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Weeks 4-5: The Puzzle Is Real: The Handsome Rewards of Useless Education

I.   Two Naïve Inferences
      A.   As we've already seen, earnings rise sharply with education. Results for full-time, year-round workers:

Average Earnings By Educational Attainment (2011)

	Some High School	High School Graduate	Bachelor's Degree	Master's Degree
Average Earnings $	31,201	40,634	70,459	90,265
Premium Over H.S.	-23%	+0%	+73%	+122%
Source: United States Census Bureau 2012a.				

      B.   Statistically naïve observers leap to the conclusion that education is fantastically lucrative: Give up four years of your life in college, and your earnings rise by 73%!

      C.   Economists, however, are trained to skeptically assess such claims. How much of the high observed correlation between education and earnings is *causal*?

      D.   Why would the causal effect of education on earnings be smaller than it seems? Ability bias: Perhaps the well-educated have more pre-existing talent, family connections, greed, favorable location, etc.
            1.   Sports analogy.

      E.   Theoretically naïve observers leap to the conclusion that if education has a large causal effect on earnings, the signaling model is false. But the signaling model specifically predicts a causal effect of education on earnings!
            1.   Signaling doubts education's effect on *skill, not earnings*!

      F.   There are *three* competing economic theories of education: human capital, signaling, and ability bias. Each takes stances on three distinct issues:
            1.   Visibility of skill.
            2.   Education's effect on skill.
            3.   Education's effect on income.

      G.   Summary table:

Table 3.2: Human Capital, Signaling, and Ability Bias

Story	Visibility of Skill	Education's Effect on Skill	Education's Effect on Income
Pure Human Capital	Perfect	WYSIWYG	WYSIWYG
Pure Signaling	Zero	Zero	WYSIWYG
Pure Ability Bias	Perfect	Zero	Zero
⅓ Human Capital, ⅓ Signaling, ⅓ Ability Bias	2/3	1/3*WYSIWYG	2/3* WYSIWYG
WYSIWYG="What You See Is What You Get."			

1. Note: Mixed versions of the three theories are not only possible, but much more plausible than any pure version.

II. Correcting for Ability Bias
   A. Human capital and signaling are competing explanations for whatever effect education has on earnings. But you have to investigate ability bias before you can determine how much effect of education on earnings there is to apportion.
   B. Classic approach: measure ability, then compare people with different educations but identical ability. Statistically, this is equivalent to adding control variables to a regression of logged income on a constant and education.
   C. IQ (or "cognitive ability" more generally) is the most common control variable. Findings:
      1. Holding education constant, 1 IQ point (mean=100, SD=15) raises earnings about 1%.
      2. Holding IQ constant, the education premium falls 20-30%.
   D. Outliers:
      1. In one study, correcting for mathematical ability cut education premium by 40-50% for men, 30-40% for women.
      2. Another study: Education premium falls 50% after correcting for students' 12th-grade math, reading, and vocabulary scores, self-perception, perceived teaching ranking, family background, and location.
   E. Much thinner literature adds controls for "non-cognitive abilities" like conscientiousness and conformity. Relatively small marginal effects of adding these controls, but maybe the measures are poor?
   F. Two big doubts:
      1. Reverse causation: what if education raises cognitive or non-cognitive ability?
      2. Missing abilities: what if an overlooked ability causes both education and earnings?

        3.   Not much evidence either doubt is serious, but research is somewhat thin.

    G.   Verdict: Cautious estimate of 25% total ability bias (20% cognitive plus 5% non-cognitive); Reasonable estimate of 45% total ability bias (30% cognitive plus 15% non-cognitive).

III.   Labor Economists vs. Ability Bias

    A.   The "Card Consensus": quasi-experimental approaches show ability bias is roughly 0%.

        1.   Twin studies

        2.   Season of birth

        3.   Compulsory attendance

    B.   Card Consensus has fostered academic and popular neglect of ability bias.

    C.   Key tenet: Estimates that control for measured ability are too methodologically weak to count.

        1.   Can't measure all abilities? But then ability bias is bigger than it looks!

        2.   Negative ability bias? Unclear what these abilities are even supposed to be.

    D.   I say: quasi-experiments are less convincing than simply controlling for measured ability – and each quasi-experimental approach faces strong criticism in follow-up research:

        1.   More educated twin is usually smarter twin.

        2.   Season of birth correlates with health, region, and possibly income.

        3.   Compulsory attendance laws mask regional trends, especially in the South.

IV.   Wheat vs. Chaff

    A.   How can education be so irrelevance but so lucrative? Maybe the relevant sub-set of the curriculum is *extremely* lucrative "wheat," and the rest is worthless "chaff." If so, there's no puzzle for signaling to explain.

