



Human Capital and the Economy

Author(s): Gary S. Becker

Source: *Proceedings of the American Philosophical Society*, Mar., 1992, Vol. 136, No. 1 (Mar., 1992), pp. 85-92

Published by: American Philosophical Society

Stable URL: <https://www.jstor.org/stable/986801>

REFERENCES

Linked references are available on JSTOR for this article:

https://www.jstor.org/stable/986801?seq=1&cid=pdf-reference#references_tab_contents

You may need to log in to JSTOR to access the linked references.

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at <https://about.jstor.org/terms>



American Philosophical Society is collaborating with JSTOR to digitize, preserve and extend access to *Proceedings of the American Philosophical Society*

JSTOR

Human Capital and the Economy*

GARY S. BECKER

*Department of Economics and Sociology
University of Chicago
and
Hoover Institution
Stanford University*

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

But I am going to talk about a different kind of capital. Schooling, a computer training course, expenditures on medical care, and lectures on the virtues of punctuality and honesty are capital too in the sense that they improve health, raise earnings, or add to a person's appreciation of literature over much of his or her lifetime. Consequently, it is fully in keeping with the capital concept as traditionally defined to say that expenditures on education, training, medical care, etc., are investments in capital. However, these produce human, not physical or financial, capital because you cannot separate a person from his or her knowledge, skills, health, or values the way it is possible to move financial and physical assets while the owner stays put.

It may seem odd now, but I hesitated a while before deciding to use the title *Human Capital* for the book I published more than twenty-five years ago—and even hedged the risk by using a long subtitle. In the early days, many people were criticizing this term and the underlying analysis because they believed it treated people like slaves or machines. My, how the world has changed! The name and analysis are now readily accepted by most people not only in all the social sciences, but even in the media.

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 after adjusting for the

* Based on the Ryerson Lecture delivered at the University of Chicago, April 5, 1989. I appreciate the helpful comments of Guity Nashat, Sherwin Rosen and the late George Stigler, and the assistance of David Meltzer. Read 26 April 1991.

better family backgrounds and greater abilities of more educated people. Similar evidence is now available for many years from over one 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. As the founder of this society, Benjamin Franklin, said, "An investment in knowledge pays the best interest."

Consider the differences in average earning between college and high school graduates in the United States during the past fifty years. After being reasonably stable at between 40 to 50 percent until the early 1960s, they rose during that decade and then fell rather sharply. This fall during the 1970s led some economists and the media to worry about "overeducated Americans" (see Freeman [1976]). The concept of human capital itself fell into some disrepute.

But the monetary gains from a college education rose sharply during the 1980s to the highest level during these fifty years (see Murphy and Welch, 1989). Lawyers, accountants, engineers, and many other professionals experienced especially rapid advances in earnings. The earnings advantage of high school graduates over high school dropouts 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.

These worries are stimulated by tough economic competition from a renewed Europe, Japan, Korea and other Asian countries, by sluggish rates of productivity advance in the United States in many sectors during the past fifteen years, by a large drop in SAT scores, and by the dismal performance of American high school students on international tests in mathematics and science.

For those who prefer a monetary bottom line, trends in the earnings of young persons in the United States provide good reason for skepticism about the quality of the preparation they receive. The trend has been disastrous for the 15 percent of all students and much larger percentage of inner-city blacks who fail to complete high school. Real wage rates of young high school dropouts fell by more than 30 percent since the early 1970s. Whether because of school problems, family instability, or other forces, young people without a college education are not being adequately prepared for work in modern economies.

The fraction of high school graduates who enter college fell during the middle of the '70s when benefits from a college education dropped, and it rose again in the '80s when the benefits greatly increased. This caused an unexpected boom in college enrollments during the past few years, despite the relatively few people who are reaching college age.

Many educators expected enrollments in the '80s to decline not only for demographic reasons, but also because college tuition was rising rapidly. They were wrong about whites, for whom enrollments rose steadily, because they failed to appreciate that benefits from college rose

even faster than costs, and that high school graduates respond to changes in both benefits and costs. However, the fraction of black male high school graduates who went on to college did fall in the early eighties because they were more responsive than whites to the rise in tuition costs and to the fall in federal grants to low income college students (see Kane [1990]).

One reason benefits rose more than costs for whites is that private costs consist of tuition plus earnings foregone by being in college rather than working. And foregone earnings, which comprise about three-fourths of all private costs, did not rise because the earnings of high school graduates were flat during the 1980s.

One might believe that enrollments in college would be easy to predict since the number of persons graduating from high school can be predicted quite closely. But demographic-based college enrollment forecasts have been wide of the mark during the past twenty years (see Report of the Commission on Graduate Education [1982]). Such forecasts ignored the changing incentives to women, blacks, and older persons to enroll in college.

