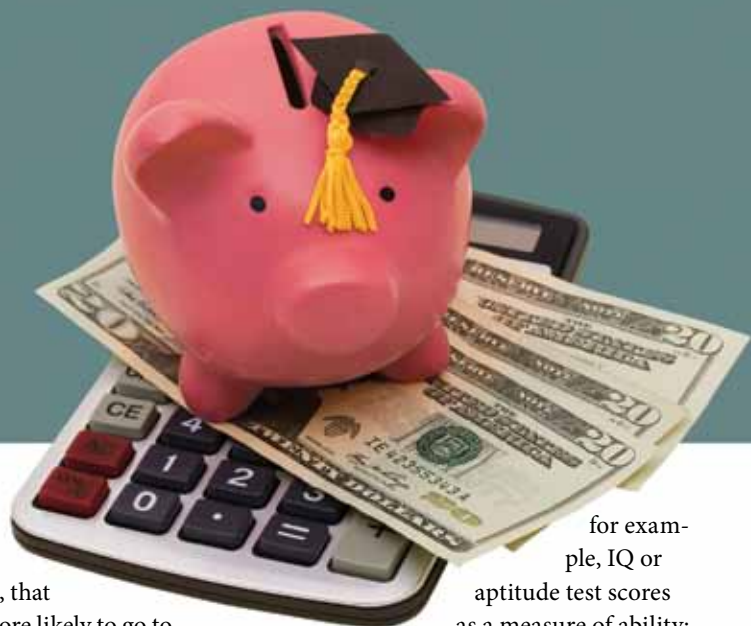


The Return to Education Isn't Calculated Easily

By Natalia Kolesnikova



It is almost a given that people with more education make more money than those with less education. But how much more is that better education worth? The answer is more complicated than many would think.

The differential between the price of highly and poorly educated labor is given the suitably evocative label “the return to education.” The reference to the price differential as a “return” stems, of course, from an understanding that education is a choice; individuals can place themselves in a position to sell their labor services at the higher price by “investing” in their human capital.

The relationship between education and earnings is among the most widely studied topics in labor economics. One important goal is to uncover the *causal* impact of education on earnings. Just because a person with a college degree earns more than a person without such a degree does not necessarily mean that college education *causes* the difference in pay. Rather, the person who went to college might have some characteristics that make him or her more productive in the

labor market, resulting in higher earnings. It is possible, for example, that high-ability people are more likely to go to college *and* are more productive.

So, how can the effect of a college education on earnings be isolated? In an ideal world, researchers would make a copy of a person, sending only one of the two to college. After the one graduates from college, earnings of the two would be compared. Only in this case could it be said with some certainty that the difference in earnings was due to the college education.¹ Of course, this sort of comparison is not feasible. Instead, researchers try to compare people who are as similar as possible in everything but the level of education they have.

Studies usually try to control for demographic factors, such as age, gender and race, as well as work experience. Other factors that might affect the return to education are family background, school quality and ability. Quantifying any of these factors is a difficult task in itself. Researchers use,

for example, IQ or aptitude test scores as a measure of ability;

parental education is used as a measure of family background.

With so many factors to consider, studies take different approaches and use different estimation techniques. Although all studies find that more education is associated with higher earnings, the estimates of the return to education vary. Most studies estimate that the return to one year of schooling is, on average, between 8 and 13 percent.² In other words, each additional year of education is associated with an 8-13 percent increase in hourly earnings. For practical applications, 10 percent, on average, is a good estimate of the return. (It is worth pointing out that the returns are somewhat higher for women than for men.)

Additional Complications

Complicating these estimates is the fact that any returns on investment in human

An Individual's Education Benefits Others, Too

Estimates of the private returns to education do not account for all the benefits that society receives from an individual's investment in education. Economic theory predicts that an individual's education not only boosts his or her own productivity but also that of others. The presence of more educated workers leads to a “knowledge spillover,” making other workers more productive. Some recent studies have found empirical evidence in support of this prediction.⁶

Productivity spillovers also have a positive effect on wages. For example, “a percentage point increase in the supply of college graduates raises high school dropouts’ wages by 1.9 percent, high school graduates’ wages by 1.6 percent and college graduates’ wages by 0.4 percent,” according to one study.⁷ Not surprisingly, there is also a positive impact of education on economic growth as people with more education were shown to be more likely to accept innovation and adopt new technologies.

