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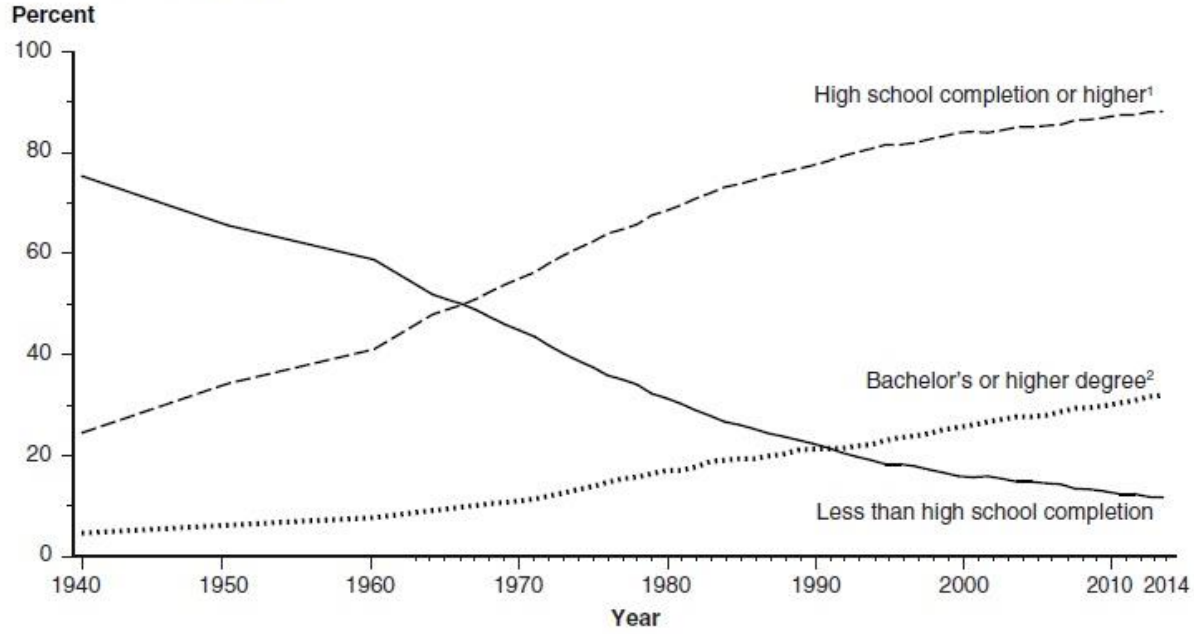
Econ 496/895

Week 1: The Magic of Education

I. The Economics of Education: A Short History
   A. Economists have intently studied education for about sixty years.
   B. Standard view: education – especially formal schooling – is the main way society "invests in people."
   C. What happens when you invest in people? Just as transforming natural resources yields physical capital, transforming human resources yields "human capital."
      1. Classic example: Schools take illiterate, innumerate children and transform them into literate, numerate adults – who then use their literacy and numeracy on the job.
   D. The human capital view of education is one of economics' most successful intellectual "exports." It's widely used not just by economists, but by:
      1. Other social scientists (education, sociology, psychology)
      2. Pundits
      3. Policy-makers
      4. General public
   E. The human capital view is exceptionally bipartisan. Liberals and Democrats are slightly more prone to hail education's economic payoff. But liberals and conservatives, Democrats and Republicans – whether social scientists, pundits, policy-makers, or the general public – all see education's economic benefits as immense.
   F. I strongly disagree with this consensus. My book, *The Case Against Education*, explains why.
   G. The purpose of this class is to methodically and carefully examine this book, learning relevant background material along the way.
   H. You absolutely do not have to agree with me to excel in this class. But you must be able to explain and analyze my arguments in detail.

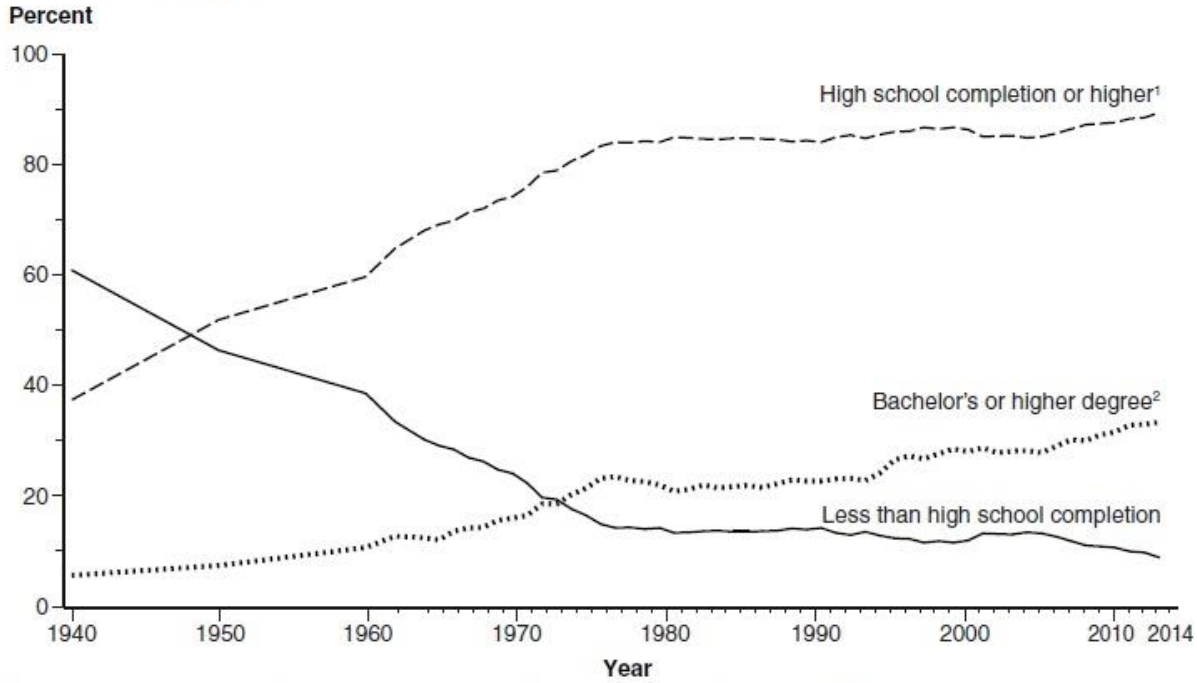
II. Basic Facts About Education
   A. Adults' average years of education has risen tremendously over the last century around the world. The U.S. used to be one of the most-educated countries in the world, but it's now fairly typical for developed countries.
   B. U.S. educational attainment data from *The Digest of Education Statistics* 2014:

Figure 3. Percentage of persons 25 years old and over, by highest level of educational attainment: Selected years, 1940 through 2014



[1]Includes high school completion through equivalency programs, such as a GED program. For years prior to 1993, includes all persons with 4 or more years of high school.
[2]For years prior to 1993, includes all persons with 4 or more years of college.
SOURCE: U.S. Department of Commerce, Census Bureau, *U.S. Census of Population: 1960*, Vol. I, Part 1; J.K. Folger and C.B. Nam, *Education of the American Population* (1960 Census Monograph); Current Population Reports, Series P-20, various years; and Current Population Survey (CPS), March 1961 through March 2014.

Figure 4. Percentage of persons 25 through 29 years old, by highest level of educational attainment: Selected years, 1940 through 2014



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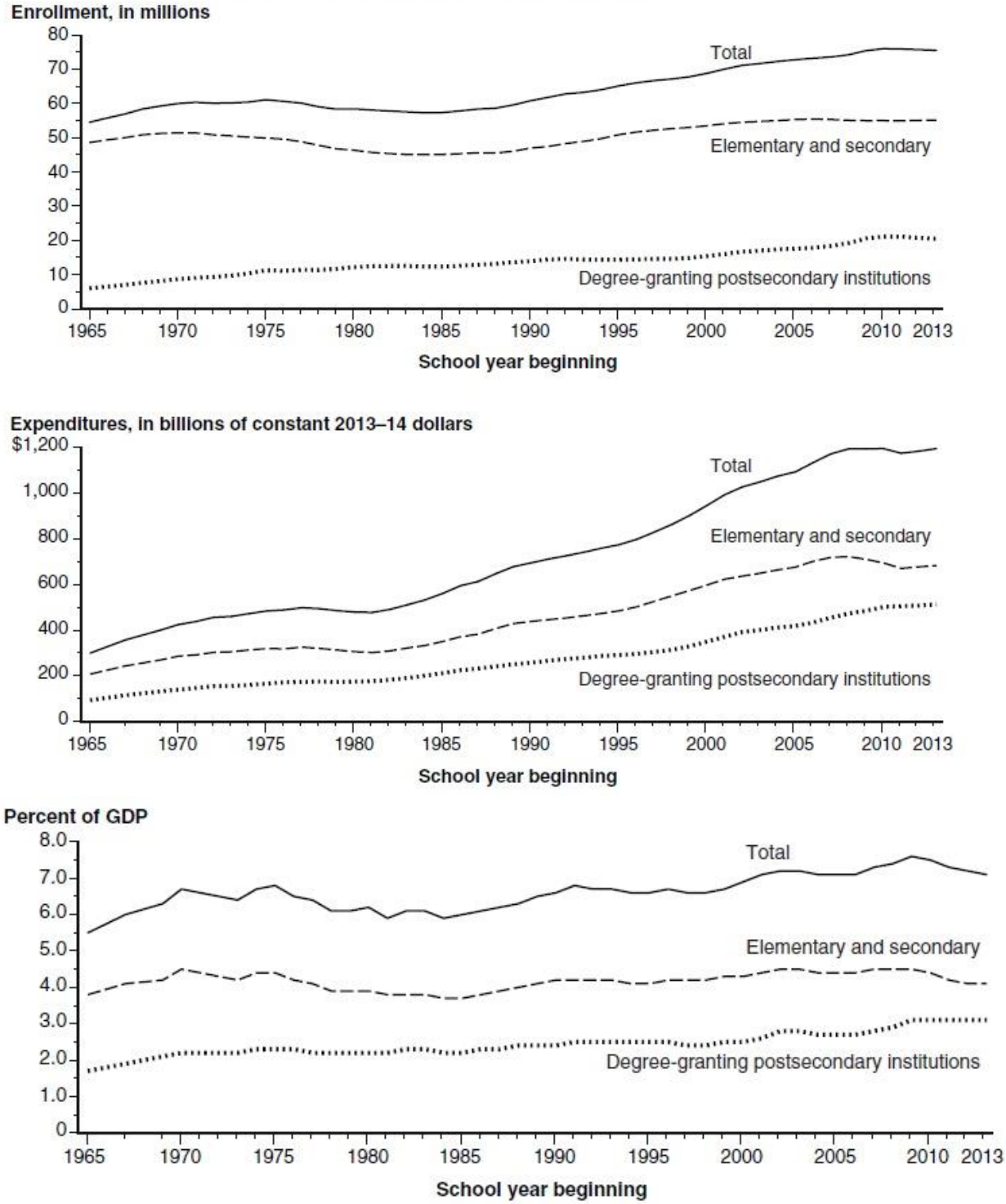
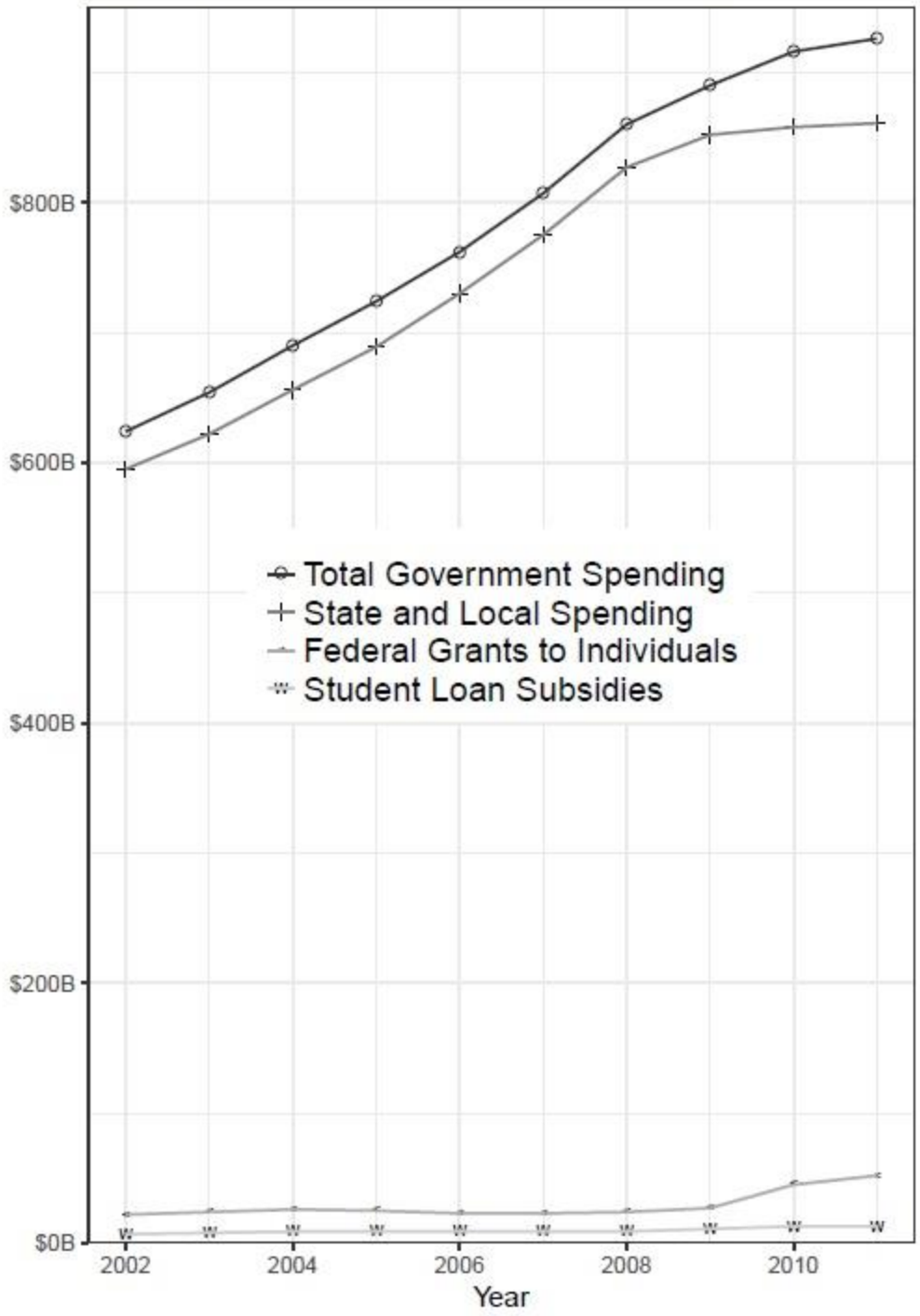
C. The U.S. contains over 70M students. Total spending – public and private – exceeds $1T per year. Data:

Figure 2. Enrollment, total expenditures in constant dollars, and expenditures as a percentage of the gross domestic product (GDP), by level of education: Selected years, 1965–66 through 2013–14



D. Public funding greatly exceeds private, especially for K-12.

Figure 7.1: Total U.S. Government Education Spending



E. More-educated workers earn a lot more than less-educated 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.				

III. Human Capital Purism vs. Signaling
- A. The big problem with the human capital view of education: much – if not most – of the academic curriculum at least *seems* irrelevant for almost all jobs.
  1. History and social studies
  2. Music and art
  3. PE
  4. Higher mathematics
  5. Classic literature and foreign languages
- B. Even more puzzling: Employers seem to *care* about performance in "irrelevant" classes – especially if poor performance prevents graduation.
- C. These two observations inspire an alternative economic theory of education, known as "signaling."
- D. Basic idea of educational signaling: Academic success can *certify* worker quality without *increasing* it.
- E. Signaling can make totally irrelevant education lucrative.
  1. If people who do well in underwater basket-weaving are, on average, better workers than people who don't do well in this subject, profit-maximizing employers will be happy to pay a premium for such workers.
  2. Why? While learning UBW doesn't make you a better worker, it *convinces* employers that you were a better worker all along.
- F. Do any economists claim that signaling explains *all* of education's financial payoffs? No! Literacy and numeracy are obviously useful on most jobs.
- G. Do any economists deny that signaling explains *some* of education's financial payoff? Yes, especially by default. "Human capital purism" – the view that human capital explains 100% of education's payoff in the labor market – is the standard assumption in the large majority of empirical work and policy discussion.
  1. Researchers often measure the effect of education on earnings, then *call* it the effect of education on *skill*.

H. Preview: I claim that signaling accounts for at least 50% of education's payoff. My preferred point estimate: 80%.

IV. Signaling: Private Profit, Social Waste

A. Both human capital and signaling models agree that education is individually rewarding. They disagree about *why*.
   1. Human capital: Education pays because it raises skill.
   2. Signaling: Education pays because it *reveals* skill.

B. So is this a purely academic dispute? No. The models disagree about education's *social* rewards. What happens if *average* education rises?
   1. Human capital: Average skill rises, so society is richer.
   2. Signaling: Average skill stays the same, so society is no richer. (In fact, since education costs time and money, society is poorer).

C. With signaling, rising education yields credential inflation. Workers need more education to get the same job.
   1. The Fallacy of Composition: Insofar as signaling is true, education is "smart for one, dumb for all."

D. *Can* education levels fall? Sure. If you think government funding raises education, simply cutting that funding will have the opposite effect. And current government funding is massive, so there's plenty of room to cut.

V. Basics of Signaling

A. There must be different types, varying by intelligence, conscientiousness, conformity, or whatever.

B. Types must be non-obvious.

C. Types must visibly differ *on average*. Though you can't see type directly, you can fallibly *infer* type.

D. Two questions for employers to ask:
   1. Unanswerable question: "Who's truly the best worker for the job?"
   2. Answerable question: "Which worker sends the best signals?"

E. If employers hire based on the second question, they create an incentive for less desirable types to *impersonate* higher-quality types. To remain viable, signals must, on average, be more costly for types in higher demand.
   1. "Cost" can be financial or psychological.

F. Signaling is just a special case of statistical discrimination.

G. What does education signal?
   1. Intelligence
   2. Conscientiousness
   3. Conformity
   4. More?

H. In a sense, almost everyone conforms to something. What education signals is conformity to workplace norms.
   1. While school and work norms are different, they heavily overlap: obedience to authority, punctuality, tolerance for boredom, good manners, etc.

I. Recurring analogy: You can raise a gem's market price by skillfully cutting it (human capital) or favorably appraising it (signaling).

