



**Human Capital\***  
**by**  
**Gary S. Becker\*\***

To most people capital means a bank account, a hundred shares of IBM stock, assembly lines, or steel plants in the Chicago area. These are all forms of capital in the sense that they are assets that yield income and other useful outputs over long periods of time.

But these tangible forms of capital are not the only ones. Schooling, a computer training course, expenditures of medical care, and lectures on the virtues of punctuality and honesty also are capital. That is because they raise earnings, improve health, or add to a person's good habits over much of his lifetime. Therefore, economists regard expenditures on education, training, medical care, and so on as investments in *human* capital. They are called human capital because people cannot be separated from their knowledge, skills, health, or values in the way they can be separated from their financial and physical assets.

Education and training are the most important investments in human capital. Many studies have shown that high school and college education in the United States greatly raise a person's income, even after netting out direct and indirect costs of schooling, and even after adjusting for the fact that people with more education tend to have higher IQs and better-educated and richer parents. Similar evidence is now available for many years from over a hundred countries with different cultures and economic systems. The earnings of more educated people are almost always well above average, although the gains are generally larger in less developed countries.

Consider the differences in average earnings between college and high school graduates in the United States during the past fifty years. Until the early sixties college graduates earned about 45 percent more than high school graduates. In the sixties this premium from college education shot up to almost 60 percent, but it fell back in the seventies to under 50 percent. The fall during the seventies led some economists and the media to worry about "overeducated Americans." Indeed, in 1976 Harvard economist Richard Freeman wrote a book titled *The Overeducated American*. This sharp fall in the return to investments in human capital put the concept of human capital itself into some disrepute. Among other things it caused doubt about whether education and training really do raise productivity or simply provide signals ("credentials") about talents and abilities.

But the monetary gains from a college education rose sharply again during the eighties, to the highest level in the past fifty years. Economists Kevin M. Murphy and Finis Welch have shown that the premium on getting a college education in the eighties was over 65 percent. Lawyers, accountants, engineers, and many other professionals experienced especially rapid advances in earnings. The earnings advantage of high school graduates over high school dropouts has also greatly increased. Talk about overeducated Americans has vanished, and it has been replaced by concern once more about whether the United States provides adequate quality and quantity of education and other training.

This concern is justified. Real wage rates of young high school dropouts have fallen by more than 25 percent since the early seventies, a truly remarkable decline. Whether because of school problems, family instability, or other factors, young people without a college or a full high school education are not being adequately prepared for work in modern economies.

Thinking about higher education as an investment in human capital helps us understand why the fraction of high school graduates who go to college increases and decreases from time to time. When the benefits of a college degree fell in the seventies, for example, the fraction of white high school graduates who started college fell, from 51 percent in 1970 to 46 percent in 1975. Many educators expected enrollments to continue declining in the eighties, partly because the number of eighteen-year-olds was declining, but also because college tuition was rising rapidly. They were wrong about whites. The fraction of white high school graduates who enter college rose steadily in the eighties, reaching 60 percent in 1988, and caused an absolute increase in the number of whites enrolling despite the smaller number of college-age people.

This makes sense. The benefits of a college education, as noted, increased in the eighties. And tuition and fees, although they rose about 39 percent from 1980 to 1986 in real, inflation-adjusted terms, are not the only cost of going to college. Indeed, for most college students they are not even the major cost. On average, three-fourths of the private cost—the cost borne by the student and by the student's family—of a college education is the income that college students give up by not working. A good measure of this "opportunity cost" is the income that a newly minted high school graduate could earn by working full-time. And during the eighties this forgone income, unlike tuition, did not rise in real terms. Therefore, even a 39 percent increase in real tuition costs translated into an increase of just 10 percent in the total cost to students of a college education.

The economics of human capital also account for the fall in the fraction of black high school graduates who went on to college in the early eighties. As Harvard economist Thomas J. Kane has pointed out, costs rose more for black college students than for whites. That is because a higher percentage of blacks are from low-income families and, therefore, had been heavily subsidized by the federal government. Cuts in federal grants to them in the early eighties substantially raised their cost of a college education.

