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Econ 321

Weeks 1-2: Labor Supply and Labor Demand

I. Intro to Labor Economics
   A. Labor economics is interesting for two main reasons.
      1. The enormous total value of labor - something like 70% of national income comes from sale of labor.
      2. The strong emotional commitments people have to their beliefs about how labor markets work.
   B. Upshot: Emotional preconceptions strongly color the way we see the most important market in the world!
   C. Economics, as always, begins by putting these preconceptions aside, and trying to think about matters analytically.
   D. First pass: labor economics is simple. It's a market like any other, and can be analyzed with the same supply-and-demand tools.
   E. But: The implications of the basic supply-and-demand model are so strong that it is useful to systematically reconsider our pre-scientific views.
   F. Also, there are a number of ways labor markets actually do work in ways more complicated than S&D alone can explain.

II. Individual Labor Markets, I: Basics of Labor Supply
   A. Consider the market for barbering services, where barbers are self-employed.
   B. On the x-axis, we have the number of hours worked or "sold"; on the y-axis, we have the price of an hour of labor, generally known as the "wage."
   C. How does the supply of barbering services relate to the market wage?
      1. Number of people in the occupation.
      2. Number of hours people in the occupation work.
   D. It is clear that the number of people in the barbering occupation will increase as the market wage rises, especially over a longer time horizon.
   E. The second effect is more complicated. Economists call this the labor/leisure trade-off, with "leisure" being the amount of your time you decide NOT to sell on the market. (Note that labor might be fun and leisure might be unpleasant on this definition!)
   E. Since you have 168 hours in a week, when you pick your hours of labor L, you simultaneously pick your hours of leisure (168-L).
      1. While employers rarely let people "pick their own hours," people can choose their occupations and employers to try to match their desired labor/leisure mix.

II. Individual Labor Markets, II: More on Labor Supply

A. What determines the number of hours a barber wants to sell? If we mechanically apply the law of supply to labor, we discover that the higher the "price" of labor, the more labor people want to sell. *This is known as the* ***substitution effect****.*

B. But there is a major complication: Normally, sellers of a good consume little of their own product. Orange growers, for example, spend less than 1% of their income on oranges. However, sellers of labor consume an ENORMOUS amount of their own product; even the most extreme workaholic consumes 50% of his own hours in leisure.

C. Why is this important? An increase in the price of what you sell makes you richer, enabling you to afford more of everything. If you already consume a lot of what you sell, then as the price of your product rises, your tendency to buy more of everything (including your own product) as you get richer may overpower your tendency to sell more of your product as its price rises. *This is known as the* ***income effect.***

D. Somewhat shocking implication: For products that are a large percentage of their budget - such as their own time - suppliers **might** actually sell LESS as the price rises, not more as economists usually assume. **Individual** supply curve might be "backwards-bending."

E. Implausible? Suppose your real wage was $10 an hour. How many hours a week would you work? What about $5? $1? $.10? Almost everyone's labor supply curve will "bend backward" at some point.

F. Still, for one occupation, the effect of a higher wage on the number of people in the occupation will almost surely ensure that the labor supply curve has its usual upward slope.

III. Individual Labor Markets, III: Basics of Labor Demand

A. Continuing with the barbering example, what determines labor demand?

B. Simple: The higher the price of barbering services, the less people will buy.

C. So how does the market for barbering services work? It looks like any other commodity market, with the wage and quantity of hours fluctuating in response to supply and demand.

D. Only unusual thing to note: When demand goes up, some barbers may actually cut back their hours. Total hours sold will still go up, though, because more people will decide to become barbers.

E. Most workers are not self-employed, however. Rather, consumers buy final products from firms, and it is the firms, rather than consumers, who demand labor. For example, consumers buy oranges, and orange-growing firms hire orange-pickers to pick the oranges. How does labor demand work then?

F. Before we can analyze labor demand in this familiar sort of market, we must understand two concepts: marginal physical productivity and marginal value productivity.

G. Concept #1: How many additional oranges does one more worker-hour allow the firm to produce? This is called the *marginal **physical** product* of an hour of labor, or MPP.

H. Concept #2: What is the market price of an orange? Multiplying the price of an orange times the MPP gives us the dollar value one worker-hour adds, the *marginal **value** product*, or MVP.

I. Ex: If an additional worker produces 30 oranges in an hour, and the market price of an orange is 50 cents, then the worker's MPP=30 oranges and his MVP=$15.00.

V. Individual Labor Markets, IV: More on Labor Demand

A. Question: What determines an employer's willingness to pay for another hour of labor?

B. Put yourself in the shoes of an employer in the orange industry. You will keep buying more labor until it is no longer profitable. It is profitable to hire a worker so long as his marginal value product exceeds his wage: $MVP \geq w$. If the value a worker produces in an hour is greater than or equal to the hourly wage, he is profitable to employ!