Positive spillovers from education have been found in areas other than labor markets, too. One study has shown that “higher maternal education improves infant health, as measured by birth weight and gestational age. It also increases the probability that a new mother is married, reduces parity, increases use of prenatal care and reduces smoking, suggesting that these are important pathways for the ultimate effect on health.”⁸

Another study found a significant decrease in probability of criminal behavior and incarceration for people with more education.⁹ The researchers noted that “the externality of

capital must be realized in a specific labor market—usually a local labor market. These educational investments aren't like investments in stock, where a share of General Electric is worth the same in New York as it is in St. Louis.


One study, conducted in part by this author, found that the returns to college education are systematically lower in nicer, more expensive cities.³ It is not surprising that when a city has attractive amenities people “pay” for these amenities in the form of high property prices. However, people with low levels of education, and therefore low lifetime income, find these cities’ high property prices to be a greater deterrent than do individuals with high levels of education. Well-educated people (cardiologists, for example) might even accept a lower salary to work in these cities than they would in less-attractive cities. On the other end of the scale, less-educated people (janitors, for example) might have to be paid more to work in these nice cities than elsewhere because of the higher cost of living. Therefore, the discrepancy in pay between those with more education and less education is smaller than elsewhere. It is important to point out that even though measured “monetary returns to education” are lower in more-attractive cities, cardiologists are not at any disadvantage when they choose to locate there. They are simply “paying” for an access to amenities of a nice city by accepting lower returns to their education.

The study also estimated the returns to college education for white men living in major U.S. cities. In 2000, a white man with a college degree earned as much as 85 percent

more than a similar white man with a high school diploma in Dallas, but only 50 percent more in Seattle (but he enjoyed all the good things that Seattle has to offer).⁴ The cross-city differences in the returns to college education are even bigger if smaller cities are considered as well.

Nonmonetary Returns

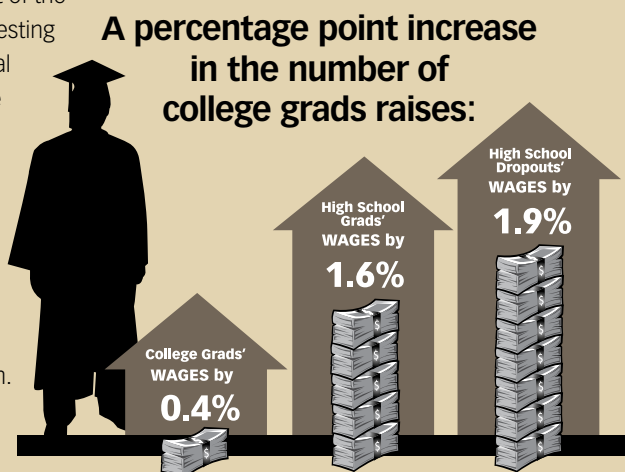
Although it is difficult to determine the monetary return to education, it is practically impossible to quantify the numerous non-monetary returns. Studies have shown that “experiences and skills acquired in school reverberate throughout life, not just through higher earnings. Schooling also affects the degree one enjoys work and the likelihood of being unemployed. It leads individuals to make better decisions about health, marriage and parenting. It also improves patience, making individuals more goal-oriented and less likely to engage in risky behavior. Schooling improves trust and social interaction, and may offer substantial consumption value to some students.”⁵

Despite the difficulty in assessing the returns to education, there is little doubt that the importance of education will not disappear from the public policy arena. As a result, continued economic research on the subject will hopefully guide effective public policy. 

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education is about 14-26 percent of the private return to schooling, suggesting that a significant part of the social return to education comes in the form of externalities from crime reduction.”

Research done to evaluate the social returns to education is extremely important for a variety of policy questions, such as assessing the efficiency of public investment in education. The issue remains one of the frontiers of labor economics.



ENDNOTES

- ¹ Even in this case, it is not clear if the labor market rewards skills a person learned in college or simply reacts to a “signal” of higher abilities. In fact, some researchers argue that there is a “sheepskin effect” in which diplomas and degrees matter more than actual number of years of education. See Hungerford and Solon, as well as Belman and Heywood, for more.
- ² Card provides an excellent overview of existing studies.
- ³ See Black, Kolesnikova and Taylor.
- ⁴ The reported numbers represent an increase in hourly earnings from obtaining college education (relative to having only a high school diploma), rather than a return to one year of schooling as before.
- ⁵ See Oreopoulos and Salvanes.
- ⁶ In particular, see the work of Acemoglu and Angrist and that of Moretti (2004a,b).
- ⁷ See Moretti (2004b).
- ⁸ See Currie and Moretti.
- ⁹ See Lochner and Moretti.

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