VI. Locked-In Syndrome

A. Education is one good way to signal to employers, but why do substitute signals play so little role?

1. E.g., if your SAT scores are good, why can't you get a college-type job straight out of high school?

B. Education signals a *package* of socially desirable traits. If you clearly have one of these traits, educational failure suggests you're deficient in the other two.

1. What do we say about the genius with little education?
2. What do we say about the hard-worker with little education?
3. What do we say about the conformist with little education?

C. Substitute signals of conformity have an even bigger flaw – a "catch-22": unconventional signals of conformity signal *non*-conformity.

1. Should you put your SATs on your resume?

D. What's so special about education? Almost everyone *believes* it's special.

E. The cycle of conformity:

1. Employers notice the link between success at school and success at work, so they use it as a gate-keeper.
2. Talented, motivated people notice education's gate-keeping role, so they pursue educational success.
3. Frequency of talented, motivated people with little education falls.
4. Return to 1.

F. As long as sub-par workers are the first to switch from education to alternatives, alternatives send bad signals. This can "lock-in" socially inferior systems, even in the long-run.

1. Current educational system has been stable for centuries, despite massive technological and economic changes.

VII. "Signaling Doesn't Make Sense"

A. Leading objections to the signaling model don't say it contradicts experience. They say experience is misleading. Leading objections:

B. "Signaling=100% signaling." Schools teach literacy and numeracy, both useful job skills, so the signaling model is wrong.

1. Reply: No prominent advocate ever said this. Signaling purism is mythical, but human capital purism is real.

C. "Signaling=signaling intelligence alone." IQ tests are much cheaper ways to measure intelligence than years in school. Why don't employers just use those?

1. Reply: Education signals more than intelligence - and high IQ scores without matching educational credentials signal low conscientiousness and conformity.

D. "Signaling shouldn't take years." Once you've signaled your quality with a year or two in school, why would employers value anything further?

1. Reply: There are no "show-stopping" signals of worker excellence. Signaling is a war of attrition, where you can always go farther to look better. If your competitors have many years of education, you

need comparable achievements to convince employers you're in the running.

E. "You can't fool the market for long." You might need a credential to get hired. But employers soon figure out your true quality, and pay you accordingly.
   1. Reply: When researchers measure employer learning, it seems to take years or decades, not months. But even if employers could find and fire phonies in a few months, this can't happen to workers they never hire. "Diamonds in the rough" still need lengthy educations to get their foot in the door.
   2. Further reply: The employer learning critique falsely assumes employers fire any worker who falls short of their expectations. In the real world, employers often retain disappointing workers because of hiring costs, legal costs, or pity. And both legal costs and pity argue for "dehiring" (helping unwanted employees find another job) rather than firing, further cementing signaling's rewards.

VIII. Riddle Me This

A. Many facts about education are hard to explain *without* signaling. Top puzzles:

B. "The best education in the world is already free." Colleges almost never check attendees' IDs. So if you simply want to build your human capital, you can move near whatever school you believe to be the best, and receive a full education for zero tuition.
   1. Would you rather have a Princeton diploma without a Princeton education, or a Princeton education without a Princeton diploma? If you pause to answer, you must think signaling is pretty important.

C. "Failing versus forgetting." Human capital theory says employers pay you for skills you have, not skills you used to have. But the career damage of failing classes is high, while the career damage of forgetting what you learned is usually minimal.

D. "Easy A's." Why do students seek out professors known for their easy grading, instead of professors known for teaching lots of useful skills?

E. "You're only cheating yourself." In the human capital model, academic cheating is pointless. So is preventing cheating.

F. "Why do students rejoice when the teacher cancels class?" Well?

G. Signaling readily solves all their puzzles.
   1. Why not unofficially attend Princeton? Because employers won't know you did so.
   2. Why is failing worse than forgetting? Because almost everyone forgets, so it doesn't send a bad signal.
   3. Why do students favor easy graders? Because employers don't know which professors are hard, so you get the same signal for less effort. (Easy *majors*, in contrast, are pretty obvious to employers).

4. Cheating is a problem because it dilutes the value of everyone else's signals.
5. Students like cancellation because they get the same grade for less work.

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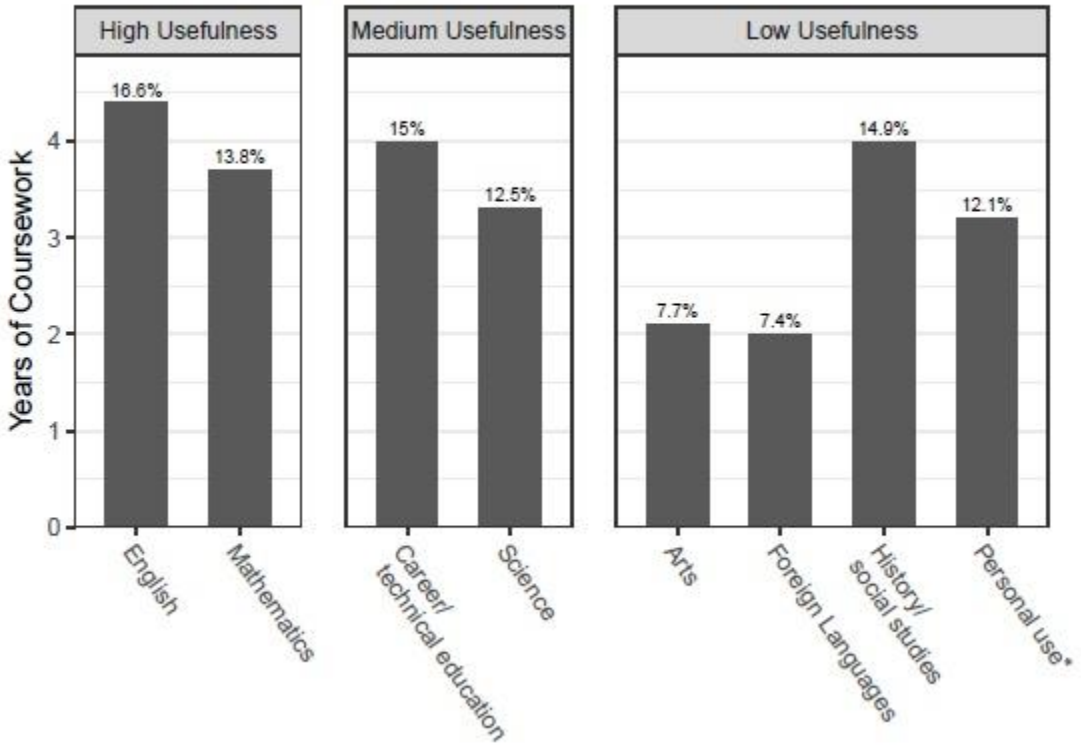
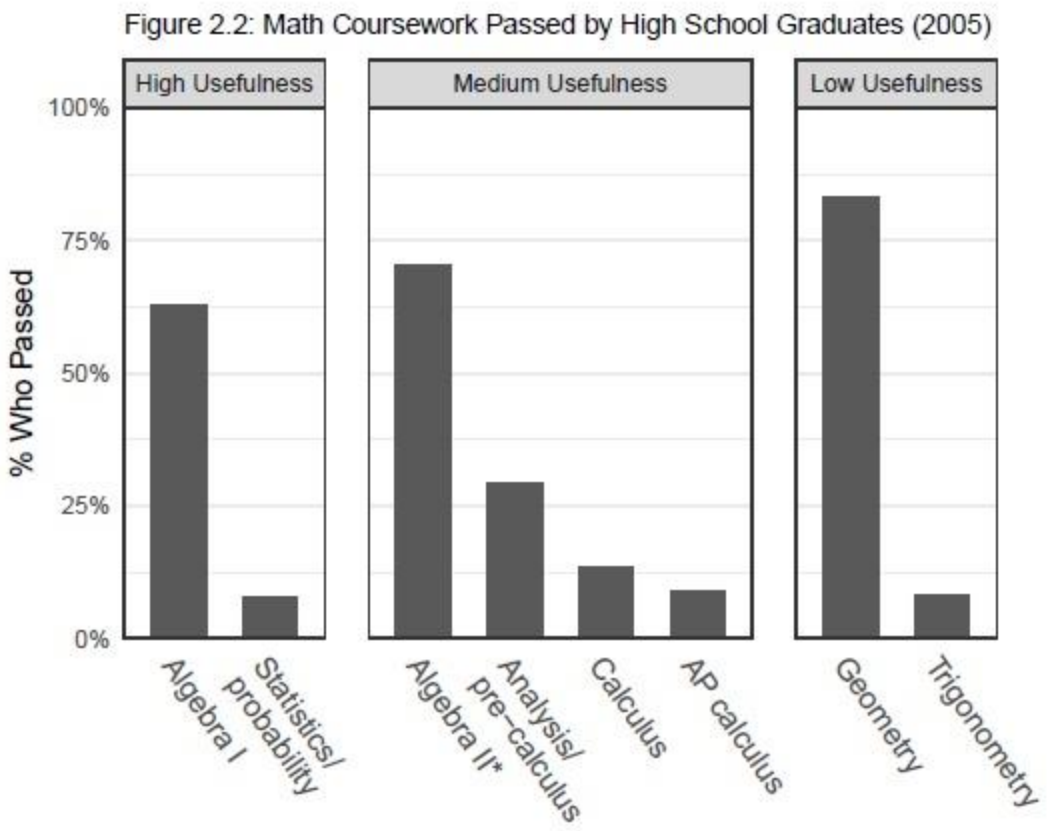
Weeks 2-3: The Puzzle Is Real: The Ubiquity of Useless Education

I. The Content of the Curriculum: High School
   A. What do students actually study in grades 9-12 – and how useful is it?
   B. How I classify subjects:
      1. High usefulness: "knowledge of the subject improves job performance in a wide range of occupations"
      2. Medium usefulness: "knowledge of the subject improves job performance in some common occupations"
      3. Low usefulness: "knowledge of the subject at best improves job performance in rare occupations"

Figure 2.1: Average Years of Coursework Passed by High School Graduates (2005)



   C. Given my classifications, under a third of course hours are spent on High usefulness subjects, and about 40% on Low.
      1. Challenges to my classifications?
   D. This overstates, because even High usefulness subjects are more academic than they sound. Take math:



1. Challenges to my classifications?

E. U.S. curriculum is more practical than a "classical education" in Latin and Greek, but that's damning with faint praise.

II. The Content of the Curriculum: College

A. What majors do college students actually study – and how useful are they?

B. How I classify majors:

1. High usefulness: explicitly prepares students for well-defined technical careers
2. Medium usefulness: funnels students toward predictable occupations after graduation, but teaches few technical skills, and non-majors readily compete for the same jobs
3. Low usefulness: doesn't prepare student for predictable occupations… except teaching the very subject.
4. Note that I classify economics as Low! Economists have great job options, but few non-academic jobs actually use what econ classes teach.
5. Challenges to my classifications?

C. Results: 24% of graduates receive degrees in majors with High usefulness, 35% in Medium usefulness, 40% in Low usefulness.

Table 2.1: Bachelor's Degrees by Field of Study (2008-9)

Field of Study	# Graduates	%
High Usefulness		
Agriculture and natural resources	24,988	1.6%
Architecture	10,119	0.6%
Biological/biomedical sciences	80,756	5.0%
Computer/information sciences	37,994	2.4%
Engineering	84,636	5.3%
Health professions	120,488	7.5%
Legal professions	3,822	0.2%
Other*	162	0.0%
Physical sciences/science technology	22,466	1.4%
Statistics/applied mathematics	1913	0.1%
Subtotal	*384,431*	*24.1%*
Medium Usefulness		
Business	347,985	21.7%
Education	101,708	6.4%
Mathematics	13,583	0.8%
Parks/recreation/leisure/fitness studies	31,667	2.0%
Public administration	23,851	1.5%
Security/protective services	41,800	2.6%
Transportation	5,189	0.3%
Subtotal	*567,696*	*35.3%*
Low Usefulness		
Area/ethnic/cultural/gender studies	8,772	0.5%
Communications	83,109	5.2%
English	55,462	3.5%
Family/consumer sciences	21,905	1.4%
Foreign languages	21,158	1.3%
Liberal arts	47,096	2.9%
Multi/interdisciplinary studies	37,444	2.3%
Philosophy/religious studies	12,444	0.8%
Psychology	94,271	5.9%
Social sciences/history	168,500	10.5%
Theology	8,940	0.6%
Visual/performing arts	89,140	5.6%
Subtotal	*648,242*	*40.5%*
Total	**1,601,368**	**100%**

Source: Snyder and Dillow 2011, pp.412.

* Library science, military technologies, and precision production.

D. The *Hoarders* defense

III. Measured Learning

A. In general, it's better to measure educational outputs (how much people learn) than educational inputs (what classes they take).

B. But this is easier said than done. If you just measure learning by subtracting what students know at the beginning of the school year from what they know at the end, you:

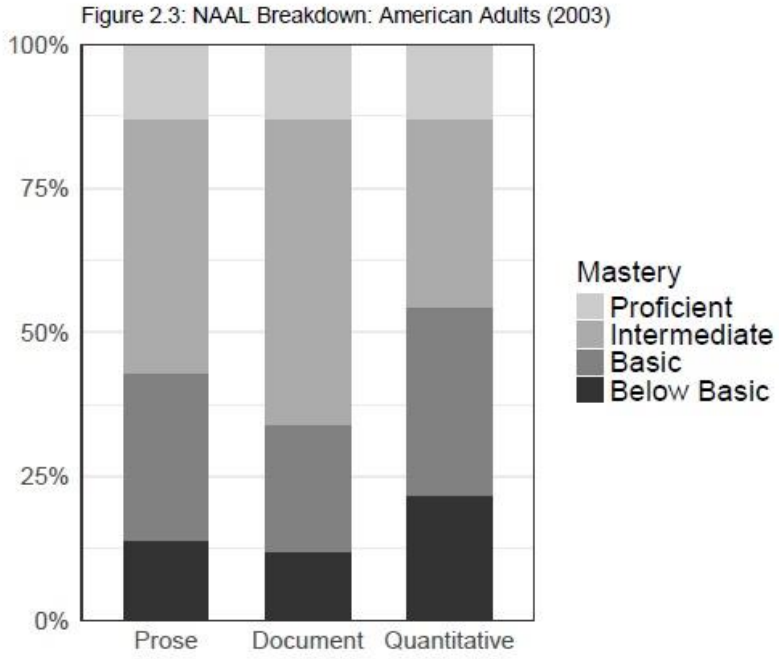
1. Assume school teaches everything they learn.
2. Neglect the issue of long-term retention.

C. Some experiments handle the first problem, but virtually none deal with the second.
D. Large literature finds the retention problem (or "fade-out") is severe.
    1. Most impressive study: Most people forget half their high school algebra and geometry in five years – and *all* their algebra and geometry in 25 years.
E. My approach: Use ***adults'*** knowledge of classroom subjects to measure education's *maximum* long-run effect on learning. (Schools can't cause more than 100% of what people know).
F. Using this approach, the effect of education on literacy and numeracy is modest. The National Assessment of Adult Literacy grades knowledge as "Below Basic," "Basic," "Intermediate," or "Advanced."
    1. The scale is charitable. Finding a table in an almanac and summing two prices are "Basic" tasks.

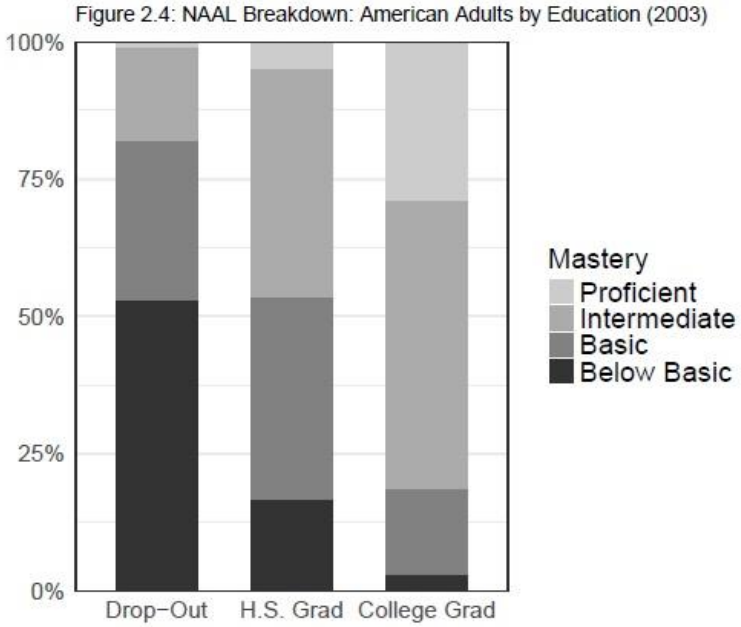
Table 2.2: Sample NAAL Tasks, By Level

	Below Basic	**Basic**	**Intermediate**	**Proficient**
Prose	Identify what it is permissible to drink before a medical test, based on a short set of instructions.	Find information in a pamphlet for prospective jurors that explains how citizens were selected for the jury pool.	Summarize the work experience required for a specific job, based on information in a newspaper job advertisement.	Compare viewpoints in two editorials with contrasting interpretations of scientific and economic evidence.
Document	Circle the date of a medical appointment on a hospital appointment slip.	Find a table in an almanac with information on a specified topic.	Find the time a television program ends, using a newspaper television schedule that lists similar programs showing at different times on different channels.	Contrast financial information presented in a table regarding the differences between various types of credit cards.
Quantitative	Add two numbers to complete an ATM deposit slip.	Calculate the cost of a sandwich and salad, using prices from a menu.	Calculate the total cost of ordering office supplies, using a page from an office supplies catalog and an order form.	Calculate an employee's share of health insurance costs for a year, using a table that shows how the employee's monthly cost varies with income and family size.
Source: Kutner et al. 2007, pp.5-7.				

G. You might think almost all American adults would score at least Intermediate, but they don't. Americans' literacy and numeracy in the NAAL:



H. You might think almost all college grads would score Proficient, but they don't. Americans' literacy and numeracy by education level:



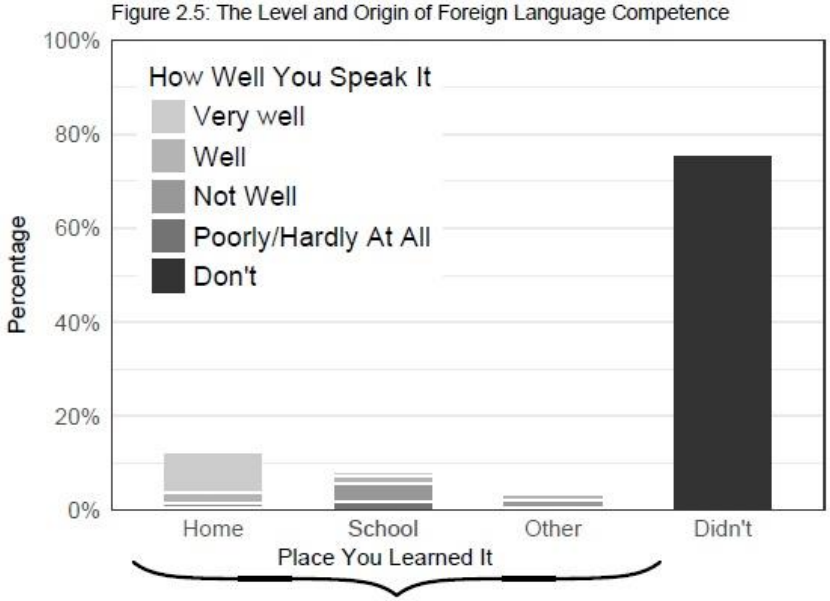
I. Notice: Modern drop-outs spend at least 9 years in school, but over half remain functionally illiterate and innumerate.