    B.   Empirics: wheat arguably pays more than chaff, but chaff pays too.

        1.   Unsurprising, since most academic programs require lots of chaff for graduation.

    C.   Early high school transcript study find payoffs for math, foreign language, and industrial arts – and *negative* payoffs for extra English, social studies, and fine arts. Extra year of foreign language pays more than extra year of math plus extra year of science.

        1.   Later studies find bigger effect of math, but not science.

        2.   Bigger point: Course payoffs don't add up to total payoff. Graduation is crucial.

    D.   Consistent with wheat/chaff story, pay varies widely by college major.

        1.   More vocational majors usually pay more.

        2.   Fine arts and other "impractical" majors are near the bottom.

    E.   But: Even the least practical majors pay. Adjusting for ability, B.A.s with the lowest-earning majors out-earn high school grads by about 20%.

          1.   Econ is a great outlier: highly paid, but only marginally relevant for most jobs econ majors get.

    F.   Consistent with wheat/chaff, surveys reveal fairly high mismatch between major and career: 55% of college grads say they're "closely related," 25% "somewhat related," 20% "not related." (Note Social Desirability Bias).

    G.   But: contrary to wheat/chaff, the market penalty for mismatch is smaller for *less* vocational subjects. There's no penalty at all for English or foreign language – and a bonus for mismatch in philosophy and religion!

V.   Is Credentialism a Creature of the State?

    A.   In the signaling model, employers *freely* reward irrelevant education. Perhaps the reality is that government *forces* employers to do so. Top stories:

          1.   Good government jobs require credentials.

          2.   Government licenses require credentials.

          3.   Government persecutes alternative signaling mechanisms, especially IQ testing, so employers turn to credentials instead.

    B.   Governments do reward credentials, and government employers around the world tend to be more educated than private sector workers. But:

          1.   Government pay scales are compressed, so private sector rewards education *more* than the private sector.

          2.   Government jobs aren't numerous enough to explain why useless education pays. Even if all state-employed college grads had useless degrees, most holders of such degrees would be in the private sector.

    C.   Occupational licensing is now more prevalent in the U.S. than union membership was in the 50s. Licensing is more common for well-educated occupations, raising pay by an estimated 10-15%. Is the "payoff for useless degrees" a "payoff for licenses" in disguise?

          1.   No. Controlling for licensing does not shrink the education premium.

          2.   The education premium dwarfs the licensing premium, so even in the best-case scenario, licensing explains only a tiny fraction (around 5%) of education's payoff.

    D.   IQ tests are very useful for hiring good workers, but have a big disparate impact on blacks and Hispanics.

          1.   So what? The 1971 *Griggs* case requires employers to show that any hiring practice with a "disparate impact" on protected classes must prove its "business necessity." Taken literally, this is almost impossible.

          2.   Defenders of IQ tests often assert that IQ testing for employment has been "banned."

          3.   Relevance? Many observers argue that colleges provide "IQ laundering" services for employers. Since employers can't legally test IQ, they outsource testing to higher education.

    E.   Problems with the IQ laundering story:

          1.   Lots of U.S. employers *admit* to testing IQ for hiring purposes.

2. The so-called "ban" is really just a "test tax." And the test tax is small – under $200M a year by my calculation. That's a pittance compared to all the extra wages employers pay educated workers.
3. College premium stayed flat for almost a decade after *Griggs*. Basic micro says the adjustment should have been big at first, then tapered off.
4. College premium was roughly U-shaped between 1914 and 2005. Useless majors paid off decades before *Griggs*.
5. If IQ testing is so great, why aren't employers hunting for loopholes?
6. IQ laundering story implies labor market will reward admission letters, not just diplomas.

VI. Underrating the Benefits of Education?
A. Key idea of ability bias: education's payoff is smaller than it looks. Are there any factors that make education's payoff *bigger* than it looks?
B. Unemployment: the educated have lower unemployment rates, even correcting for ability.
C. Fringe benefits: The educated get more non-cash compensation, even correcting for ability.
D. Mismeasurement? Key fact: Statistically, measurement error leads to "attenuation bias" – the true value of the coefficients is larger in absolute value than standard estimation techniques say.
E. Example: Suppose there are five workers with high school diplomas, who earn $50k, and five with college degrees, who earn $100k. But when the Census collects this information, one in five workers checks the wrong education box.
   1. Result: Measured education premium falls from +100% to +50%!
F. Problem with the problem: Educational mismeasurement ensures attenuation bias only if all independent variables *except* for education are measured without error. Otherwise, anything's possible.
   1. Rare papers that adjust for multiple forms of measurement error don't find that education's coefficient is attenuated. Unsurprising, since measurement error for education is tiny.
G. Bottom line: All things considered, education – even useless education – is highly lucrative, even though it's much less lucrative than it superficially looks. Education really helps you *get* a good job even if it doesn't teach you how to *do* a good job.