

Why Do College Graduates Earn More?

BY KARTIK ATHREYA

In our research and writing on workforce development and on earnings differences among individuals, the Richmond Fed has often highlighted the importance of college-level training for those who are well-prepared for it. The economic benefits that workers receive from college completion are well-known: On average, college graduates earn almost twice as much over their lifetimes as high school graduates. Moreover, the size of the earnings gap between college (especially post-college) and high school graduates has been trending upward for decades. But where does this earnings premium from higher education come from?

The predominant view among economists is that a student's investment in higher education adds to his or her "human capital" in the form of new or improved skills. This interpretation, which economists Gary Becker and Theodore Schultz set out in the early 1960s, is an intuitive one: A college student who chooses a field of study wisely and who graduates will increase his or her value to employers through higher productivity. (Some other ways of building human capital include work experience and "on the job" training programs.) On this view, the question for policymakers is whether such investments are occurring in an efficient amount, and if not, whether policies like college subsidies and student-loan programs could achieve this.

The main rival view is the signaling model. This view, advanced by Michael Spence, Kenneth Arrow, and Joseph Stiglitz in the mid-1970s, is also intuitive: It holds that completion of educational programs, such as college, may simply demonstrate pre-existing attributes of the student, such as intelligence or motivation. Under the signaling view, an employer does not look upon a college degree as a sign of newly acquired skills so much as a clear signal for identifying workers with these traits, which they already had.

Thus, one disconcerting possibility is that we might see a college earnings premium even if education were totally useless in improving people's skills. This could happen if someone's true productivity is not directly observable and if higher education — even if not affecting productivity at all — is harder for low-productivity people to complete than for high-productivity people. In this case, the question for policymakers is whether time-consuming and resource-intensive education is really the most efficient way to assess someone's productivity — or whether education policies subsidizing education may in fact be *worsening* matters by creating a wasteful arms race.

Both human capital and signaling likely play some role in the way employers look at education, and in particular, college degrees. We can readily think of fields in which educational programs and degrees affect eventual job performance, such as law, engineering, architecture, and medicine. We can also

point to many jobs that have little to do with any specific college degree. But in perhaps the majority of cases, both human capital and signaling are driving the college premium. It's difficult to reach hard and fast conclusions about their relative importance, however, because their influence is observed only indirectly. Worse yet, almost any argument in favor of one interpretation of the data can be used in support of the other.

From an individual's perspective, the source of the college earnings premium doesn't matter. All that an individual needs to know is that college can be a worthwhile investment — depending, among other things, on his or her field and readiness. But from society's perspective, the question of human capital versus signaling has important implications. Are we under-investing in higher education, or over-investing? The greater the importance of human capital, the more promise higher education holds as a means of increasing individual incomes and the economy's productivity overall. The greater the importance of signaling, the more central other policies should become to workforce development.

My research and that of some of my Richmond Fed colleagues has focused on the human capital model and what it means for individuals and policymakers. For me, signaling carries less weight as a compelling explanation in most cases. This is for a few reasons. First, if the signaling model were largely true, one might expect more employers to seek to avoid paying the college premium — by looking for alternatives to the sheepskin, such as more use of job testing, apprenticeships, and the like. Second, the idea that employers derive value from the skills taught in higher education (both job-specific, like engineering skills, and general, like critical thinking) seems consistent with the trends we've seen in the skills demanded in today's knowledge-oriented economy. Lastly, one implication human capital theory has, which signaling does not, is the prediction that earnings will rise at a diminishing rate for much of working life and then decline — a pattern observed almost universally in the data.

Even if lengthy education serves largely as a signal, it may still be the most efficient screening method, yielding gains for the economy. But based on what we know now, the human capital model seems generally a helpful way to think about the investments that students make, and society makes, in higher education. And regardless of which explanation is right, I think most of us would agree it is still important to ensure that young people have the best information and preparation needed to make educational decisions wisely given their own particular attributes and circumstances. **EF**

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