According to the 1982 "Report of the Commission on Graduate Education" at the University of Chicago, demographic-based college enrollment forecasts had been wide of the mark during the twenty years prior to that time. This is not surprising to a "human capitalist." Such forecasts ignored the changing incentives—on the cost side and on the benefit side—to enroll in college.

The economics of human capital have brought about a particularly dramatic change in the incentives for women to invest in college education in recent decades. Prior to the sixties American women were more likely than men to graduate from high school but less likely to continue on to college. Women who did go to college shunned or were excluded from math, sciences, economics, and law, and gravitated toward teaching, home economics, foreign languages, and literature. Because relatively few married women continued to work for pay, they rationally chose an education that helped in "household production"—and no doubt also in the marriage market—by improving their social skills and cultural interests.

All this has changed radically. The enormous increase in the labor participation

of married women is the most important labor force change during the past twenty-five years. Many women now take little time off from their jobs even to have children. As a result the value to women of market skills has increased enormously, and they are bypassing traditional "women's" fields to enter accounting, law, medicine, engineering, and other subjects that pay well. Indeed, women now comprise one-third or so of enrollments in law, business, and medical schools, and many home economics departments have either shut down or are emphasizing the "new home economics." Improvements in the economic position of black women have been especially rapid, and they now earn just about as much as white women.

Of course, formal education is not the only way to invest in human capital. Workers also learn and are trained outside of schools, especially on jobs. Even college graduates are not fully prepared for the labor market when they leave school, and are fitted into their jobs through formal and informal training programs. The amount of on-the-job training ranges from an hour or so at simple jobs like dishwashing to several years at complicated tasks like engineering in an auto plant. The limited data available indicates that on-the-job training is an important source of the very large increase in earnings that workers get as they gain greater experience at work. Recent bold estimates by Columbia University economist Jacob Mincer suggest that the total investment in on-the-job training may be well over \$100 billion a year, or almost 2 percent of GNP.

No discussion of human capital can omit the influence of families on the knowledge, skills, values, and habits of their children. Parents affect educational attainment, marital stability, propensities to smoke and to get to work on time, as well as many other dimensions of their children's lives.

The enormous influence of the family would seem to imply a very close relation between the earnings, education, and occupations of parents and children. Therefore, it is rather surprising that the positive relation between the earnings of parents and children is not strong, although the relation between the years of schooling of parents and children is stronger. For example, if fathers earn 20 percent above the mean of their generation, sons at similar ages tend to earn about 8 percent above the mean of theirs. Similar relations hold in Western European countries, Japan, Taiwan, and many other places.

The old adage of "from shirtsleeves to shirtsleeves in three generations" is no myth; the earnings of grandsons and grandparents are hardly related. Apparently, the opportunities provided by a modern economy, along with extensive public support of education, enable the majority of those who come from lower-income backgrounds to do reasonably well in the labor market. The same opportunities that foster upward mobility for the poor create an equal amount of downward mobility for those higher up on the income ladder.

The continuing growth in per capita incomes of many countries during the nineteenth and twentieth centuries is partly due to the expansion of scientific and technical knowledge that raises the productivity of labor and other inputs in production. And the increasing reliance of industry on sophisticated knowledge greatly enhances the value of education, technical schooling, on-the-job training, and other human capital.

New technological advances clearly are of little value to countries that have very few skilled workers who know how to use them. Economic growth closely depends on the synergies between new knowledge and human capital, which is why large increases in education and training have accompanied major advances in technological knowledge in all countries that have achieved significant economic growth.

The outstanding economic records of Japan, Taiwan, and other Asian economies in recent decades dramatically illustrate the importance of human capital to growth. Lacking natural resources—they import almost all their energy, for example—and facing discrimination against their exports by the West, these so-called Asian tigers grew rapidly by relying on a well-trained, educated, hardworking, and conscientious labor force that makes excellent use of modern technologies.