J. Still: While absolute performance is shockingly low, marginal gains could still be highly valuable on the job.

K. Measured learning in other subjects is far worse. Adults know roughly half of the most basic fact in history, civics, and science.
   1. Is that really so bad? The alphabet analogy.

L. School's effect on foreign language competence is near-zero, despite an average of two years of instruction (and self-assessment!).

Figure 2.5: The Level and Origin of Foreign Language Competence



IV. The Relevance of Relevance

A. Teachers' classic reply to "We won't need to know this in real life": "You're learning how to think" or "You're learning how to learn." Variants:
   1. Critical thinking
   2. "Mental muscles"
   3. "General cognitive skills"

B. Do these claims check out? Rarely.

C. Simple Transfer of Learning experiments.
   1. Background: a century of dismay in educational psychology.
   2. The Dunker radiation problem: under ideal conditions, success rises from 10% to 30%.

D. How to make Transfer even worse:
   1. Reduce similarly of surface features.
   2. Add a distractor problem. ("interference")
   3. Change environment. (location, instructor)
   4. Add delay. ("decay")

E. Non-laboratory evidence.
   1. College attendance boosts scores on tests of critical thinking, but fails to durably improve critical thinking outside the classroom.
   2. The Perkins study of informal reasoning: while more-educated people get higher scores, there's minimal improvement *within* any degree program.

Table 2.5: Average Overall Reasoning Score (1-5 scale, 5 being highest)

	1st-Year	4th-Year
High School	1.6	2.1
College	2.8	2.8
Graduate School	3.1	3.3
Source: Perkins 1985, p.566.		

F. Modest counter-examples:
   1. From the algebra of arithmetic progression to the physics of constant acceleration. (10% transferred physics to algebra, but 72% transferred algebra to physics).
   2. Fong et al. study: *Outside* the classroom, stats students transferred their learning on two out of four sports questions. (But what about retention?)
   3. College and grad students do measurably improve in areas they heavily practice.

G. Gardner on "inert knowledge": biology, math, stats, economics.
   1. The Leshowitz study: College students fail to apply basic statistics and experimental reasoning to practical questions.

H. Common-sense case *against* the "mental muscles" analogy.

V. Making You Smarter

A. Large body of evidence finds that education raises IQ, psychologists' standard measure of intelligence.
   1. Extra years of education raise IQ.
   2. Summer vacation, intermittent attendance, delayed school entry, and dropping out all depress IQ.
   3. Some early childhood programs raise IQ by over 30 points (2 SDs)!

B. Big problem: people can improve on any test by practicing, especially if you "teach to the test."
   1. Standard view: Teaching to the test yields only "hollow gains."
   2. Extreme case: Just hand students the answer key.

C. Challenge: Is the effect of education on IQ hollow as well?
   1. Many IQ tests include questions from standard academia curricula.

D. Less philosophical problem: fade-out.
   1. None of the famous IQ-boosting experiments achieve large lasting gains; most achieve none.
   2. Summer learning loss: Average student loses one month of performance per summer. Average middle-schooler loses three months of performance per summer.
   3. Note: Year-round school is not a long-term remedy, because everyone graduates eventually.

E. How people really get good at their jobs: practice.
   1. 10,000 Hour Rule is exaggerated. Practice is not sufficient for excellence, but it is the path to *improvement*.

VI. Discipline, Socialization, and Connections

A. School plausibly builds “non-cognitive skills” – obedience, tolerance for boredom, ability to get along with others, knowing how to work as a team. Could this explain education’s return?
B. Key question: Compared to what? If they weren’t in school would students be working? Or just playing videogames?
C. “School ethic” and “work ethic” are imperfect correlated:
    1. Abstract understanding vs. practical results.
    2. Passing exams vs. the market test.
    3. Fairness vs. profit.
    4. Especially clear for college: Researchers find that “full-time” college students average only 27 hours of academic work per week, earning an average GPA of 3.2.
D. We should therefore expect school to be worse preparation for workplace norms than actual work experience. And how much does work experience pay? 2-3% premium per year – far less than the education premium.
E. What about connections? About half of all workers say they used contacts to get their current job. But in the data, the valuable contacts are:
    1. Friends in your narrowly-defined occupation.
    2. Older male relatives who know the boss or vouch for you.
F. Problem: Modern economy is so vast, and most academic majors so amorphous, that your classmates are unlikely to ever be in a position to help you.
    1. Obvious exceptions: CS, engineering, academia…

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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.

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Weeks 6-7: The Signs of Signaling: In Case You're Still Not Convinced

I. The Case So Far
   A. I've tried to establish that education has a far bigger effect on earnings than job skills.
   B. This is consistent with signaling, but not human capital, and accordingly seems like a strong argument in favor of the former.
   C. I've also offered a long list of common-sense arguments that favor signaling over human capital.
   D. But are there research literatures that speak to the issue? Yes; there are four big ones. Let's consider each in turn.

II. Basics of the Sheepskin Effect
   A. Suppose you exogenously miss your last final exam, and end up one class short of a degree. Should you return to school to finish your degree?
   B. Human capital and signaling offer radically different advice.
      1. Human capital tells you not to finish. You know just as much as graduates, so you'll be paid just as much as if you'd finished.
      2. Signaling tells you to finish. Employers don't know why you failed to finish, so they'll treat you like the average person without a degree.
      3. Remember conformity signaling?
   C. Labor economists usually specify log-linear effects of education, so every year of education raises income by the same percent.
   D. But when they test for degree-year discontinuities, they almost always find them. Two approaches:
      1. In the absence of explicit degree measures, look at typical graduation years (especially 12 and 16).
      2. In the presence of explicit degree measures, use them!
   E. First approach yields big average sheepskin effects.
      1. High school: +5% for normal year, +12.7% for graduation year.
      2. College: +5.5% for normal year, +23.1% for graduation year.
   F. Second (and superior) approach yields even bigger average sheepskin effects.
      1. High school: +4.4% for normal year, +15.1% for graduation year.
      2. College: +5.1% for normal year, +34.1% for graduation year.
   G. Evidence on graduate sheepskins is thinner, but several studies find the graduate payoff is *all* sheepskin.
   H. The GSS is ideal for estimating sheepskin effects, because there are explicit measures of completion of both degrees and years of school. Basic results:

Table 4.1: Sheepskin Effects in the General Social Survey (1972-2012)

	Effect on Earnings	
Education	If Only Years of Education Matter	If Diplomas Matter Too
Years of Education	+10.9%	+4.5%
High School Diploma	–	+31.7%
Junior College Diploma	–	+16.6%
Bachelor's Degree	–	+31.4%
Graduate Degree	–	+18.2%
All results correct for age, age squared, race, and sex, are limited to labor force participants, and converted from log-dollars to percentages.		

III. Interpreting the Sheepskin Effect

A. Early signaling debates take the connection between the sheepskin effect and signaling for granted. Now that it's undeniable, however, some reinterpret the evidence.

B. How could sheepskin effects *not* reflect signaling?

1. "Best-for-last" theory?
2. Ability bias.

C. But: Correcting for measured ability does nothing to undermine the sheepskin effect, because estimated effects of degrees *and* individual years fall, leaving the ratio roughly constant.

D. Ability bias and sheepskins in the GSS:

Table 4.2: Sheepskin Effects and Ability Bias in the General Social Survey (1972-2012)

	Assumption	
Effect on Earnings	Only Years of Education Matter	Diplomas Matter Too
Years of Education	+10.3%	+4.2%
High School Diploma	–	+32.0%
Junior College Diploma	–	+10.4%
Bachelor's Degree	–	+29.8%
Graduate Degree	–	+17.8%

All results adjust for age, age squared, race, sex, and cognitive ability, and are limited to labor force participants, and converted from log-dollars to percentages.

E. When pay spikes, so does graduation itself. "Finish your degree, then quit" is the modal strategy. If the sheepskin effect weren't real, why would people do this?

F. We can use the sheepskin effect to put a *lower bound* on signaling's share.
   1. The Cautious signaling assumption: sheepskin effects reflect signaling, yearly effects reflect human capital.

G. Why only a lower bound? Because education would still send favorable signals in a world without the concept of "degrees."

IV. Malemployment and Credential Inflation

A. Many workers have more education than they use. You could call them:
   1. "Overqualified": their education is too good for their jobs.
   2. "Malemployed": their jobs aren't good enough for their education.

B. Three main measures of malemployment:
   1. Atypical education: Is your education abnormally high given your occupation? Result: 10-20% malemployment. Drawback: what if everyone in an occupation is malemployed?
   2. Self-report: Do you have too much, too little, or just enough education for your job? Result: 20-35% malemployment. Drawback: Social Desirability Bias.
   3. Job analysis: Researchers judge how much education your job "really requires." Result: 20-35% malemployment. Drawback: skill requirements change over time.
   4. The tautological objection: whatever you have is what you "really need."

C. Malemployment has risen over time and during the Great Recession. Long-run estimates:
   1. Early 70s to mid-90s, average education rose 1.5 years; higher-skilled occupations account for only .3 years.
   2. 1972-2010, average education rose 1.75 years; higher-skilled occupations account for only 19%.

D. Rival interpretations:
   1. Human capital: "Malemployment" arises when students fail to acquire marketable job skills in school.
   2. Signaling: "Malemployment" reflects credential inflation. The more education workers have, the more they need to signal their quality.

E. Two interpretations diverge on one big issue: Does the labor market reward workers for education they don't *use* on the job?

F. Georgetown Center on Education and the Workforce data tabulates earnings by education for more than a quarter million workers in 500 occupational categories. Two big patterns:

1. High school grads out-earn dropouts in almost all occupations. There are 214 occupations with at least ten dropouts and ten high school grads. High school grads outearn dropouts in 93% of occupations, with a median premium of +37%.
2. College grads out-earn high school grads in almost all occupations. There are 270 occupations with at least ten high school grads and ten college grads. College grads out-earn high school grads in 90% of occupations, with a median premium of +28%.
3. Note: there are no ability controls.

G. What about occupations with little or no plausible connection to academic curricula? Results for six clear-cut cases:

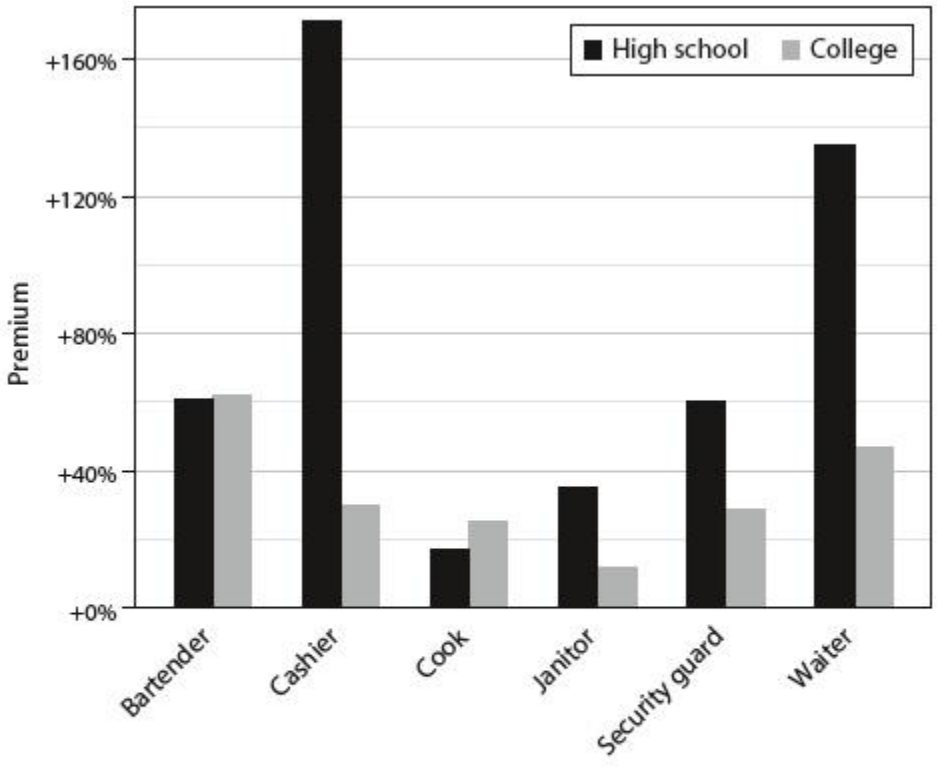

Figure 4.1: Education Premiums in Selected Nonacademic Occupations
Source: Supplementary data for Carnevale et al. 2011, supplied by coauthor Stephen Rose.
High school premium = [(median earnings for high school graduates)/(median earnings for high school dropouts)] −1.
College premium = [(median earnings for college graduates)/(median earnings for high school graduates)] −1.

H. Broadening the sample, about one-third of occupations have at least ten workers in each educational category. About one-third of occupations at

least arguably build on traditional academic coursework. Median premiums for "arguably academic" versus "nonacademic" occupations:

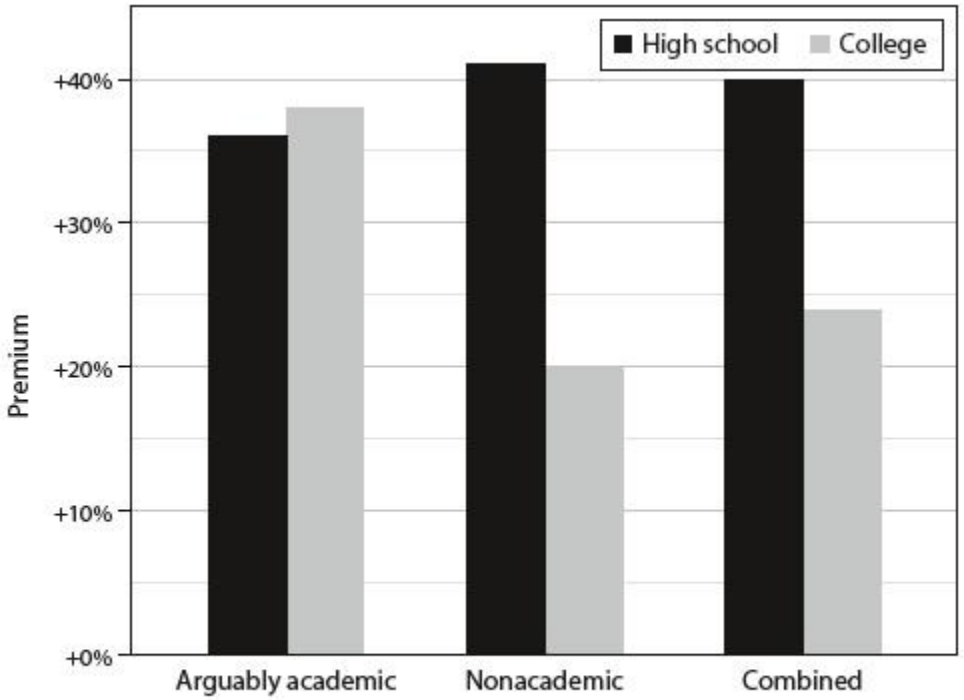

Figure 4.2: Median Education Premiums by Occupational Category
Source: Supplementary data for Carnevale et al. 2011, supplied by coauthor Stephen Rose.

I. We can estimate signaling's share by dividing the nonacademic premium (which presumably reflects something like pure signaling) by the combined premium (which reflects both). Result: near-100% signaling for high school, 80% for college.

J. The Georgetown dilemma: Either employers are fools, or schooling raises productivity in virtually any line of work.
   1. But what about signaling?!

V. Speed of Employer Learning

A. Recall that signaling is a special case of statistical discrimination: using true-on-average stereotypes to save time and money.

B. With repeated interaction, phasing out statistical discrimination is profitable. Every time you interact, you cheaply acquire additional individualized information.

C. This applies to educational signaling: the longer employers know you, the less reason they have to rely on mere credentials. Employers eventually know the "Real You."

D. But how long is "eventually"? Research on the speed of employer learning tries to answer this question.

E. Method: If researchers know credentials and proxies for actual ability (in practice, mostly IQ), then can separately estimate their rewards *over time*.

Employer learning prediction: education premium will fall with experience and ability premium will rise with experience.

F. This prediction is true, at least for U.S. data. But the process takes years or decades.
   1. Two seminal studies: ability premium sharply rises over first decade of work experience, while education premium falls 25-30%.
   2. Later prize-winning study: both premia plateau after about ten years of experience.

G. Employers seem to see through college grads faster than others.
   1. Early study: Academic performance is a strong predictor of job *performance* in both blue- and white-collar jobs, but only college grads receive a noticeable job *reward*.
   2. Recent study: Employers see college grads' ability "nearly perfectly," but less-educated workers (including workers with "some college") wait over a decade to get full reward.
   3. Also: Only paper to measure how sheepskin effects evolve over time finds they take about two decades to disappear.
   4. This is all bad news for "diamonds in the rough" who want to skip college.

H. Major caveats on employer learning:
   1. Employer learning research neglects noncognitive ability.
   2. Learning plateaus do not imply perfect knowledge.
   3. Signals can affect pay even after employers know the truth. (Firing aversion, fairness norms, dehiring).

I. Ignoring these caveats, employer learning papers find a much smaller role for signaling than I claim, ranging from 14-40% signaling.
   1. But we shouldn't ignore these caveats!

VI. The Education Premium: Personal Versus National

A. In a pure human capital model, education equally enriches individuals and nations.

B. In a pure signaling model, education enriches individuals but not nations.

C. This implies another way to estimate human capital/signaling split.
   1. Measure effect of personal education on personal income. (The "Micro-Mincer" premium).
   2. Measure effect of national education on national income. (The "Macro-Mincer" premium).
   3. Divide the later by the former to find the human capital share. The rest is signaling.
   4. Example: If a year of education raises personal income by 10% but national income by 6%, human capital/signaling split is 60/40.