That human capital investments tend to respond rationally to benefits and costs is clearly indicated by these changes in the education of women. Prior to the 1960s in the United States, women were more likely than men to graduate from high school but less likely to continue on to college. Women shunned math, sciences, economics, and law, and gravitated toward teaching, home economics, foreign languages, and literature. Since 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.

All this has changed radically. The enormous increase in the 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 so-called 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," which is a true branch of economics.

The same trends in women's education are found in Great Britain, France, Scandinavia, Taiwan, Japan, Mexico, and other countries with large increases in the labor force participation of women, even when attitudes toward women differ greatly from those now prevalent in Europe and the United States. Whenever the labor force participation of married women has increased sharply, changes in the gains from work for pay have had a more powerful effect on the behavior of women than have traditional ideas about the proper role of women.

The ratio of the earnings of full-time working women to men increased

more rapidly since 1979 than during any previous period in our history, and women are becoming much more prominent in many highly skilled jobs. Improvements in the economic position of black women have been especially rapid, and they now earn just about as much as white women.

Although the civil rights movement clearly contributed to greater job opportunities for women and minorities, it is far from the whole story. This can be seen from the fact that women progressed most rapidly under the Reagan administration, which was opposed to affirmative action and did not have an active Civil Rights Commission. In my judgment, women advanced primarily because of their greater attachment to the labor force. This in turn was stimulated by a large decline in fertility, a rapid increase in divorce, and the growing importance of the service sector.

Human capital analysis assumes that schooling raises earnings and productivity mainly by providing knowledge, skills, and a way of analyzing problems. An alternative view, however, denies that schooling does much to improve productivity, and instead it stresses "credentialism"—that degrees and education convey information about the underlying abilities, persistence, and other valuable traits of people. According to extreme versions of this line of analysis, earnings of more educated persons exceed those of the less educated not because schooling raises productivity, but because abler students get more schooling.

Credentialism obviously exists. But many kinds of evidence suggest that credentialism does not explain most of the positive association between earnings and schooling.

A problem with credentialism is that companies want information on abilities and performance in the context of working life: the discipline imposed by factories, the need to please customers and get along with fellow employees, and so forth. Success in the flexible, individualistic, and rather undisciplined university atmosphere in most countries, and in high schools in the United States, does not convey much relevant information. A cheaper and more efficient way to provide information to employers about worker traits is for teenagers to enter directly into the labor force, as they did prior to the industrial revolution. Far more would be learned about their work-related abilities and other characteristics after six years of work experience than after six additional years of schooling.

High school and college education has spread extensively in modern economies because the additional knowledge and information acquired in school is so important in technologically advanced economies. I should add that advocates of the credentialism approach have become rather silent in recent years with the growing concerns about schools and labor quality in the United States.

Of course, learning and training also occur outside of schools, especially on jobs. Even college graduates are not well prepared for the labor market when they leave school, and they 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 information available indicates that on-the-job training is an important source of the very large increase in earnings as workers gain greater experience at work. And recent bold estimates by Jacob Mincer suggest that the total investment in on-the-job training may be almost as large as the investment in education.

After a few years of frequent job changes, most workers settle down and remain with the same company for a long time. Workers and their employers get bonded together in large part because of the on-the-job learning and training. Therefore, it is not surprising that job changes are common among unskilled workers and uncommon among skilled workers.

My friends in the humanities may complain that so far I have only mentioned "money," or they might say "mere money." Is there any place in human capital theory for education to appreciate literature, culture, and the good life? Fortunately, nothing in the concept of human capital implies that monetary incentives need be more important than cultural and nonmonetary ones, although in discussing human capital and the economy, I will say little about nonmonetary effects.

Obviously, it is much easier to quantify the monetary side, but, nevertheless, progress has been made in quantifying other aspects. Many studies show that education promotes health, reduces smoking, raises the propensity to vote, improves birth control knowledge, and of course stimulates the appreciation of classical music, literature, and even tennis. And several ingenious studies rely heavily on economic theory to quantify some nonmonetary benefits of education. These results indicate that such benefits of schooling are quite large, although for most people they are apparently smaller than monetary benefits (see, e.g., Michael [1972]).

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

Differences among young children grow over time with age and schooling because children learn easier when they are better prepared. Therefore, even small differences among children in the preparation provided by their families are frequently multiplied over time into large differences when they are teenagers. This is why the labor market cannot easily cope with school dropouts who can hardly read and never developed good work habits, and why it is difficult to devise policies to help these groups.

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 is stronger for education. For example, if fathers earn 20 percent above the mean of their generation, sons tend to earn about 8 per-

cent 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; earnings of grandsons and grandparents are hardly related. Apparently the opportunities provided by a modern economy, along with extensive public support of education, enables the majority of those who come from lower income backgrounds to do reasonably well in the labor market.

Families divide their total spending on children between number of children and the amount spent per child. The number of children and spending per child tend to be negatively related. The reason is simple. An increased number of children raises the effective cost of adding to the spending on each one because an additional dollar or hour of time spent on each then means a larger total addition to spending. Similarly, an increase in the dollars or time spent on each child raises the cost of having an additional child. Consequently, even a modest increase in the cost of births can have a large negative effect on the number of children and a large positive effect on the amount spent on each child.