\* From *The Concise Encyclopedia of Economics*, part of The Library of Economics and Liberty, (no date)

Original version: <http://www.econlib.org/library/Enc/HumanCapital.html>

### Further Reading

Becker, Gary S. *Human Capital*. 1975.

Freeman, Richard. *The Overeducated American*. 1976.

Kane, Thomas J. "College Entry by Blacks since 1970: The Role of Tuition, Financial Aid, Local Economic Conditions, and Family Background." Unpublished manuscript, 1990.

Murphy, Kevin M., and Finis Welch. "Wage Premiums for College Graduates: Recent Growth and Possible Explanations." *Educational Researcher* 18 (1989): 17-27.

"Report of the Commission on Graduate Education." *University of Chicago Record* 16, no. 2 (May 3, 1982): 67-180.

### About the Author

Gary S. Becker is University Professor of Economics and Sociology at the University of Chicago and the Rose-Marie and Jack R. Anderson Senior Fellow at Stanford's Hoover Institution. He was a pioneer in the study of human capital. He won the 1992 Nobel Prize in economics. (See also: Biography: Gary S. Becker.)\*\*

### \*\*Biography of Gary S. Becker (from the same source as the above)

Gary S. Becker won the 1992 Nobel Prize in economics for "having extended the domain of economic theory to aspects of human behavior which had previously been dealt with—if at all—by other social science disciplines such as sociology, demography and criminology."

Becker's unusually wide applications of economics started early. In 1955 he wrote his doctoral dissertation at the University of Chicago on the economics of discrimination. Among other things, Becker successfully challenged the Marxist view that discrimination helps the person who discriminates. Becker pointed out that if an employer refuses to hire a productive worker simply because of his skin color, that employer loses out on a valuable opportunity. In short, discrimination is costly to the person who discriminates.

Becker showed that discrimination would be less pervasive in more competitive industries because companies that discriminated would lose market share to companies that did not. He also presented evidence that discrimination was more pervasive in more regulated and, therefore, less competitive industries. The idea that discrimination is costly to the discriminator is common sense among economists today, and that is due to Becker.

In the early sixties Becker moved on to the fledgling area of human capital. One of the founders of the concept (the other being Theodore Schultz), Becker pointed out what again seems like common sense but was new at the time: education is an investment. Education adds to our human capital just as other

investments add to physical capital. (For more on this, see Becker's article, Human Capital, in this encyclopedia.)

One of Becker's insights was that a major cost of investing in education is one's time. Possibly that insight led him to his next major area, the study of the allocation of time within a family. Applying the economist's concept of opportunity cost, Becker showed that as market wages rose, the cost to married women of staying home would rise. They would want to work outside the home and economize on household tasks by buying more appliances and fast food.

Not even crime escaped Becker's keen analytic mind. In the late sixties he wrote a trail-blazing article whose working assumption was that the decision to commit crime is a function of the costs and benefits of crime. From this assumption he concluded that the way to reduce crime is to raise the probability of punishment or to make the punishment more severe. His insights into crime, like his insights on discrimination and human capital, helped spawn a new branch of economics.

In the seventies Becker extended his insights on allocation of time within a family. He used the economic approach to explain the decisions to have children and to educate them, and the decisions to marry and to divorce.

Becker was a professor at Columbia University from 1957 to 1969. Except for that period, he has spent his entire career at the University of Chicago. He holds joint appointments in the departments of economics and sociology. Becker won the John Bates Clark Award of the American Economic Association in 1967 and was president of that association in 1987.

#### **Selected Works**

"Crime and Punishment: An Economic Approach." *Journal of Political Economy* 76, no. 2

(March/April 1968): 169-217.

*The Economics of Discrimination*, 2d ed. 1971.

*Human Capital*, 2d ed. 1975.

"A Theory of the Allocation of Time." *Economic Journal* 40, no. 299 (September 1965): 493-508.

*Treatise on the Family*. 1981.