D. International results for personal education:
   1. Premium is positive in every country studied.
   2. U.S. premium is very high for the developed world.

3. Premium is generally lower in richer countries. 50-country study finds 7.4% premium in high-income countries, 10.7% in mid-income countries, 10.9% in low-income countries, and 9.7% for world. (Not ability-corrected, though).

E. Results for national education are very mixed. Some prominent economists even find *negative* effects; others, low but positive effects. The rest find moderate positive effects.

F. Bad Third World data? Problem also holds for OECD. Results for study that tries eight different education measures:

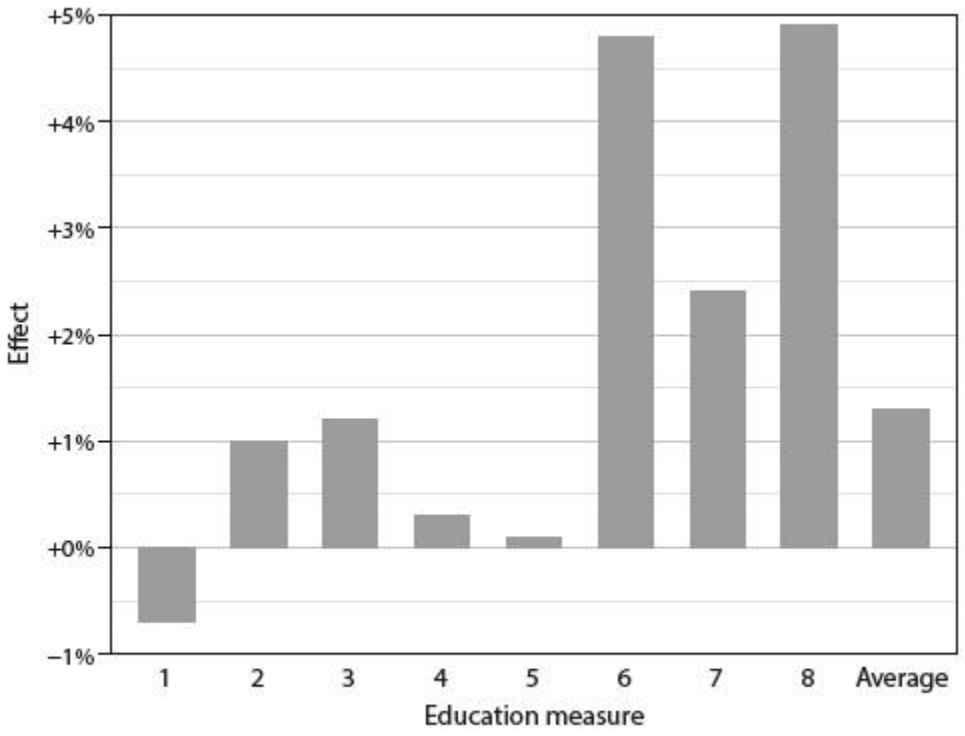

Figure 4.3: Effect of a Year of National Education on National Income
Source: de la Fuente and Doménech 2006b, appendix, p. 52, table A.1.f.

G. Some critics object that measurement error downwardly biases estimates of education's effect. Corrections raise education's measured effect.
   1. As usual, though, these corrections assume everything *except* education is measured without error!

H. Measured effect of education is even less impressive than it looks, because all these papers ignore reverse causation. Main paper to address this issue cuts out another two-thirds of education's effect.

I. Final step: compare. Personal effect estimates are roughly 8-12%. National effect estimates are roughly 1-3%. Big range, but 20/80 is right in the middle.

J. Admission: data quality is poor. But believing the results if they support human capital and ignoring them if they support signaling is bad science.

VII. What About Test Scores?
- A. Chetty and value-added studies.
  1. Cognitive gains fadeout in a few years.
  2. Income effects are lasting.
  3. Average effect of a good teacher is only a few hundred dollars per student per year, but it multiplies to a big payoff.
- B. But: Gain could reflect either human capital, or just promotion of academic gamesmanship. Even if it's entirely the former, teacher effects are only a small share of education's payoff.
- C. Hanushek and national test scores.
  1. Unlike mere years of education, national test scores strongly predict national income.
  2. In fact, national test scores have much *bigger* payoffs than personal test scores.
  3. In Hanushek's preferred specifications, test scores permanently raise the growth rate.
  4. Big underlying claim: These effects are genuinely causal, especially for math and science scores.
- D. My critique:
  1. Not plausible that average math and science scores have much causal effect, because most jobs use little math and almost no science.
  2. Better story: national test scores are disguised average IQ scores. Better math and science teaching would probably only yield hollow gains for actual intelligence.
  3. Even if Hanushek's right about what education could do, signaling model describes what education actually does.

VIII. Labor Economists Versus Signaling
- A. The signaling model is taken serious in sociology, psychology, and education research. It's also taken seriously by non-specialists in economics. Empirical labor and education economists, however, are highly dismissive.
- B. Why should you believe me rather than the consensus of specialists?
  1. Evidentiary double standards (e.g., sheepskin effects and cross-national evidence)
  2. Neglect of evidence from psychology, education, and sociology (especially learning vs. earning evidence).
  3. Pro-education bias.
  4. Intellectual inbreeding.
- C. Is everything signaling? Of course not. But 20% human capital, 80% signaling is a reasonable estimate.
- D. Bringing all the evidence together:

Table 4.3: Signaling in Sum

Issue	What Pure Human Capital Says	What Pure Signaling Says	Advantage?
Learning-Earning Connection	Only job-relevant learning pays.	Irrelevant learning pays too, as long as it's correlated with productivity.	Signaling
Collegiate Exclusion	Colleges prevent unofficial attendance so students actually pay tuition.	Colleges ignore unofficial attendance because the market doesn't reward it anyway.	Signaling
Failing vs. Forgetting	Employers only reward workers for coursework they still know.	Employers also reward workers for coursework they used to know.	Signaling
Easy A's, Cancelled Classes, and Cheating	Students only care about marketable skills, not graduation requirements or grades.	Students only care about graduation requirements and grades, not marketable skills.	Signaling
Sheepskin Effect	Graduation years won't be especially lucrative.	Graduation years may be especially lucrative.	Signaling
Malemployment	Degrees required to *get* a job depend solely on skills required to *do* a job.	Degrees required to get a job rise when those degrees become more common.	Signaling
Employer Learning	Employers instantly discover and reward true worker productivity.	Employers never discover or reward true worker productivity.	Signaling
Personal vs. National Returns	Education equally enriches individuals and nations.	Education enriches individuals but not nations.	Signaling

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Week 8-9: Who Cares If It's Signaling? The Selfish Return to Education

I. The Selfish Return to Education: A Primer
   A. Building blocks of returns: benefits, costs, and time pattern.
      1. Note: Anything can be monetized. Just use willingness to pay, and count everything people care about.
   B. One-year loan as the Rosetta Stone: Lend it out, and see how much extra comes back ("returns") to you.
      1. An arbitrarily complex investment with return of x% is as lucrative as earning x% on a series of one-year loans, reinvesting every penny of interest along the way.
   C. Estimating education's selfish (or "private") return the lazy way: assume one benefit and two costs:
      1. Benefit: education premium
      2. Costs: tuition and foregone earnings
      3. Further common simplification: Assume infinite life. Then annual return equals extra annual earnings/(annual foregone earnings + annual tuition).
      4. With infinite life and zero tuition, return is just coefficient on education in regression of ln earnings on constant and years of education. (Consol analogy).
      5. Note: Returns to education are already real returns. No further adjustment for inflation is appropriate.
   D. My rate-to-adjective glossary: inflation-adjusted return of x is… y.
      1. 10% - "excellent"
      2. 7% - "very good"
      3. 5% - "pretty good"
      4. 3% - "so-so"
      5. 2% - "poor"
      6. 1% or less – "awful"
   E. Counting Everything That Counts
      1. Step 1: Brainstorming – identifying every semiplausible benefit and cost of education. (Caveat: Avoid double-counting).
      2. Step 2: Literature review (Supplemented by explicit guesstimates when necessary).
   F. Key distinction: Annual Return versus Degree Return.
      1. Why the difference? Sheepskin effects! The further you go in a program, the higher your chance of earning the big payoff for crossing the finish line.
   G. How can returns ever be negative? Finite lifespans. (Contrast with consols).

II. Student Typology

A. My whole analysis builds on four student archetypes:
    1. "Excellent Student": Fits the profile of the average person with a master's degree.
    2. "Good Student": Fits the profile of the average B.A. who does *not* continue on to grad school.
    3. "Fair Student": Fits the profile of the average high school grad who does *not* continue on to college.
    4. "Poor Student": Fits the profile of the average high-school dropout.
B. "Fits the profile" is all-inclusive: On cognitive ability, character, background, and so on, the archetype is average for that education level.
    1. Cognitive ability by archetype: 82nd, 73rd, 41st, and 24th percentiles. (From GSS).
C. By construction, an archetype with the normal level of education for their type gets the *observed* outcomes.
    1. Ex: Good Student with a B.A. gets average outcomes for B.A.s
    2. If Good Student has more or less education, however, I adjust his outcomes based on estimated causal effects of education.
D. Analysis further assumes everyone is…
    1. Either a full-time student or full-time worker.
    2. Single and childless.
    3. Attends nearby public schools for all levels.
    4. Equally likely to be male or female.
    5. Note: Archetypes are slices, not partitions. Better-than-Excellent Students and worse-than-Poor Students definitely exist.

III. Summary of Benefits and Costs
A. Compensation: Analysis starts with Census figures for cash income plus CBO estimates of non-cash benefits. Next, it estimates education's causal effect by adjusting for 45% ability bias and sheepskin effects.
B. Employment: Analysis starts with standard numbers by education. Next, it estimates education's causal effect by adjusting for 45% ability bias and sheepskin effects.
C. Taxes: Applies 2011 tax code to mean earnings, with +10% flat state and local tax. (Progressivity implies a slight overestimate of education's return).
D. Transfers: Since analysis assumes everyone is a single, childless, full-time worker, he's only eligible for one important transfer: unemployment insurance. Calculations assume flat $300/week payment if unemployed.
E. Job satisfaction and happiness: Mixed results after holding income constant, so I assume no benefit.
F. Classroom experience: In the data, average person finds classroom experience boring and unpleasant. Same holds for work, but schools seems slightly worse. Calculations assume making your primary task a full step happier on a 0-6 scale is worse 5% of your full-time income, holding all else constant.
G. Health: Huge literature finds causal effects of education on health. My preferred estimates:

1. One year of education raises life expectancy by .1. Value assumption: A year of life is worth double your potential full-time income.
2. One year of education raises self-rated health by .01 on a four-step scale. Value assumption: One full step is worth 20% of your potential full-time income.
3. Tuition: Free for K-12. Net tuition of $3662 for public college and M.A.

H. Foregone earnings: Just recycle causal estimates for income as a function of education.

I. Experience: Assumes constant 2.5% annual return to experience. (More realistic quadratic variant doesn't much change the results).

J. Last but not least…

IV. Completion Probability

A. Standard return to education calculations look at people who successfully *completed* various levels of education.

B. This grossly inflates education's *expected* return. Analogy: Only counting repaid loans to measure a bank's profitability.

C. Technical Appendix estimates completion probabilities by type.

D. For K-12, I rely on Herrnstein and Murray's logistic model of high school completion and GED from *The Bell Curve*.

1. Since researchers find the GED has few benefits, I'm measuring probability of earning a regular high school diploma.

E. Why rely on such a controversial source for K-12 probabilities?

1. Lots of other estimates, but almost no one else reports enough info to allow the computation of a probability. (Problem? Omitting constants and/or coefficients on control variables).
2. *Bell Curve*'s estimates on this issue are very comparable to other estimates on same canonical data set.

F. For B.A., I use UCLA's Higher Education Research Institute's model, adjusting results up 14% to account for college switching. (National Student Clearinghouse finds 72% who start at a given college earn a B.A. there within six years, but 82% had a B.A. from *somewhere*).

G. For M.A., I give Excellent Students the observed mean of 50%, and make all other rates proportional to B.A. rates.

H. Results:

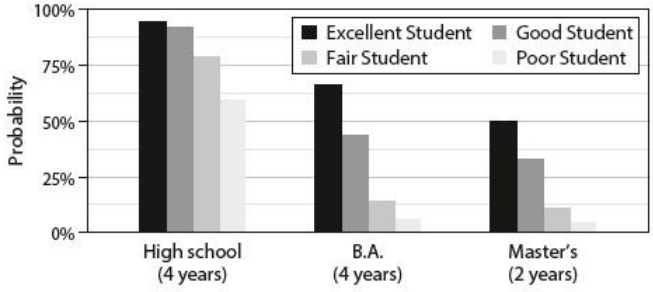

Figure 5.6: Degree Completion Probability by Student Ability
Source: See Technical Appendix.

V. Returns by Student Ability

A. Now we're ready to crunch the numbers. Results:

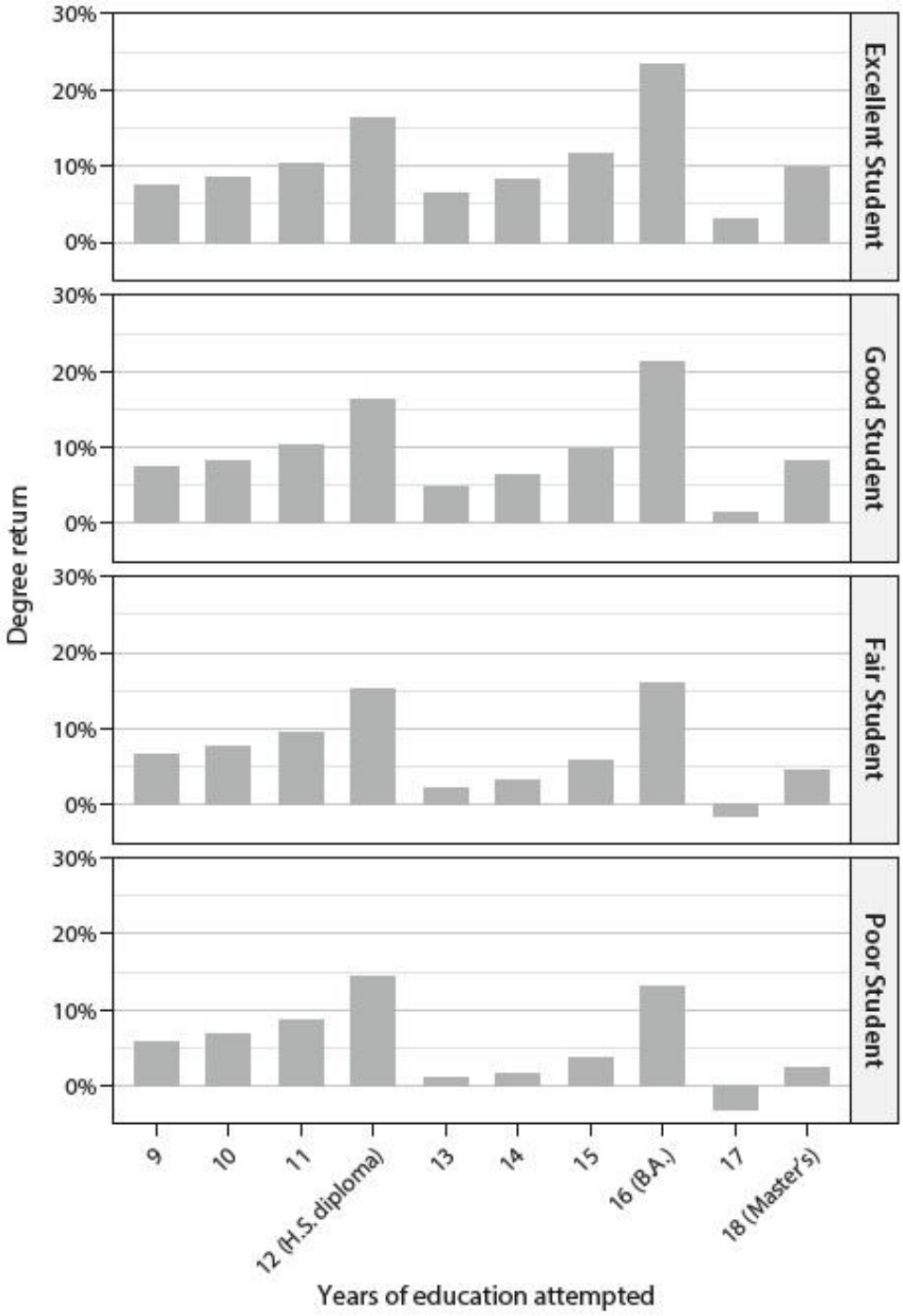

Figure 5.7: Selfish Degree Returns by Student Ability
Source: Figures 5.5 and 5.6 and text.

B. Do all the corrections really matter? Yes! Compare results for Good Students to Naïve estimates:

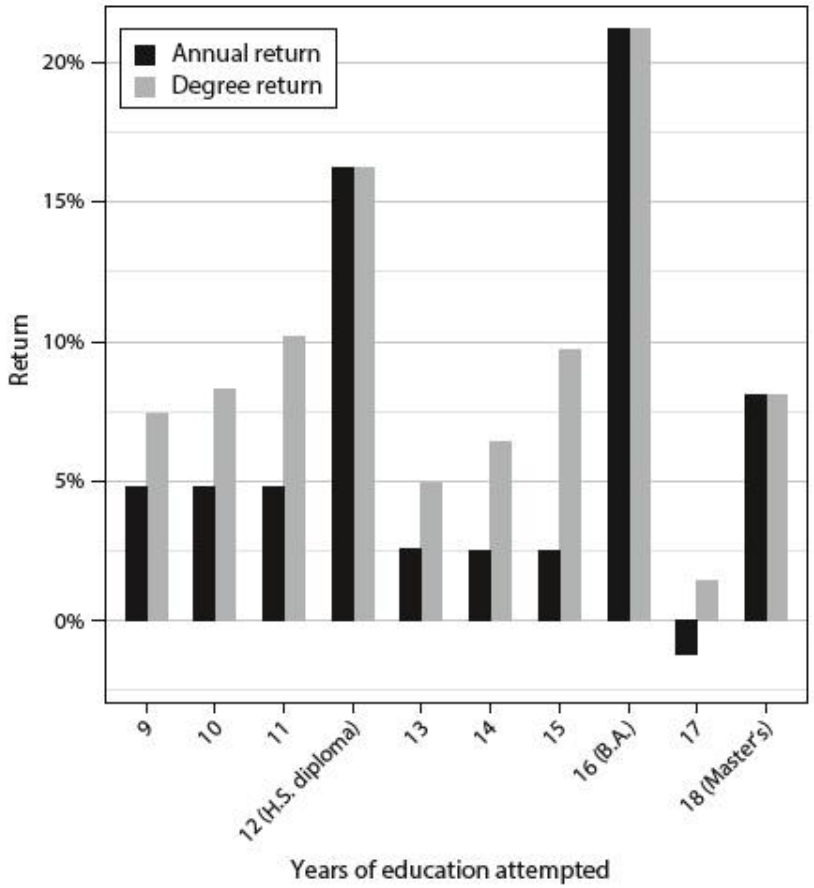

Figure 5.3: The Selfish Return to Education for Good Students
Source: Figures 5.1 and 5.2 and text.

