THE HAMILTON PROJECT

TECHNICAL APPENDIX FOR

Is Starting College and Not Finishing that Bad?

The Hamilton Project
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In the May employment analysis we estimated the return to completing some college as well as the returns to completing associate's, bachelor's, and professional degrees. This appendix explains the details and data sources for these calculations.

Unemployment and Employment-to-Population Statistics

Using April 2013 individual level microdata from the Current Population Survey, we calculated unemployment rates and employment-to-population ratios for each education subgroup. The unemployment and employment to population numbers are not seasonally adjusted and may differ slightly from reported data because of differences between the public-use file and the BLS internal file. For both unemployment and the employment-to-population ratio, the sample includes individuals age twenty-five and older.

Cost of College

The average annual tuition for associate's and bachelor's degrees is from the National Center for Education Statistics. The cost of a bachelor's degree is the national average tuition of four-year public and private institutions (both non-profit and for-profit) in 2010-2011. The cost of a professional degree is the average of the annual tuitions of all professional degrees weighted by the number of degrees given by each type of professional school. These tuition figures also include university fees, but exclude room and board, because students would have to pay living expenses regardless of whether or not they were enrolled in college.

The cost of college also includes the opportunity cost of attending college, which we estimate as the average earnings of high school graduates without college education for the years the individuals are in school (ages eighteen through twenty-one) who are not in school and who report positive earnings. (This latter assumption increases the estimated opportunity cost because it assumes that all individuals forgoing college would be able to find employment.) The cost of two- and four-year colleges includes the opportunity cost associated with the earnings that a high school graduate would earn. The cost of a professional degree includes the opportunity cost associated with the earnings of a college graduate.

We do not have data on the types of programs attended by students that do not complete a degree, therefore we estimate their tuition cost as the average tuition at two- and four-year institutions. This reflects a balance between the fact that more students enroll in four-year institutions but a larger share of students at two-year institutions drop out before completing a degree.

Length of "Some College" and Professional School

We estimate the length of time spent in school for students reporting some college or a professional degree using data on self-reported years of schooling in the CPS, data on the time-to-degree of various professional degree programs, and the distribution of professional degrees awarded. For professional degrees, we take the average length of time to complete each type of professional degree and weight it by the number of degrees granted by each type of professional school. (e.g. we take the total number of law degrees awarded and multiply by the number of years (3) to complete a law degree.) This produces an estimate of 3.48 years. According to the Current Population Survey, individuals reporting some college also report having spent 1.83 years in postsecondary education.

When calculating the opportunity cost or earnings increase associated with these degrees in the last partial year of schooling, we assume that they incur the opportunity cost during the fraction of the year in school and the earnings associated with the degree for the other fraction.

Benefits of College—Differences in Annual Earnings

The earnings data are from the 2010-2012 March Current Population Survey. For the years when individuals are in school, we assume they earn nothing.

To estimate the annual difference in earnings by education group, we estimate the annual earnings of workers as a function of a polynomial in age, gender and race dummies, and education categories. The chart reports the estimated difference in earnings relative to the average high-school graduate controlling for these covariates.

To calculate lifetime differences in earnings between groups, we assume that graduates earn the average of individuals with the same level of education over the course of their lifetimes from age eighteen to sixty-four. In other words, the return to a college degree is assumed to be the sum of the difference between the earnings of a college graduate and a high-school graduate at age twenty-two, twenty-three, all the way to sixty-four, and then we discount these differences at a 3 percent rate.

Rate of Return on a College Education Investment

For some college, associate's degree, and bachelor's degree, the rate of return is the internal rate of return of the earnings premium of individuals with those degrees compared to individuals with only high school degrees. Specifically, individuals attending postsecondary education are assumed to incur the direct tuition costs and opportunity costs while in school starting at age eighteen and then to receive the earnings premium associated with the degree over the course of their working lives up until age sixty-four.

The rate of return of a professional degree is the return of getting a professional degree compared to only a bachelor's degree starting at age twenty-two using the same method as above. However, the earnings premium is the difference between the earnings of individuals with professional degrees and of individuals with only bachelor's degrees.

Rate of Return on Alternative Investments

The rate of return of the alternative investments is the geometric mean of the real value of asset returns between 1928 and 2012 net of inflation estimated by the CPI-U-RS (from 1947 to 2012) and an estimate of the CPI-U prior to 1947. Bond and T-bill returns are calculated from data from The Saint Louis Federal Reserve; the historical gold prices and the current gold price are from the National Mining Association. Stock market returns are calculated from data provided by Robert Shiller. Estimates of real housing prices are from Shiller and accessed from Haver Analytics.