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Does College Still Pay?

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Summary

Since the mid-1990s college tuition costs have risen quickly while the rate of increase in the value of education has slowed considerably. Cecilia Rouse and Lisa Barrow explore the reasons and ask if college remains a good investment.

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In the 1980s the value of a college education grew significantly. According to Census data, in 1979 those with a bachelor's degree or higher earned roughly 45 percent more per hour than workers with only a high school diploma. By 1989 wages for college graduates were more than 70 percent higher than those of high school graduates.[1] This dramatic change revived arguments over the cause and effect relationship between education and higher income. In other words, was education driving income levels or was the education trend a byproduct of rising income levels? This debate spawned a very large literature tying increasing income inequality to a decrease in demand for workers without marketable skills. A key reason for the increasing value of a college education was the increasing cost of not having one: Real earnings of workers without some college education fell during the 1980s, as earnings of the more highly educated increased. Politicians and policymakers tried to enact policies to improve educational attainment, for as President Clinton stated: "Today, more than ever before in our history, education is the fault line between those who will prosper in the new economy and those who will not."[2]

But the labor market changed in the mid-1990s. The hourly wage gap between those with college education and those without, which had grown by 25 percentage points in the 1980s, grew by only 10 percentage points in the 1990s. At the same time, college tuition rates increased extremely rapidly. The wage-gap slowdown has led some to wonder: Has college ceased being the better deal over the past few years? Do rising tuition levels mean that the value of a college education has peaked? And even, is attending college still worth the costs?

Our answer to the final question is yes. College is definitely still worth the investment. In fact, there are no signs that the value of a college education has peaked or is on a downward trend. Also, the rapid annual percentage rise in the cost of tuition has had little effect on the value of a college education, largely because tuition is a relatively small part of the true total economic cost of attending college. Most of the true economic cost of college is the wages students forego while they attend—and those have not risen by very much at all.

[1] All levels of education have become more valuable since the late 1970s. The return on each year of schooling was 6.6 percent (in terms of hourly wages) in 1979, compared with 9.8 percent in 1989 and 10.9 percent in 2000. We focus on college education here due to space limitations.

[2] "President Clinton's Call to Action for American Education in the 21st Century" (February 1997) available at www.ed.gov/updates/PresEDPlan/part9.html, accessed on April 4, 2005.

The Changing Value of Education

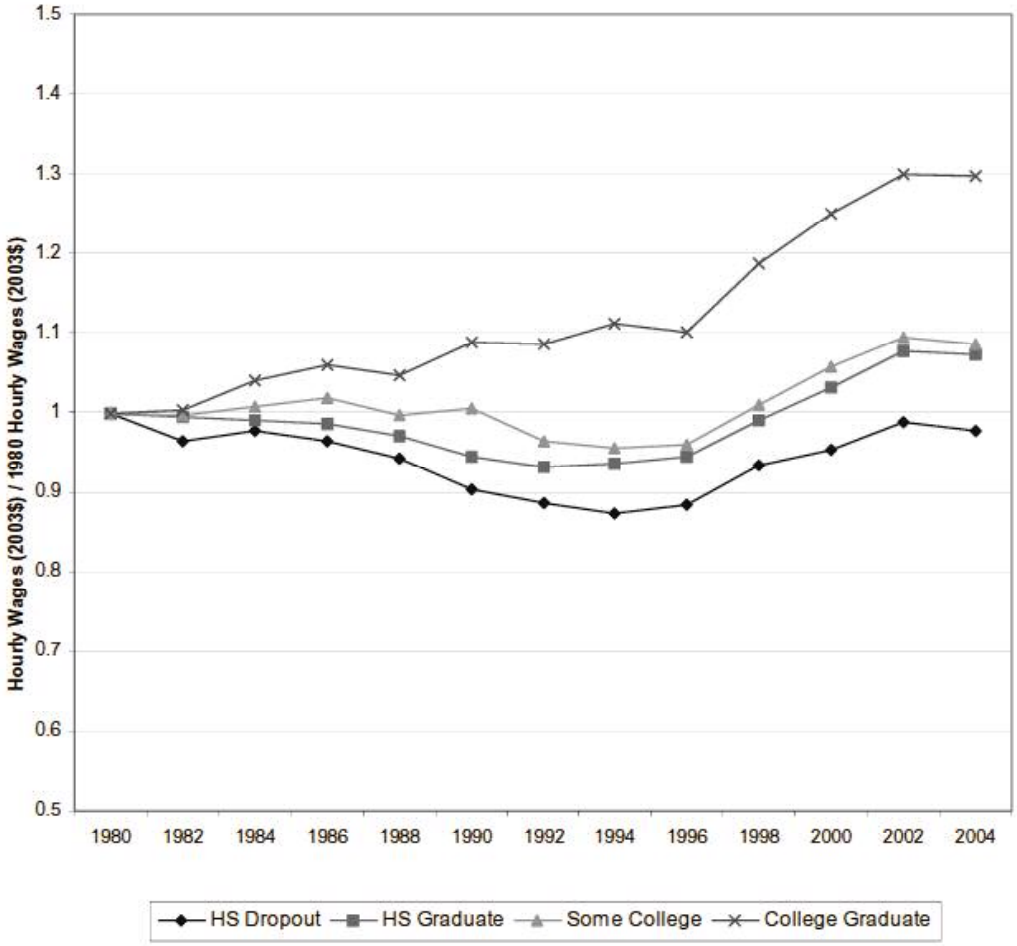
To make sense of trends in the economic value of education, one must first understand what economists see as the "return to education." The return to education is the capitalized present value of the extra income an individual would earn with additional schooling, after taking into account all of the costs of obtaining the additional schooling.[3] This return to education may change because of a shift in the income for individuals who obtain more schooling or a shift in the income of those who do not. Also, a change in the economic costs of education can affect the return to education.