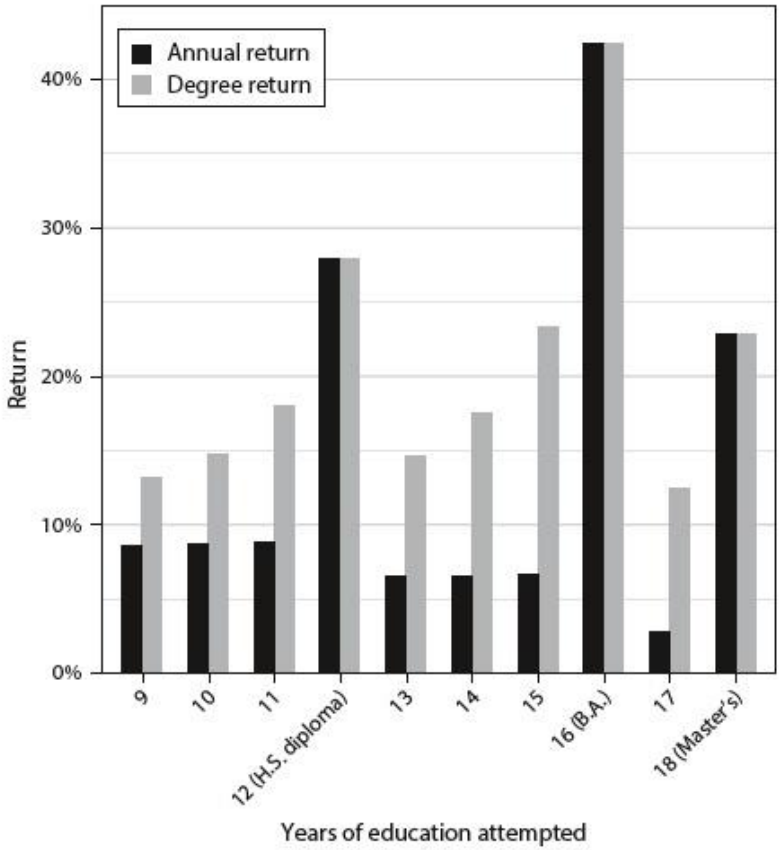

Figure 5.4: The Naive Selfish Return to Education for All Students
Source: Figures 5.1 and 5.2 and text.

C. Overall patterns:
   1. Higher ability students get higher *absolute* payoffs because completion gives similar percentage increase in larger base.
   2. Higher ability students get higher *expected return* because their completion probabilities are higher.

D. Patterns by education level:
   1. High school is a lucrative for all abilities.
   2. College is only a good investment for Excellent and Good Students.
   3. Master's are so-so for Excellent Students and bad deal for everyone else.

VI. Further Results

A. Returns by major. As expected, electrical engineers sharply outperform business majors, who sharply outperform Fine Artists.

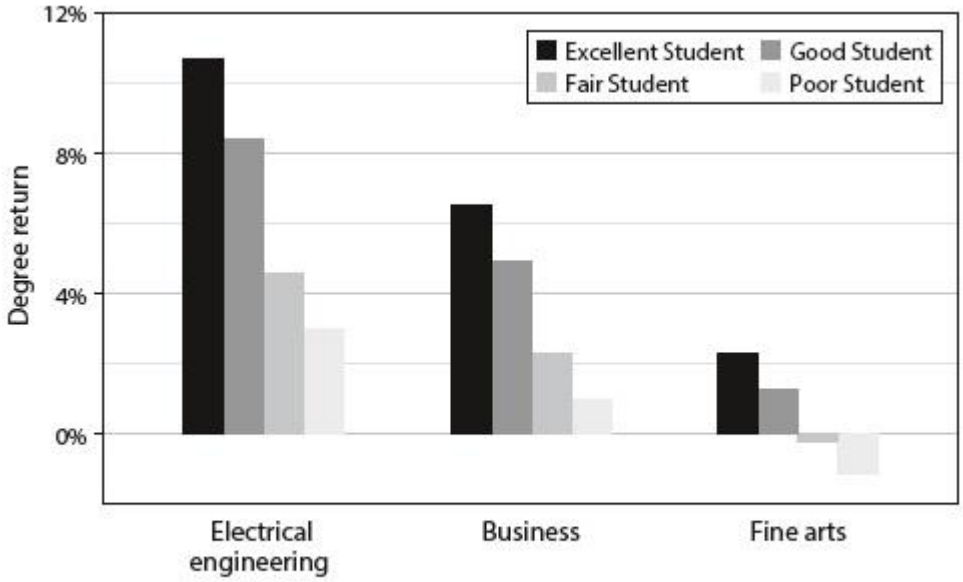

Figure 5.8: Freshmen's Selfish Degree Returns by Major
Source: Figure 5.7 and text.

B. Returns by college quality. Literature reaches a wide range of results (note especially Dale and Krueger), but all researchers conclude that much of the observed quality premium is *not* causal.
   1. Most researchers do *not* find that completion probability falls as quality rises, even after extensive ability controls.
   2. If this is right, disparity by ability rises further. Best places willing to accept weak students probably aren't worth attending.

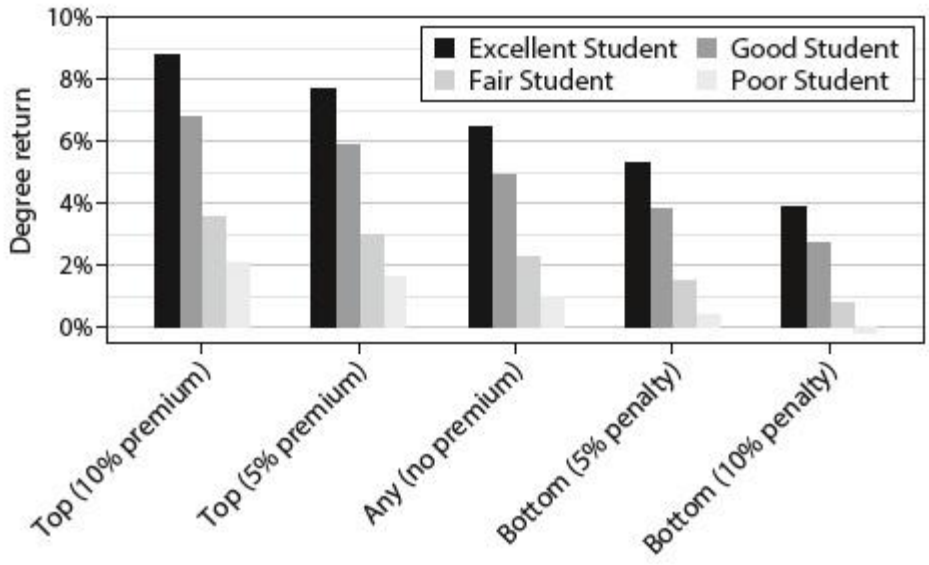

Figure 5.9: Freshmen Selfish Degree Returns by College Quality
Source: Figure 5.7 and text.

C. Returns by Out-of-Pocket Costs

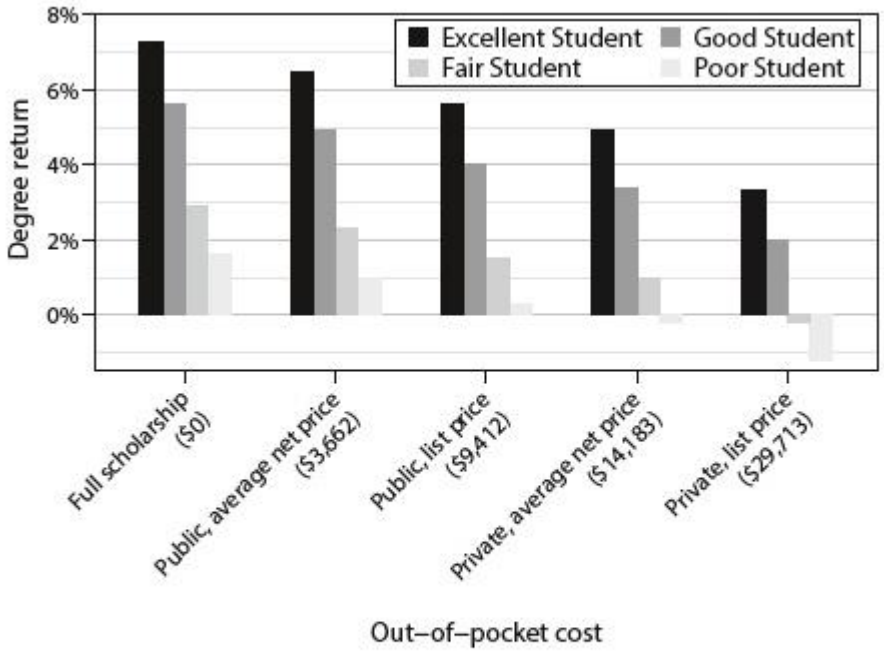

Figure 5.10: College Freshmen's Selfish Degree Returns by Out-of-Pocket Costs
Source: Figure 5.7, S. Baum and Ma 2011, and text. "List price" = "Tuition and Fees" + "Books and Supplies"; "Average Net Price" = "List price" – "Federal Grants and Tax Benefits" – "State Grants" – "Institutional Grants" – "Outside Grants" (S. Baum and Ma 2011, pp. 6, 15).

D. Returns by School Vs. Work Feelings: Extreme assumptions required to flip advice.

VII. Sex and Marriage

A. Returns by Sex: Women have higher completion probabilities but lower absolute payoffs at all levels. Net results favor women until the M.A. level.

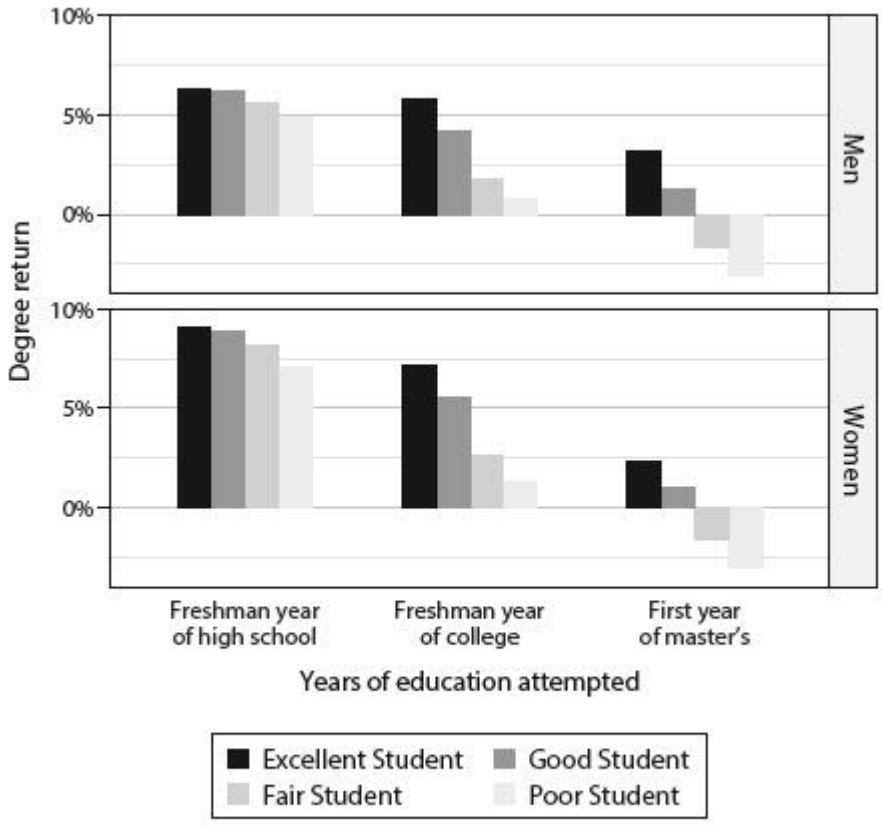

Figure 5.12: Men and Women's Selfish Degree Returns
Source: Figure 5.7 and text.

B. Education's biggest neglected benefit comes from marriage. The spousal education correlation is very high – if you have one more year of education, your spouse typically has an extra .5 or .6 years.
   1. About 80% of this estimated persists correcting for intelligence, age, year, race, sex, and religion.
   2. As you'd expect, there are big sheepskin effects.
   3. The M.R. degree versus the M.R.S. degree.

C. Upshot: When you get more education, the expected education of your spouse rises, too.
   1. Note: You don't have to actually meet your spouse in school. You get the benefit as long as your education puts you in a more selective dating pool.

D. If partners share equally and consume separately, marital effect must be zero-sum.

E. But on the realistic assumption that marital consumption is at least partly non-rival, both partners can gain.

1. Standard estimates: Two people who live together save 20-40%, with most credible estimates at 35%.

F. I re-estimate education return with these marital benefits, using GSS to measure causal effect of your education on your spouse's education.
   1. Key assumptions: People marry for life at 25, and both always work full-time.
   2. Result: Marriage raises return by about 1 percentage-point for men and 2 percentage-points for women.
   3. Marriage market is probably the best reason to pay for elite schools.

VIII. Participation

A. So far, the analysis assumes that everyone works full-time until retirement once they graduate.

B. The real world looks quite different:

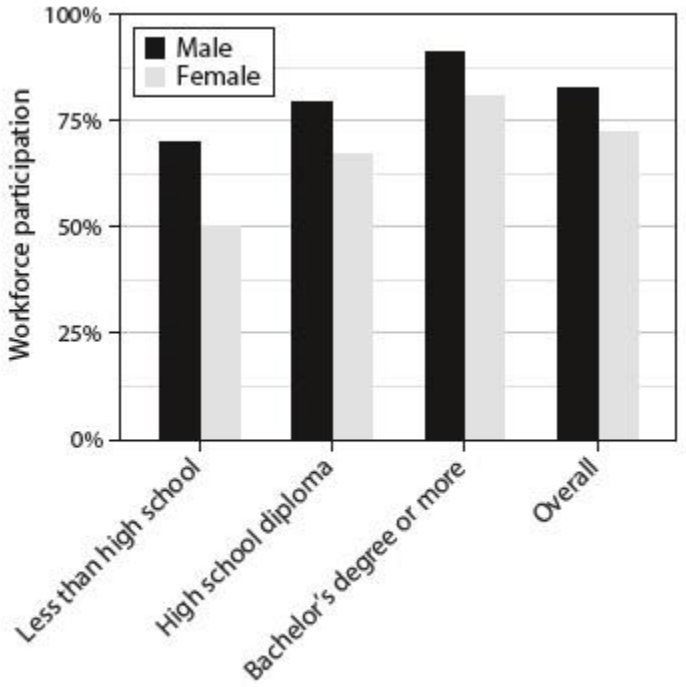

Figure 5.14: Workforce Participation for 25-to-64-Year-Olds, by Education (2011)
Source: Snyder and Dillow 2013, p. 620.

C. If we relax this assumption, how do returns change?
   1. As usual, I start with observed labor force participation (adjusted for part-time work), then adjust for ability bias and sheepskin effects.

D. Returns will clearly fall, because many people fail to squeeze the full potential earnings gain out of their educational investments.

E. The size of the gain is still surprising – and largely wipes out women's edge over men.

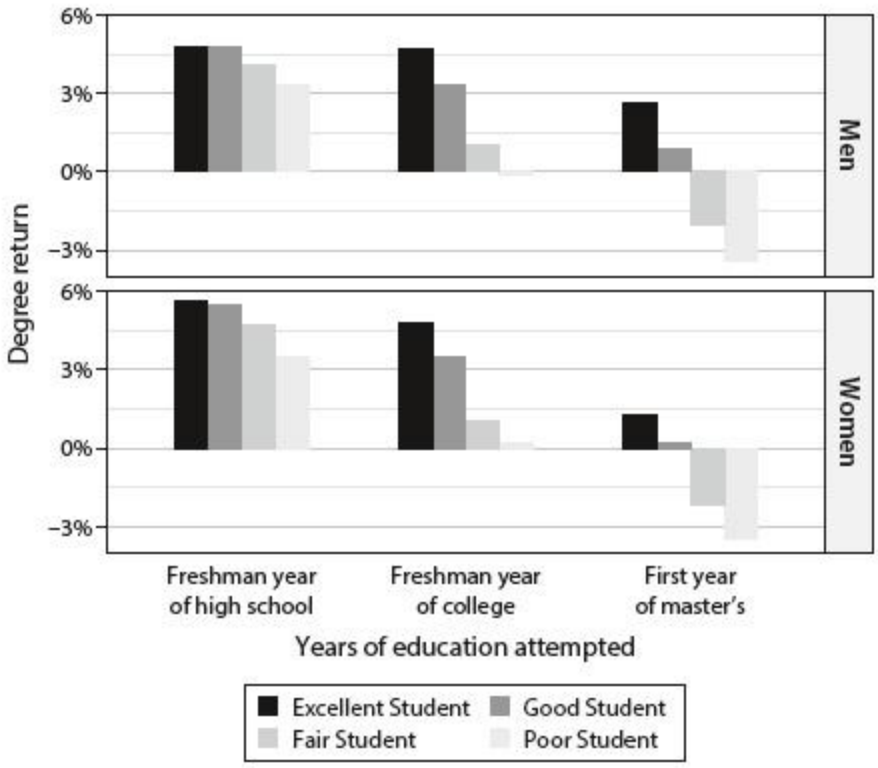

Figure 5.15: Selfish Degree Returns, Correcting for Workforce Participation
Source: Figures 5.12 and 5.14 and text.

F. Even high school is no longer a no-brainer for Poor Students. Degree Return for female Poor Students falls from 7.1% to 3.5%.

IX. Advice and Doubts

A. Practical guidance for prudent students.
   1. Go to high school unless you're a terrible student (or don't want a full-time job).
   2. Go to college only if you're a strong student or special case.
   3. Don't get a master's degree unless the stars align.
   4. Elitism versus candor.
   5. How I advise my kids.

B. Top doubts about my numbers.
   1. Completion probabilities.
   2. How work and school feel.
   3. Education and health.
   4. The neglected master's.