China has imposed heavy, not modest, taxes and other penalties on large families during the past decade, especially in urban areas. It is revealing about the cross-cultural relevance of this analysis that sharp declines in urban fertility—the total fertility rate in Chinese cities is now much below replacement levels—have been accompanied by discussions in the Chinese press of the “emperor child.” This refers to only children who receive lavish toys and presents from their parents, and are pushed toward outstanding educational achievement.

Differences among ethnic groups in the United States in the relation between number of children and spending per child are fascinating. Groups with small families generally spend much on each child’s education and training, while those with big families spend much less. The Japanese, Chinese, Jews, and Cubans have few children who become well-educated, while Mexicans, Puerto Ricans, and blacks have big families, and the education of children suffers. I should add that the Mormons are an interesting exception, for they have both very large families and high levels of achievement. It should come as no surprise that children from the ethnic groups with small families and large investments in human capital typically rise faster and further in the United States’ income-occupation hierarchy than do children from other groups.

Malthus’s famous prediction that people marry earlier and birth rates rise when incomes increase was decisively contradicted by the industrial revolution, whose effects became evident not long after publication of the second edition of his book on population. The contradiction to Malthus’s theory is that fertility eventually fell sharply, rather than rose, as per capita incomes continued to grow, initially in Great Britain, the United States, and France, and eventually also in Germany, Sweden, Japan, and other countries. Rapid advances in education and other training accompanied the sharp declines in fertility. Parents did spend

more on children when their incomes rose—as Malthus predicted—but they spent a lot more on each child and had fewer children, as human capital theory predicts.

Similar changes occur in other cultures when they experience rapid economic growth. Taiwan's birth rate was cut in half from 1960 to 1975, while the fraction of high school graduates doubled after Taiwan took off in the 1960s toward its remarkable economic growth. Mexico's birth rate did not fall much during its rapid economic growth in the 1950s and 1960s. But since 1975, birth rates have fallen by more than one-third, and school enrollments have expanded rapidly.

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. 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 like the Upper Volta which 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 managed significant economic growth.

Rather compelling evidence on the link between education and economic progress comes from a comparison of the growth in incomes per capita of more than 100 countries since 1960. On the average poor countries grew about as fast as rich ones. But countries with a relatively well-educated labor force in 1960 advanced much faster than average except under systems that do not use their workers effectively, as in the Eastern bloc countries.

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—e.g., they import practically all their sources of energy—and facing discrimination from the West, these so-called Asian tigers grew rapidly by relying on a well-trained, educated, hard-working, and conscientious labor force that makes excellent use of modern technologies.

The different demands for education in traditional and modern agriculture are also very instructive. Education has little value in traditional agriculture since farming methods and knowledge are mainly passed on from parents to children. By contrast, education is of great value to modern farmers who must deal with new hybrids, breeding methods, fertilizers, complicated equipment, and intricate futures markets for commodities (see Welch [1970]). Therefore, it is no surprise that farmers are about as well-educated as industrial workers in modern economies but lag far behind in undeveloped economies.

Education and training are also helpful in the manufacturing and ser-

vice sectors in coping with changing technologies and advancing productivity. Recent studies show that more rapidly progressing industries do attract better-educated workers and provide greater training on the job (see Mincer and Higuchi [1988]; Gill [1989]).

Perhaps I succeeded in conveying the enormous energy devoted to the analysis of human capital during the past quarter-century and the impressive advances in analytical techniques and the accumulation of empirical regularities. Much is now known for many countries about the effects of education on earnings, occupation, employment, and unemployment of both men and women and various races and ethnic groups. Much too is known about the link between birth rates and investments in education and training, how families influence the human capital of their children, and the relation between investments in human capital and economic progress. The analysis of human capital may have removed a little of the mystery from the economic and social world that we live in.

BIBLIOGRAPHY

- Freeman, Richard, *The Overeducated American*, New York: Academic Press, 1976.
- Gill, Indermit, "Technological Change, Education and Obsolescence of Human Capital: Some Evidence for the U.S.," Ph.D. Dissertation, University of Chicago, 1989.
- Kane, Thomas J., "College Entry by Blacks Since 1970: The Role of Tuition, Financial Aid, Local Economic Conditions and Family Background." Kennedy School of Government, Harvard University, 1990.
- Michael, Robert T., *The Effect of Education Efficiency in Consumption* (New York, NY: Columbia University Press for NBER, 1972).
- Mincer, Jacob, and Yoshio Higuchi, "Wage Structures and Labor Turnover in the U.S. and Japan," *Journal of the Japanese and International Economies* (1988): 297-331.
- 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.
- Welch, Finis, "Education in Production," *Journal of Political Economy* 78 (1970): 35-59.