Figure 1 shows the average hourly real wages (relative to hourly wages in 1980) for four sets of workers between 1980 and 2004. The four categories include: those who did not complete high school; those who only earned a high school diploma; those who have some college education but did not earn a bachelor's degree; and those who earned at least a bachelor's degree. Through the mid-1990s average hourly wages increase fairly steadily among those with at least a bachelor's degree, while the real wages of high school dropouts and of those with only a high school diploma decline. These trends account for the large increases in the return to schooling through the mid-1990s.

Since the mid-1990s the average wages of college graduates have skyrocketed, increasing by 18 percent by 2004. However, the wages of high school dropouts have also risen, climbing by 10 percent in the second half of the 1990s from their lowest levels in 1994. Because of this turnaround in the wages of high school dropouts, the college wage premium has risen at a much slower rate of increase than before. And rapidly rising tuition costs must be set against this slower rate of increase.

[3] Ideally, one would observe a worker's income were she to obtain the additional schooling, and then compare this to her income were she to obtain no further schooling. Because an individual either obtains more schooling or does not, this ideal is impossible to measure. Therefore, economists typically compute the return to schooling by comparing the average income of workers who have obtained the additional schooling to those who did not. The main conceptual issue with this observed return to schooling is a concern that workers who obtained the additional schooling may also differ from those that did not along unobserved dimensions (such as they were more motivated or hard working). Further discussion of these issues is beyond the scope of this paper; however, we refer the interested reader to Card (1999).

Figure 1
Hourly Wages by Education Group
Relative to 1980 Hourly Wages



Source: Authors' calculations from the 1980–2004 (even years only) Current Population Survey Outgoing Rotation Group files available from Unicon. We limit the sample to individuals between ages of 25 and 65 years, and drop observations with wages < 1/2 of the minimum wage or above the 99th percentile of the distribution.

Why Is the Premium No Longer Rising as Rapidly?

Many economists in the 1990s thought the major source of increasing wage inequality was "skill-biased technological change" (see Bound and Johnson

[1992] and Katz and Murphy [1992]). Changes in technology increased the productivity of high-skilled workers relative to low-skilled workers, raising the relative demand for the former. Therefore, relative wages for high-skilled workers rose, while those for the less-skilled declined. An end to this skill bias in technological change could account for the leveling off of the return to education.

While possible, we do not believe this is a likely explanation. The relative wages of college graduates have risen at the same time as the supply of high-skilled workers has increased, due to higher enrollment at colleges and greater immigration of high-skilled workers. Between 1996 and 2000 college enrollment rose by nearly 7 percent (National Center for Education Statistics, 2003). Since 1999, 36 percent of immigrants entering the U.S. had at least a bachelor's degree compared with 24 percent of immigrants arriving in the 1980s (Current Population Survey, 2003). The share of the population aged 25 to 65 years old with at least a bachelor's degree rose from 26 percent in 1996 to 30 percent in 2004.[4]. Despite the growth in the relative supply of college graduates, the wages of college graduates have continued to rise dramatically, which indicates an increasing—not a decreasing—demand for their skills. Moreover, average wages of workers with lower levels of education have also increased since 1995; it is this turnaround in the trend which accounts for the slowing growth in the return to schooling.