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Weeks 10-11: We Care If It's Signaling: The Social Return to Education

I. The Social Return to Education: A Primer
   A. To measure selfish returns, we count everything one student cares about. To measure social returns, we count everything *anyone* cares about.
   B. Conventional education economists focus on two big gaps between selfish and social returns:
      1. Social returns count taxpayer cost of education, not just tuition, which reduces social returns.
      2. Social returns count full market compensation as a social gain, not net compensation adjusted for taxes and transfers, which raises social returns.
   C. A few also factor in positive externalities, especially crime reduction.
   D. Education economists normally acknowledge that *if* signaling were important, education would have a clear *negative* externality. The logic: Raising productivity makes the pie bigger. Improving your signal redistributes the pie from others to yourself.
      1. Key point: the marginal social value of signaling is plausibly zero even though the total social value of signaling is clearly positive.
      2. Is there any better way? Very likely, given massive subsidies for the status quo.
   E. In this chapter, I try to systematically measure education's social return, using the same approach as last chapter:
      1. Step 1: Brainstorming.
      2. Step 2: Topic-by-topic literature review.
   F. Easy part: Reconsider every selfish benefit from a social point of view.
   G. Harder part: Identify and count education's *purely* social benefits.

II. Recounting Everything That Counts, I: Compensation vs. Productivity
   A. Selfishly, what matters is compensation. Socially, what matters is productivity.
   B. In a pure human capital model, compensation and productivity are equal case-by-case.
   C. If signaling matters, in contrast, compensation and productivity are only equal *on average*. If your credentials match your productivity, they're equal. Otherwise, they diverge.
   D. The degree of divergence depends on signaling's share. This chapter considers two signaling scenarios:
      1. Cautious: sheepskin effects reflect signaling; everything else reflects human capital.
      2. Reasonable: 80% signaling.

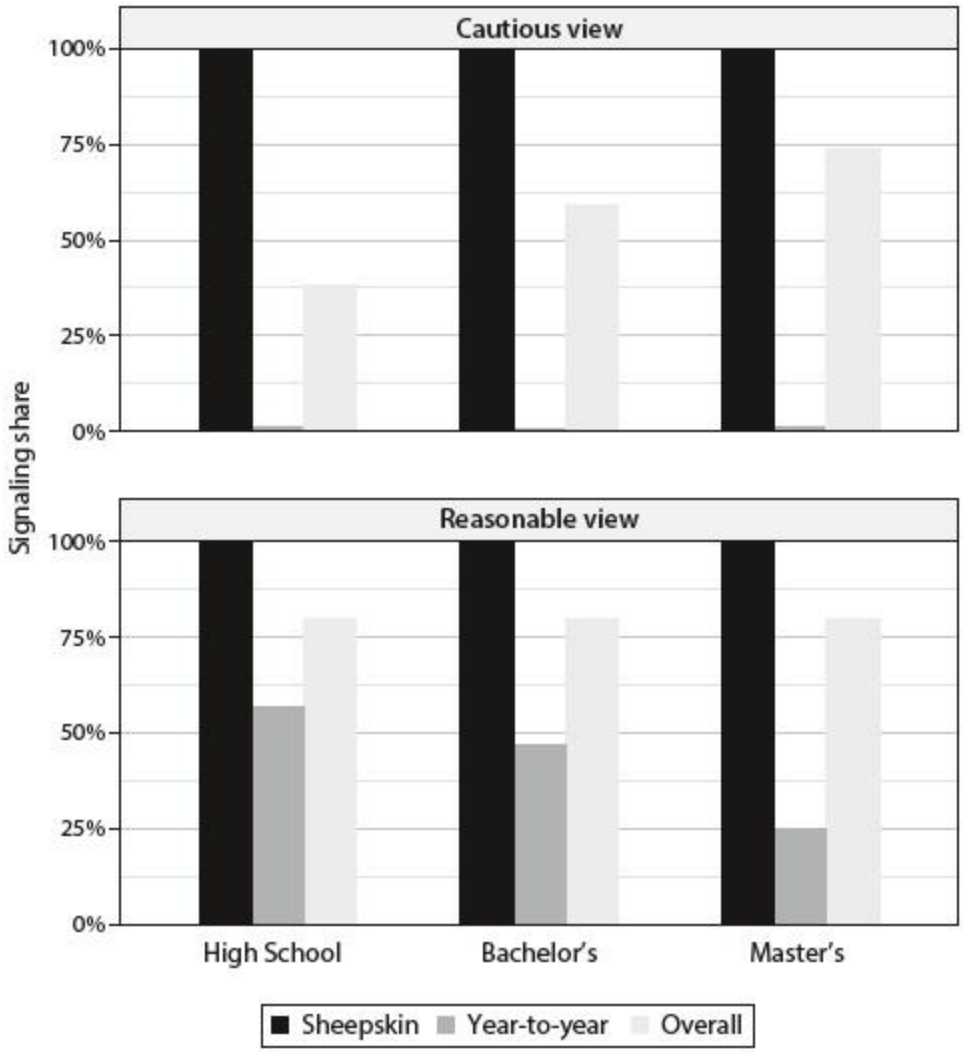


Figure 6.1: Two Signaling Scenarios
Source: See text.

E. Consider the case of a Good Student.
   1. If he has a B.A., his productivity and his pay are equal.
   2. If he has more than a B.A., however, he earns *more* than his productivity, because his credentials make him look better than he really is.
   3. If he has less than a B.A., he earns *less* than his productivity, because his credentials make him look worse than he really is.

F. Here's the disparity, by signaling assumption. Note: Reasonable signaling implies bigger disparities than Cautious signaling.

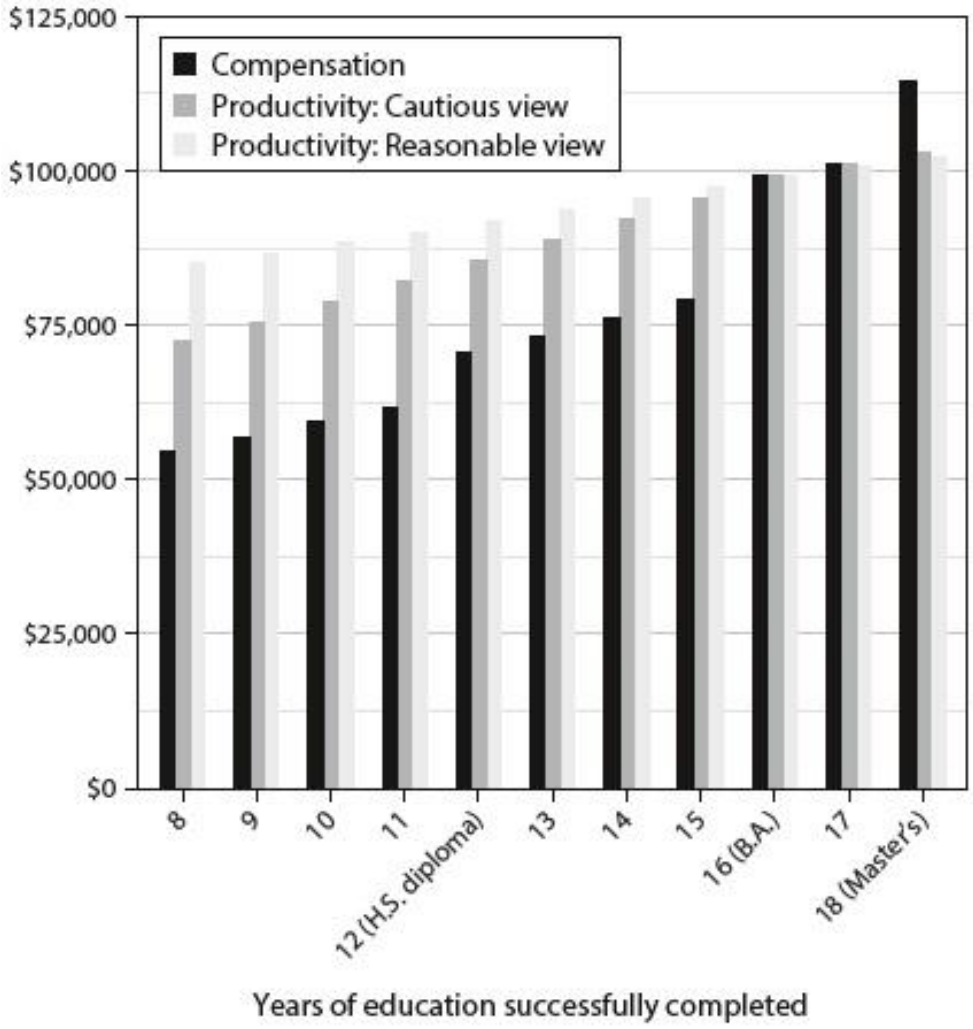


Figure 6.2: The Effect of Education on Compensation and Productivity for a Good Student (2011)
Source: Figures 5.1 and 6.1.

G. I use the same approach to calculate the social value of education's effect on unemployment. Key idea: Education can reduce your unemployment by making workers you employable, or by making you outshine the competition.

H. Since productivity is what counts, social returns ignore taxes and transfers (except insofar as these interact with workforce participation, considered later on).

III. Recounting Everything That Counts, II: Other Selfish Benefits Reconsidered

A. For selfish returns, evidence on education's effect on job satisfaction and overall happiness is mixed (see chapter 5). For social returns, there's an extra complication: Whatever effect education has on these variables might work through *status*, and hence be zero-sum.

1. In the GSS, correcting for status eliminates education's effect on job satisfaction, and shrinks its effect on happiness by two-thirds.

2. Even if I went too far in setting education's selfish benefits here to zero, it is very reasonable to set social benefits to zero.
3. What about the value of the classroom experience? No reason not to take students' feelings at face value. (Does it make students less bored if they know that millions of other kids are bored, too?)

B. My selfish returns factor in modest health benefits of education. For social returns, though, you again need to check for status effects. Education may improve health by moving you up the social pyramid, but position on that pyramid is zero-sum.
1. Researchers who check consistently find that education's health benefits are, in part, status effects, explaining 20-60% of the benefit. In the GSS, controlling for status halves education's measured effect on subjective health.
2. Given reasons discussed in chapter 5 to downgrade education's health benefits, I set social value of health benefits to zero.

C. Selfishly speaking, tuition is a relatively minor cost. Socially, it's far bigger. After various adjustments, I come to:
1. $11,298 per year for K-12.
2. $8,279 per year for public higher education.

D. Experience and completion probability have the same effects on social returns as they do on selfish returns.
1. The book considers government programs to raise completion probability in chapter 7.

IV. Purely Social Benefits

A. Economic growth? Despite widespread belief that education leads to innovation, researchers find little evidence of this. Since researchers have trouble finding much effect on GDP *levels*, it's hardly surprising that they don't find an effect on GDP *growth* either.
1. The research is fairly weak, but common sense also provides little reason for optimism. Never forget the otherworldliness of the curriculum!

B. Workforce participation? Valuing education's effect on workforce participation is conceptually tricky. Education definitely seems to raise it, but in the absence of taxes or transfers, this is no social benefit.
1. If people choose not to work, this is because they value their leisure more than the rest of society values their work.

C. Since taxes and transfers exist, however, social returns have to count all the taxes paid and transfers foregone when education raises workforce participation.
1. Intuitively: Suppose you can earn $30k per year, but pay $5k in taxes, and receive $10k if you don't work. If you care only about yourself, you'll work if you value your time less than $15k. If you care about everyone, you'll work if you value your time less than $*30*k.

2. For taxes, I continue to use the 2011 tax code. For transfers, I assign the sum of Medicaid and SNAP to anyone out of the labor force. (The single, childless assumption is crucial here).
3. However, note that signaling cuts these social benefits: boosting everyone's education has less effect on workforce participation than boosting only one person's education. (If this seems implausible, look at workforce participation by education over time).

D. Crime? The raw correlation between education and crime is very strong. Correcting for IQ and grades only mildly cuts the observed link, but adding controls for early antisocial behavior reduces the estimated effect by 75%.

E. Still, the social benefit of this crime reduction could be big, because the all-inclusive cost of crime is enormous. Even after setting aside victimless crimes, the best available estimate comes to $3,728 per American per year. Combining these estimates, we get:

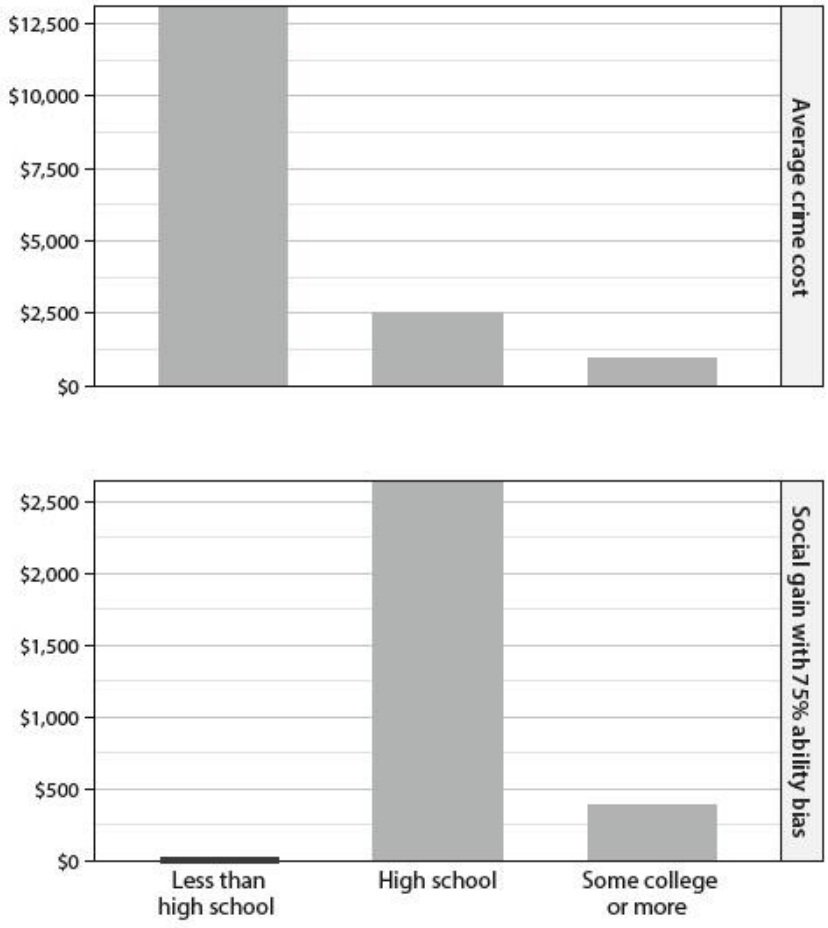


Figure 6.3: Average Annual Social Cost of Crime by Education (2011 Dollars)
Sources: D. Anderson 1999 for aggregate crime costs; Harlow 2003 for incarceration by education level.

1. As usual, signaling implies that education's effect on social criminality is smaller than its effect on individual criminality.

F. Politics? You can't value education's political effects without figuring out which policies are ideal, so I omit these from social returns calculations. (Chapter 9 measures political effects without pricing them).

G. Children?

1. Estimates of education's effects on child *quality* require a thorough study of nature versus nurture. Building on my last book, I set these to zero.
2. Estimates on education's effects on child *quantity* require us to assess the value of human existence. Again, this question is too big to resolve here, so I omit it from social return calculations. (Chapter 9 measures these effects without pricing them).

V. Crunching Society's Numbers

A. Given Cautious signaling, Good Students get mediocre social returns for high school and poor social returns for college. Note the contrast with selfish returns!

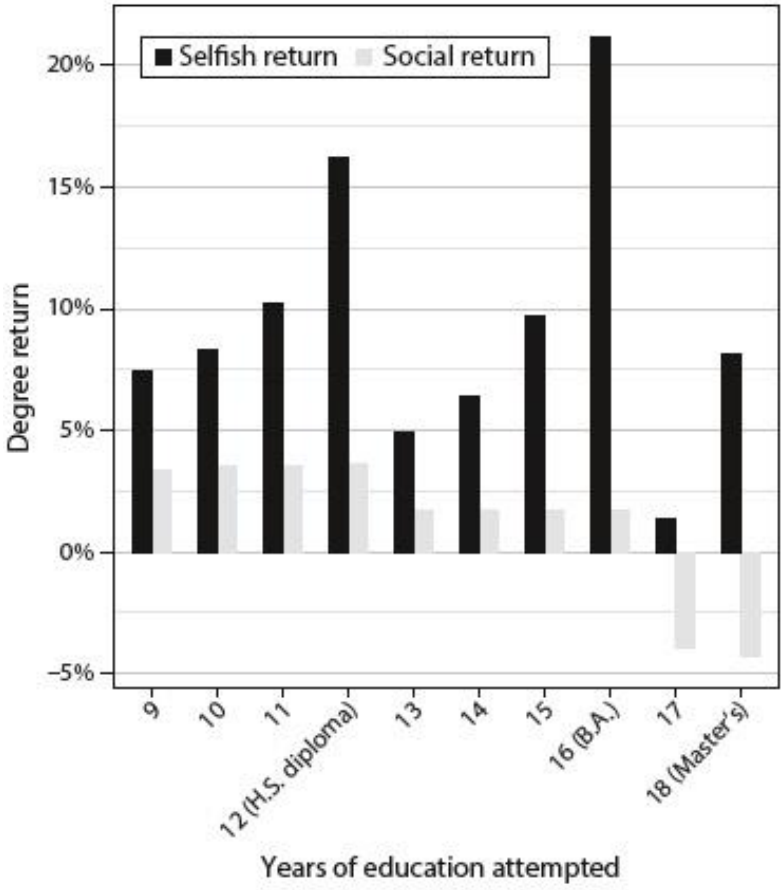
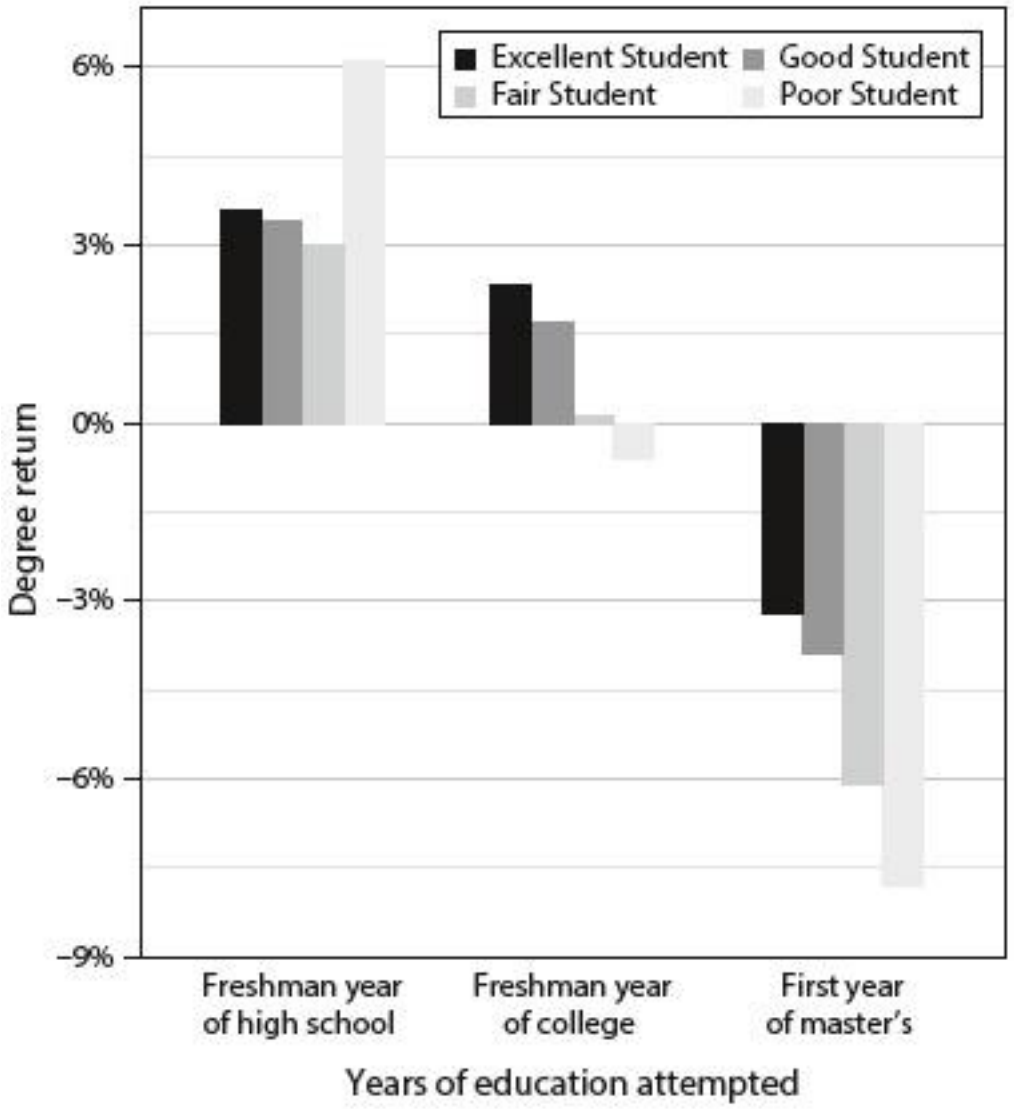


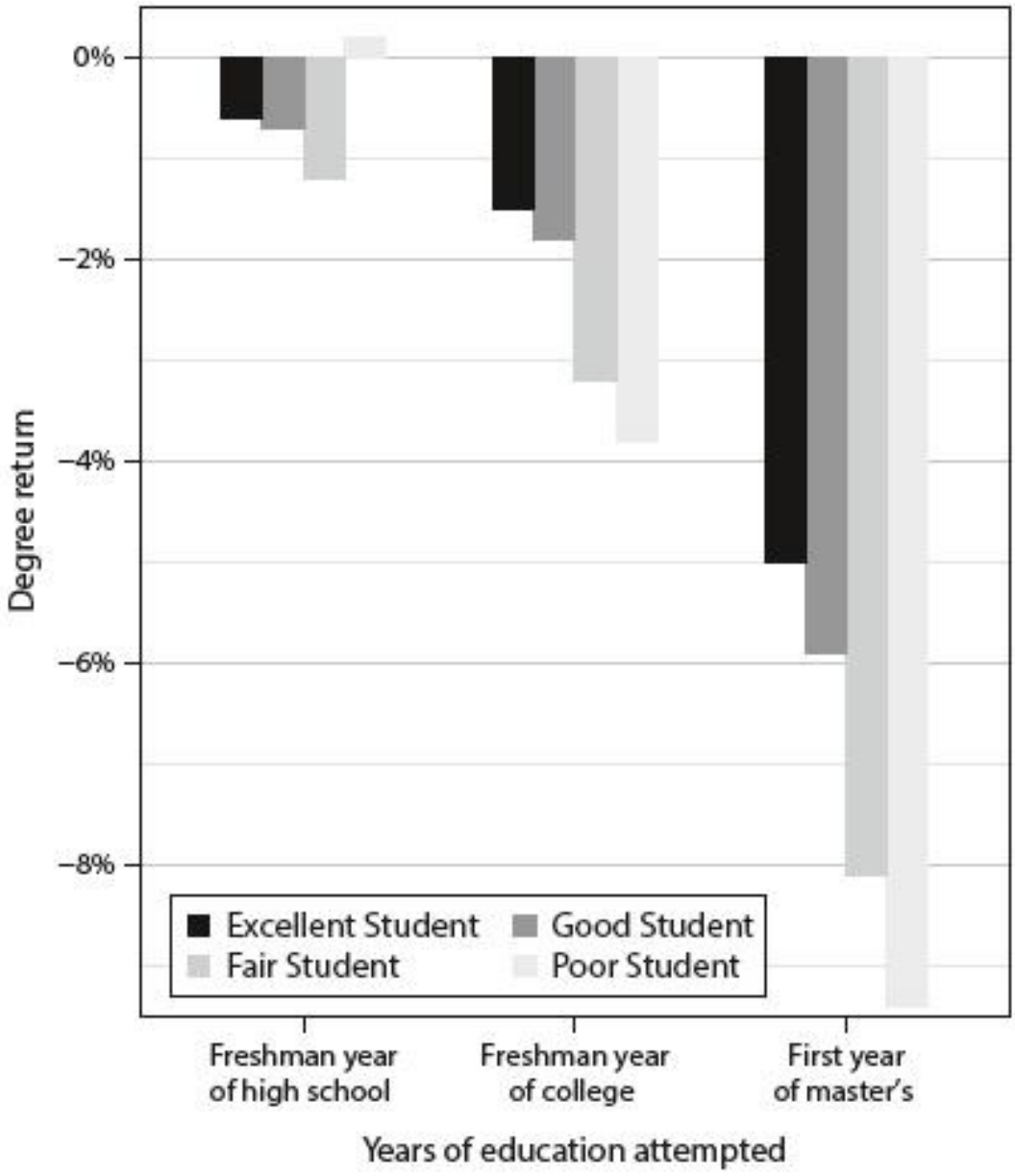
Figure 6.4: Degree Returns to Education for Good Students with Cautious Signaling
Source: Figure 5.3 and text, assuming:
(a) 45% ability bias for income, benefits, unemployment, and participation effects.
(b) 75% ability bias for crime effects.
(c) Sheepskin effects of education reflect signaling; all other effects of education reflect human capital.

B. Social returns by ability, given Cautious signaling:



1. Returns are mediocre to ruinous for all abilities and all levels, except high school for Poor Students (with the latter driven by reduced criminality).

C. Social returns by ability, given Reasonable signaling, are much worse. In fact, they're negative virtually across the board.

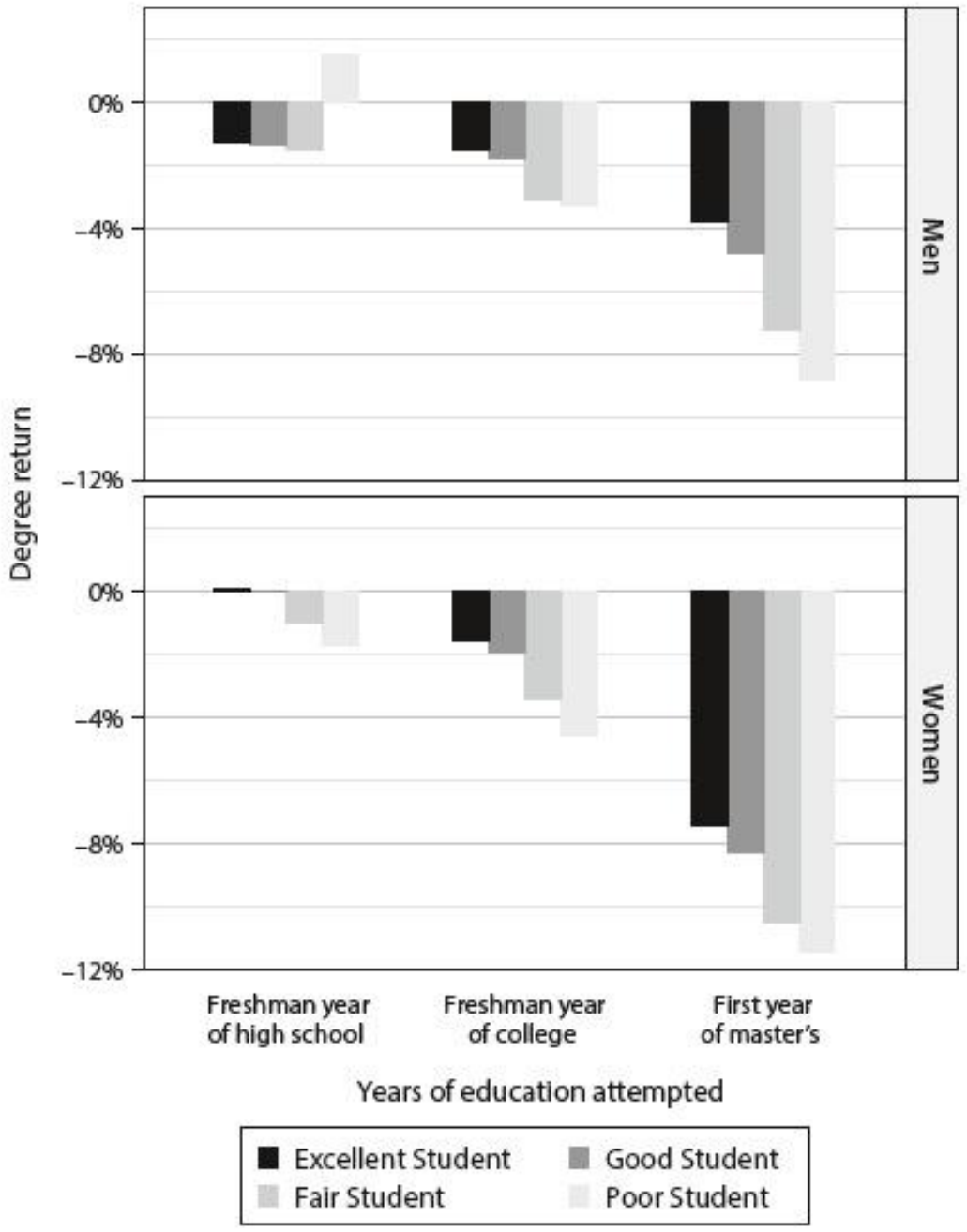


D. Robustness exercises show that even if signaling's share is as low as one-third, college looks mediocre at best. High school, however, looks very worthwhile for Fair and Poor Students.

VI. Searching for Social Returns

A. Major, selectivity, and attitude can all mitigate low social returns. But with Reasonable signaling, the most qualified students studying the most lucrative subjects are still bad social investments.

B. Since males have higher workforce participation and commit more crime, the gender gap for social returns is narrow. Male Fair and Poor Students are better (i.e., less bad) social investments than comparable women. College returns are comparable, and master's returns heavily favor men.



VII. Doubts and the Educational Drake Equation

A. Doubts:
   1. Signaling's share.
   2. Participation and ability bias.
   3. Crime, signaling, and sheepskin effects.

B. The original Drake Equation contrasted the enormous opportunities for life with the apparent lifelessness of the universe.

C. My "educational Drake Equation" contrasts the enormous observed differences between high- and low-education people with the low social return to education.

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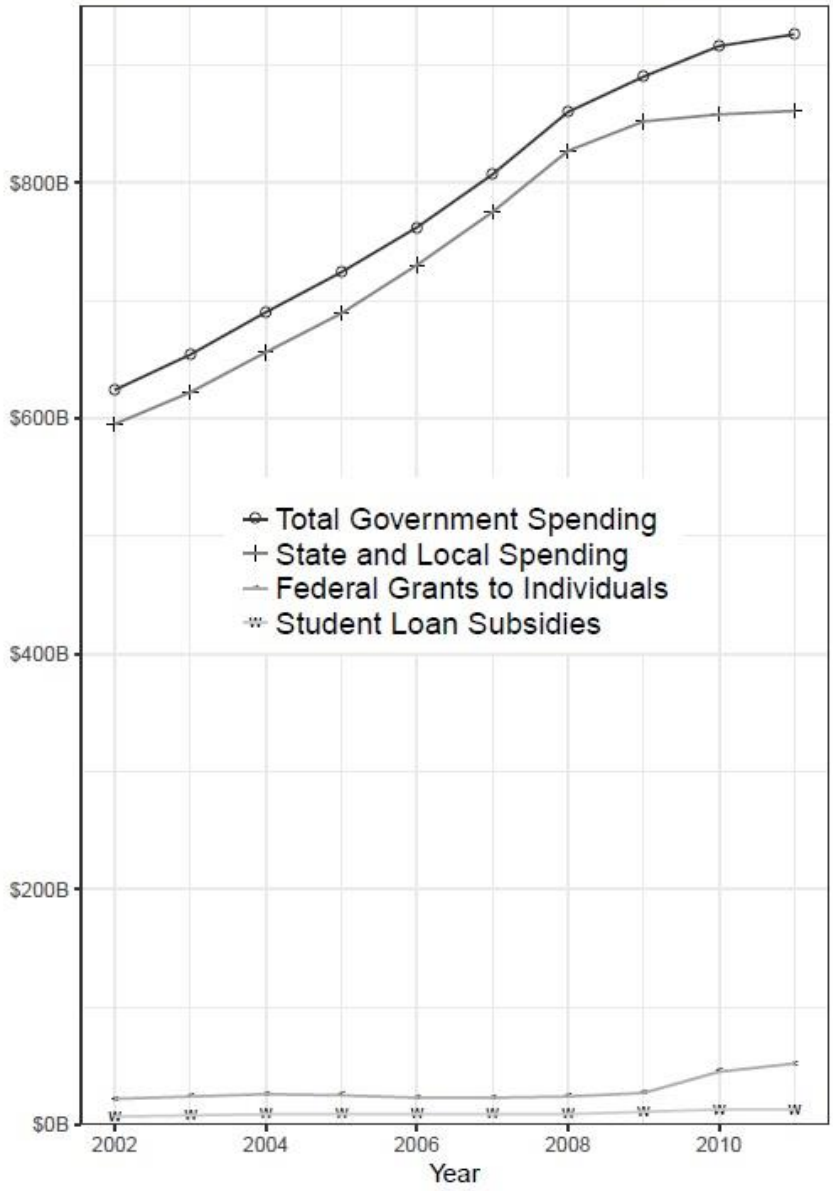
Week 12: The White Elephant in the Room: We Need Lots Less Education

I. The Status Quo
   A. All governments support education.
      1. Democracies and dictatorships support different *kinds* of education, but spend at comparable levels.
      2. Industrial policy is usually contentious, but not in this case.
   B. Support is massive. The U.S. case:

Figure 7.1: Total U.S. Government Education Spending



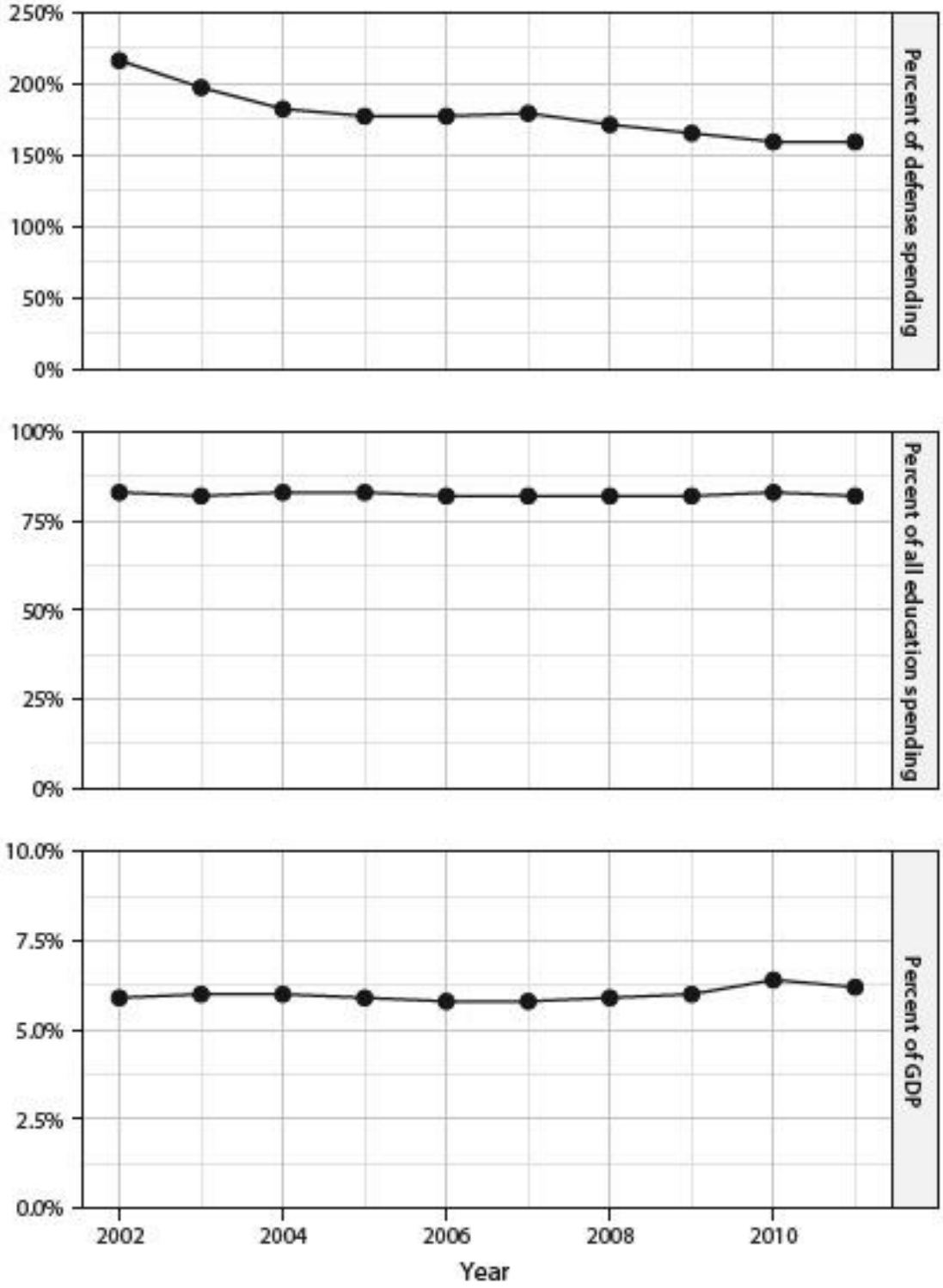


Figure 7.2: Total U.S. Government Education Spending in Perspective
Sources: Figure 7.1, and Office of Management and Budget 2014, pp. 57–58.