Thus the relevant question is: Why have the wages of these lower-skilled workers increased in the past decade?

Minimum wage increases in the late 1990s helped increase the wages of the lowest-skilled workers, but it is unlikely to account fully for the turnaround. First, the last increase in the federal minimum wage came in late 1997, two years after average wages of the lowest-skilled workers began to increase. It cannot account for subsequent increases in the wages of low-skilled workers. The states that have raised their minimum wages since 1997 make up only about one-third of U.S. payroll employment: It is unlikely that state minimum wages can fully account for changes in average wages across the entire country.[5] Moreover, there is an anomaly in the time-series relationship between minimum wages and inequality: In the data, the level of the minimum wage is correlated with

[4] Authors' calculations based on March CPS data. Autor, Katz, and Kearney (2004) also find that the relative supply of college-equivalent labor continued to increase throughout the late 1990s and early 2000s.

[5] States that raised their minimum wages include Alaska, California, Connecticut, Delaware, Hawaii, Illinois, Massachusetts, Maine, New York, Oregon, Rhode Island, Vermont, and Washington. The District of Columbia also raised its minimum wage.

inequality at both the bottom (where it should be) and the top (where it shouldn't be, if a low minimum wage is a cause and not a consequence of high inequality) of the wage distribution.[6] The booming economy of the late 1990s is the most likely explanation for the turnaround, as it raised the average wages of all workers, including those with the lowest skills.[7]

Why College Education Is Still Worth It

How good an investment finishing college is depends on both earnings and costs—the earnings of college graduates relative to high school graduates and the costs of attending college (both tuition and foregone earnings). Tuition and fees for a four-year college for the 2003–2004 academic year averaged $7,091; the average net price—tuition and fees net of grants—was $5,558 (both amounts in 2003 dollars).[8] If we assume that tuition and fees continue to rise as they did between the 1999–2000 and 2003–2004 school years, and conservatively look at sticker rather than net prices, the average full-time student entering a program in the fall of 2003 who completes a bachelor's degree in four years will pay $30,325 in tuition and fees. If we assume an opportunity cost equal to the average annual earnings of a high school graduate (from the March 2004 Current Population Survey) and a 5 percent discount rate for time preference, the total cost of attending college rises to $107,277. In other words, college is worthwhile for an average student if getting a bachelor's degree boosts the present value of her lifetime earnings by at least $107,277.

What is the boost to the present value of wages? At a 5 percent annual discount rate, it is $402,959. The net present value of a four-year degree to an average student entering college in the fall of 2003 is roughly $295,682—the

[6] Lee (1999) finds that in the 1980s the fall in the real value of the minimum wage can account for increasing inequality at the bottom of the wage distribution, suggesting that minimum wage increases of the mid-1990s also propped up wages at the bottom of the wage distribution, although Autor, Katz, and Kearney (2004) raise some caution about this interpretation. Namely, they highlight that much of the decline in the real value of the minimum wage during the 1980s occurred during an economic downturn, whereas the minimum wage increases in the 1990s were legislated during economic expansions.

[7] Studies of labor market cyclicality, e.g., Hoynes (2000) and Hines, Hoynes, and Krueger (2001), show that earnings and (especially) employment are procyclical and that less educated individuals experience greater cyclical variation than more educated individuals.

[8] U.S. Department of Education, 2005, based on data from the National Postsecondary Student Aid Study.

difference between $402,959 in earnings and $107,277 in total costs.[9] A student entering college today can expect to recoup her investment within 10 years of graduation.

It still pays to go to college—very much so, at least as much as ever before.[10]

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[9] Assuming that the college graduate–high school graduate earnings gap is constant over the lifecycle and equals the difference in average annual earnings for these two education groups as measured in the 2004 March Current Population Survey, a college graduate earns $27,800 more in inflation adjusted dollars per year. Alternatively, if we assume annual earnings will follow average earnings by age, the net present value to a first year student in the fall of 2003 is roughly $246,923 ($354,200 in earnings minus $107,277 in tuition, fees, and lost wages). Note that by using annual earnings we take into account the higher rates of unemployment among high school graduates. This may not be correct, to the extent that lower unemployment is not the result of completing the bachelor's degree; rather, it may be result of having the personal factors that made it likely that an individual would complete the degree in the first place.

[10] Note, however, that future changes in the U.S. labor market might affect relative compensation. If many more people who otherwise would not have attended college decide to do so, a dramatically increased supply of college graduates would compete in the labor market, and hence, the net benefits of college might be significantly smaller than we calculate.

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