C. These pro-education policies are extremely popular.

1. In a major international study, clear majorities in *every* country favor bigger education budgets.
2. There is no known country where a majority favors lower spending.

D. The U.S. is typical:
1. In the GSS, 74% favor more, 21% the status quo, 5% cuts.
2. There is only a slight partisan difference: 60% of self-identified "strong Republicans" favor more; only 12% favor cuts.
3. Both Bushes wanted to be "the education president."

II. Arguments for the Status Quo

A. Populist arguments:
1. "We need to invest in people!"
2. "Nothing is more important than education!"
3. "Government has to make sure even the poorest children receive a good education!"

B. Replies:
1. How worthwhile are these "investments"? And why not rely on the free market?
2. Food's more important – and we rely on markets for that.
3. Means-tested vouchers can cheaply handle this problem. And contrary to populists, cost is important.

C. Superior arguments:
1. Irrationality: students systematically underrate education's payoff – or are too myopic to care.
2. Credit market imperfections: Due to lack of collateral, many students' credit ratings are too poor to capitalize on socially profitable investments.
3. Externalities: Students selfishly ignore positive externalities of education.

D. But all three arguments cut both ways:
1. Irrationality: Students could systematically overrate their completion probability, or myopically focus on parental and peer approval.
2. Credit market imperfections: Due to heavy government subsidies, many students undertake educational investments with low or negative social returns.
3. Externalities: Students selfishly ignore negative externalities of education – especially from signaling!

E. What to do? Compare education's social return to the standard market return.

F. If my social return estimates are even roughly correct, we currently have too much education.
1. The bigger question – should government subsidize education at all – is much harder to answer with available data. (Imagine re-doing all my work in a society with no government support, then comparing the estimated social return to the market interest rate).

III. Cutting Education: Why, Where, How

A. Why not spend better, instead of spending less? Because identifying waste is *much* easier than pinpointing worthwhile investments.
    1. There's no reason to presume the best way to reallocate money we save on education is on other kinds of education.
    2. The toenail fungus analogy.
B. Cutting fat from the K-12 curriculum.
    1. Reduce useless course requirements.
    2. Raise standards so most students abandon useless subjects.
    3. Discontinue useless subjects. (Remember how little adults remember!)
C. Cutting fat from college curriculum.
    1. Shut down impractical departments at public schools.
    2. Make impractical departments at private schools ineligible for grants and loans.
D. Guiding principle: Instead of debating usefulness of marginal subjects, cut the blatant fat without delay.
E. Won't students find other ways to signal? Sure, but not all signals are equally wasteful from a social point of view. Apprenticeships and other on-the-job training combine signaling with production and training.
F. Cutting subsidies for tuition.
    1. Raise tuition for public colleges.
    2. Cut subsidies; turn grants into loans.
    3. Charge borrowers market interest rates.
    4. Impose some tuition for high school.
G. Basic point: If the problem is social return<market return, this means there's currently too much education. Raising the cost of education narrows the gap between social and market returns.
H. *Can* attendance radically fall? Absolutely. Many pro-education researchers measure the sensitivity of school attendance to cost. We can use their estimates, but reverse the desired direction of behavioral change.
    1. The hidden wonder of high tuition and student debt.
I. Are these reforms "draconian"? Or is the status quo "profligate"?
J. What about raising completion rates? Even relatively big completion boosts imply absolutely low social returns.
K. Social justice arguments for the status quo suffer from a Fallacy of Composition.
    1. Main result of education subsidies is not equality but credential inflation.
    2. Subsidies raise the correlation between education and employability, enhancing the stigma against the less-educated.
    3. Don't forget the opportunity costs of social justice.

IV. What I Really Think
A. Political philosophy sets moral presumptions.
    1. These presumptions can be overcome with sufficient evidence, but we lack compelling evidence about the effects of radical changes.

B. I still favor a radical education reform: separation of school and state.
C. Why? Because I have a strong libertarian moral presumption. When in doubt, I think we should leave strangers alone, not support the status quo. And taxing people is a prime example of *not* leaving them alone.
    1. Favorite exception: Vouchers for poor children.
    2. But: Private charity seemed to do a tolerable job in earlier periods.
D. Why be so extreme? Full separation *transparently* keeps government away from an industry where it's squandered trillions of dollars.
    1. Compare to the argument for separation of church and state.
E. Disagree? That's OK, because it's not integral to my argument.
F. Why not tax education?
    1. Throwing out the baby with the bathwater.
    2. Agency problems.
    3. Diverse moral presumptions against it.

V. The False Savior of Online Education
A. Signaling ≠ "education bubble." Nothing about the signaling model suggests fragility. Instead, signaling implies that education is *stable waste*.
B. Online education fans often emphasize its pedagogical advantages. So why isn't it doing to the education system what downloads did to record companies?
C. Answer: Because students primarily want signals, not human capital!
D. Why can't online education provide better signals? The catch-22 of conformity signaling.
    1. Note: *Offline* testing has been available for decades. Online education enthusiasts shouldn't predict an online testing revolution until they can explain why there wasn't already an offline revolution.
E. The failure of new tech to "creatively destroy" the status quo goes back many decades. Why didn't the VCR disemploy 99% of lecturers?
F. Credit where credit is due: Online education provides some great niche edutainment.

VI. The Politics of Social Desirability Bias
A. If I'm right, every country on Earth is wrong. Isn't this arrogant to the point of absurdity?
B. No. See *The Myth of the Rational Voter*. Political irrationality is free for the average citizen – and politicians pander to the average citizen.
C. But why is overrating education so popular to begin with? Social Desirability Bias. People gravitate toward saying – and thinking – whatever "sounds good." Examples:
    1. "There's no such thing as a stupid child."
    2. "We *will* win the War on Terror."
    3. "Am I fat?"
    4. "In a modern society, every child needs the best possible education."
    5. "Education is the most important investment we make in our children's future."

6. "We have to make sure that everyone who might benefit from college attends."
7. "There's no trade-off. The more we spend on education, the richer we'll be."

D. "Socially desirable" claims *can* be true. But we're inclined to believe them whether they're true or not.

E. How can SDB explain the global dominance of pro-education sentiment?
1. Human universals. Salt, sugar, fat – and education.
2. Identifying fallacies is itself socially undesirable – and the Fallacy of Composition has great appeal to the human mind.
3. Global elite culture. Western elites fell in love with education in the 19th century – and non-Western elites borrowed many of their ideas in the 20th.

F. What's so bad about SDB? It leads to popular support for wasteful and counterproductive policies – like wasting hundreds of billions on wasteful education every year.

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Week 13: 1>0: We Need More Vocational Education

I. The Vocational Alternative
   A. You could interpret human capital purism as normative rather than descriptive: If education doesn't teach a lot of useful skills, let's reform it so it does.
   B. Perhaps we can dramatically improve the teaching of reading, writing, and math.
      1. Note: We should measure what matters. Focus on uncoached adults, not students at the end of the academic year.
   C. But I'm skeptical. The goal has long been popular, the research is ample, but basic skills remain mediocre. So either:
      1. Pinpointing ways to improve basic skills is elusive.
      2. Schools spurn the methods that work.
   D. A less conventional approach: vocational education, also known as "career and technical education."
      1. Classroom training
      2. Apprenticeships
      3. On-the-job training
      4. Work experience
   E. Social Desirability Bias weighs against vocationalism, especially for K-12.
      1. "Academics prepare students for whatever they choose to do with their lives."
      2. "The world is full of late bloomers."
      3. "Every child can grow up to be president."
   F. Harsh reality, in contrast, says:
      1. Lots of kids find academics hard and dull.
      2. College is unrealistic for such kids.
      3. So they're better off training to be plumbers, electricians, or mechanics.

II. Why Vocational Education Rules
   A. "Underachievers" are more likely to pursue vocational education, so any evaluation of its effects must take this into account. How do vocational students compare to comparable students who *didn't* study a trade?
   B. Main results are somewhat sparse, but almost uniformly favorable. Adjusting for student ability, vocational education…
      1. Raises pay by 5-20% for at least a decade after graduation.
      2. Reduces unemployment.
      3. Increases high school completion.
      4. Reduces crime.
   C. These results imply higher selfish returns. Caveats:

1. There's a selfishly optimal mix. Students would do better with more vocationalism, but not *all* vocationalism.
2. Possible negative effects on employment in late middle age?

D. Where vocationalism really shines, however, is on social returns. Status is zero-sum; skill is not.

E. Key question: How often do students use the skills they learn? Vocationalism stands out because it prepares students for common jobs.

F. Vocationalism plainly sends a worse signal than conventional academics.
1. Some claim it actually sends a negative signal. If so, it's social return exceeds its selfish return.
2. More plausibly, vocationalism simply sends a *less favorable* signal than conventional academics. Since its selfish return is at least average, its social return is even higher. If vocationalism's signaling share is only 40%, its social return is four percentage-points higher than normal.

III. What's Wrong With Child Labor?

A. "Child labor" – kids learning job skills on the job – has an awful connotation. Our laws reflect this judgment.
1. Federal law effectively prohibits work for kids under 14, except in family businesses, farming, newspaper delivery, and performing arts.
2. Kids 14-15 can work three hours a day on weekdays, and eighteen hours a week on school weeks.
3. Many states have stricter regulations, including requiring school permission.

B. There's a big double standard.
1. It's OK for kids to be bored and uncomfortable at school, but not at work.
2. It's OK for kids to devote every spare minute to sports, music, drama, or chess, but not work.
3. Employers "exploit" kids if they pay them a low wage, but schools don't "exploit" students by paying them a *negative* wage (i.e., charging tuition).
4. We trust parents to safeguard their kids' interests *unless* their kids work for a non-relative.

C. What about the negative effect of work on academic performance? Adjusting for student quality, there's no downside in the data. The postgraduation earnings gain is robust; harmful effects on grades and crime is not.
1. Caveat: Researchers rarely study "intense" work of 30-40 hours per school week.

D. For social returns, any downsides are trivial compared to the upside of a relatively low signaling share.

E. The most reasonable worry, especially given the minimum wage, is that employers won't want to hire inexperienced students in the first place.
1. Catch-22: You need skills to be worth training.

2. Unpaid internships are only a small loophole.

IV. Misvocational Education

A. Is vocational education short-sighted? No, because the academic track doesn't actually focus on "general skills." Instead, it provides vocational training for ultra-rare vocations.

B. The real debate is between two kinds of vocational education.
   1. Training for long-shot, prestigious careers.
   2. Training for likely careers.

C. Ignorance of the future is no reason to train students for jobs they almost certainly *won't* have.

D. The egalitarian objection to vocationalism is based on wishful thinking.
   1. Academics aren't a free lunch, because students who fail academically often fail to "downshift" to a trade afterwards.
   2. Better to train students for one job than zero jobs. 1>0.

E. Which is truly dystopian? Vocationalism – or the status quo?

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Week 14: Nourishing Mother: Is Education Good for the Soul?

I. The Humanist Critique
- A. So far, I've focused on measuring benefits of education that we can readily price. But what if the problem is that people ignore or reject goods with *intrinsic* value?
  1. In economic jargon: What if education is a "merit good" – or helps produce merit goods?
- B. Humanist thinkers have long promoted ideas and culture as merit goods – and their position is plausible. Subjectivist cliches abound, but who really believes them?
  1. The self-education of Malcolm X.
- C. Humanists still overstate their case: "Education *can* be a merit good" is much weaker than "Actual education *is* a merit good."
- D. Three plausible criteria for meritorious (intrinsically valuable) education:
  1. Worthy content
  2. Skillful pedagogy
  3. Eager students
  4. Note: Education doesn't need any of these attributes to be *instrumentally* valuable.
- E. Actual education does poorly on all three counts.
  1. Content: Curriculum is packed with boring, trivial topics.
  2. Skill: Most teachers are boring. (Just my opinion? No, almost everyone's opinion. Who watches YouTube videos of *average* teachers?)
  3. Students: Vast majority are philistines. (Check Google hits for high versus low culture).
- F. Even if education is a merit good, cost-benefit ratios still matter.
- G. Happily, the internet has brought the cost of high-quality self-education down to near-zero. Lessons:
  1. Since self-education is a tiny share of internet use, apathy – not cost – explains widespread ignorance of ideas and culture.
  2. Subsidies' function is not to make ideas and culture accessible to anyone who's interested, but to make them mandatory for everyone who isn't.
- H. Intermediate position: "Enriching the soul" = "Fosters desirable adult attitudes and behavior."
  1. Identifying "desirability" is up to the reader.
  2. Identifying attitudinal and behavioral effects is up to me.
- I. Big complication: leadership versus peer effects.
  1. If school changes students via leadership, more education remolds society.

2. If school changes students via peers, more education *reshuffles* society. (Complication: Non-linear peer effects).

II. High Culture and Political Correctness
   A. Schools explicitly and energetically push high culture in literature and music.
   B. How effective is their pushing? Not very.
      1. People spend very little on books, and high culture is at best a small niche of the book market.
      2. Classical music is only 1.4% of the U.S. music market.
   C. My point is not that only high culture is worthwhile. My point is that schools heavily push high culture, but adults voluntarily consume almost no high culture. So the pushing is, at best, almost totally ineffective.
      1. If education causes all consumption of high culture, it doesn't cause much.
   D. Schools rarely explicitly promise left-wing indoctrination. But they do have means, motive, and opportunity for such indoctrination: captive audiences of students plus strongly left-leaning faculty.
      1. Best available (but not great) estimate of K-12 teachers' D/R ratio is 3:2.
      2. For professors, the D/R ratio is more like 4:1 – and higher at more prestigious schools.
      3. The ratio is most lop-sided in humanities (5:1) and social sciences (8:1).
      4. This is no "conspiracy theory." Ideological neutrality requires constant – if not inhuman – self-discipline.
   E. Won't even a subtle slant, year after year, turn students into leftists? Barely. Results from the GSS:
      1. Univariate regression: One year of education makes students .014 steps more liberal on a 1-7 scale. Adding controls amplifies the effect, but it remains weak.
      2. Univariate regression: One year of education makes students .071 steps more *Republican* on a 0-6 scale. Adding controls moderates the effect, but the sign is still the opposite of expected.
   F. Specific issue effects are larger. Correcting for many other factors, the educated are:
      1. More supportive of civil liberties and tolerance.
      2. More opposed to racism and sexism.
      3. More supportive of capitalism, free markets, and globalization.
   G. In other words, education makes people more socially liberal but more economically conservative. Is this really what teachers and professors want?
      1. Natural inference: Education works via peer effects, not leadership.
   H. What about mere voter participation? Turnout rises with education, even correcting for many confounding factors.
      1. But several prominent researchers argue *relative* education is what matters, again suggesting peer effects.

III. The Modern Lifestyle
  A. Schools may not explicitly try to promote “modern” over “traditional” lifestyles, but stereotypes suggest they still have this effect. But do they? Results are surprisingly mixed.
  B. Religion: education does not seem to make people less religious overall. Instead, at least in the U.S. education makes people…
    1. …less religious theologically (i.e., in doctrine).
    2. …more religious sociologically (i.e., in church membership and attendance).
    3. Statistical corrections make education’s theological effect look smaller and its sociological effect look bigger.
    4. How are these patterns possible? Simple: Most students are apathetic about both education and religion.
  C. Marriage and divorce:
    1. Being married is more common for college grads, and being divorced less common. In recent decades, GSS estimates controlling for many other factors say each year of education raises marriage probability by .7 percentage-points and lowers divorce probability by .3 percentage-points.
    2. These results vary by country, over time, by gender, and by specific degree level.
    3. Overall: Contemporary education pushes marital status in a traditional, not “modern” direction.
  D. Fertility: There is a strong negative association between education and fertility, at both individual and national levels.
    1. Globally, low-education women outbreed high-education women by about one-third.
    2. Intra-national disparities of one full child are common.
    3. Controlling for many other factors, the education-fertility connection stays strong: an extra year of education prevents .1 births.
    4. Women’s education has a much stronger effect than men’s.
    5. Leadership or peers? Globally, the evidence is mixed. But in the U.S., leadership seems to explain the whole story. Social class measures fully explain education’s effects on marriage and divorce, but none of its effect on fertility.
    6. Many take the goodness of this anti-natalist effect for granted. But there are thought-provoking arguments on the other side. (See my *Selfish Reasons to Have More Kids*).

IV. Broadening Horizons, the Merit of Play, and the Cynical Idealist
  A. Schools often promise to “broaden students’ horizons.” But they do a poor job.
    1. Schools treat an ossified list of subjects – music, art, poetry, drama, foreign language, history, government, dance, sports as “breadth.”
    2. Instead of offering a diverse sample, schools keep pushing the same list for thirteen years.
  B. Alternative:

1. Many more options in much smaller doses ("tasting menus").
2. Extra focus on realistic options that could plausibly turn into a fulfilling career. ("Do what you love, and you'll never work a day in your life" doesn't operate in a vacuum).

C. For younger kids, the main alternative to school is not work, but play. Though neglected, play is another plausible merit good.
1. What is childhood without play?
2. Warehousing is useful, but kids don't have to do schoolwork just because they're at school.
3. The upside of Leisure College, USA.

D. You don't have to be either a narrow-minded economist or a touchy-feeling humanist. You can also be a cynical idealist who:
1. Admits that merit goods are possible.
2. Doubts the existing education system is good at delivering merit goods.

E. Compulsory enlightenment is Orwellian – and its main fruit is lip service to humanist ideals.

F. The good news: While the internet is not a major commercial threat to existing education, it does provide limitless free enlightenment.

V. Conclusion: What Is the Case Against Education?

A. Education is greatly overrated, especially from a social point of view. Most important stumbling blocks:
1. Ability bias
2. Completion probability
3. Signaling!

B. While I've assembled a lot of academic research, it's best to start by unromantically reflecting on your actual educational experience.
1. "What do I need to graduate?" versus "How can I maximize my learning?"
2. "Will this be on the test?" versus "Will this be on the job?"

C. If research and common sense are both on my side, what's against me? Social Desirability Bias.

D. The solution: we need less education. If I'm right, the main effect will be credential deflation, not "deskilling."

E. Will governments follow my advice? Highly unlikely. "One day, I'll be vindicated" is classic Social Desirability Bias.

F. Civilized societies revolve around education now, but there is a more civilized way. Trying to spread success with education spreads education but not success.