1. Ex: If a worker's MVP=$15, then employers want to hire him if the market wage is $15 or less.

C. Imagine employers adding more and more workers to their workforce until it ceases to be profitable. They finally stop hiring more once the last worker's marginal productivity is exactly equal to his wage.

D. Amazing conclusion: labor demand is entirely determined by workers' **marginal productivity**. Using this concept we can trace out the whole labor demand curve.

E. If the product price goes up, labor demand rises. If product price falls, labor demand falls. Similarly, if workers' MPP rises (and product price stays the same), labor demand rises. If MPP falls (and product price stays the same), labor demand falls.

VI. Individual Labor Markets, V: Market Equilibrium

A. If wages are below the equilibrium level, there is a shortage of labor and wages get bid up; if wages are above the equilibrium level, there is a surplus and wages get bid down.

B. What about shifts?

C. In a single occupation, labor supply responds to changes in expected ways. Ex:

1. What happens to supply of orange-pickers if a new strain of poisonous fruit fly appears?

D. Shifts in labor demand are trickier, because you have to consider both the product market and the labor market.

E. One worker essentially has no effect on product price. So if *one* worker grows more productive, he gets paid proportionally more.
F. But if *all* workers in an industry get more productive, matters are more complex.
G. E.g. suppose all orange workers get faster. In the product market, this means that the supply of oranges increases, so the price falls. But in the labor market, does labor demand rise or fall?
H. It all depends on *demand elasticity* in the product market. If the demand curve is relatively flat (elastic), then when the quantity of oranges rises a lot, the price of oranges only falls a little. Thus, MVP rises and labor demand increases.
I. But if the demand curve is relatively steep (inelastic), then when the quantity of oranges rises a lot, the price of oranges drastically falls. Thus, MVP falls and labor demand falls!
J. There are definitely cases where all-around increases in worker productivity have actually hurt workers in that industry. Agriculture is the most prominent example.
K. There are other cases where an occupation only came to exist due to rises in worker productivity. Computers are probably a good example.

VII. Basic Empirics of Marginal Productivity
A. After all of this theory, how about some empirical evidence? Workers may be paid for productivity, but what makes workers productive?
B. There is no way to predict individuals' wages or income perfectly, but there are better and worse ways of guessing. **Regression** is a standard statistical technique that people use to make the "best guess" about what one thing will be given some other things.
C. For example, *given* that someone is a male 16-year-old living in Nebraska, what would your *best guess* of his annual income? No guess will hit the nail on the head, but all guesses are **not** created equal!
D. What are some of the obvious factors linked with higher value-productivity of workers?
1. Education
2. Experience
3. Innate ability (strength, intelligence...)
4. Character (punctuality, honesty...)
E. It is a lot easier to measure some things than others! Education is easy to measure; experience can be roughly approximated by (age-education-5). (Innate ability and character are harder).
F. So what is our best guess of a person's Income (from labor) given their education and experience?
G. Using the NLSY for 1992, I get:

Annual Labor Income=
-29,645 + 3318*Years of School + 728*Years of Experience

H. We'll refine our guess further throughout the semester.

VIII. Compensating Differentials

A. Do people always choose the highest-paying occupation open to them? No. "Man does not live by bread alone."

B. Conversely, does everyone refuse to do the truly miserable jobs (like garbage man)? No.

C. Easy to analyze this using S&D: the funner the job, the more labor supply increases; the more horrible the job, the more labor supply decreases.

D. The result: Fun jobs pay less; yucky jobs pay more. Economists call this pattern "compensating differentials." (aka "equalizing differences") Wage differences **compensate** people for job-related joy and misery.

E. This only works holding everything else constant. 7-11 workers have low wages and high risk; professors have above-average wages and a lot of fun. But what are the *other* options of the people in these jobs?

F. This simple principle is amazingly general. It works for:
   1. Safety
   2. Job security
   3. On-the-job amenities (free or discounted meals)
   4. Non-wage income
   5. More!

G. This also means that if you happen to really like something that most people hate, you get more money and more fun!
   1. Ex: Economists have much better job prospects than mathematicians, even though the latter are smarter and train for more years.

IX. What (Else) Do Employers Do?

A. A long tradition of thinkers see employers as parasites who "exploit" their workers.

B. Economists, in contrast, regard employers as "middle men" between workers and consumers.

C. Middle men in the wheat market buy wheat from farmers, package it, and then sell it to consumers. Calling is "exploitation" is folly: *middle men save farmers and consumers from the inconvenience of doing this themselves*.

D. But employers don't just buy and re-sell labor. They do much more:

E. Extra Employer Activity #1: Often labor themselves - directly in small business, indirectly by planning and organizing production, thinking up new ideas, etc.

F. Extra Employer Activity #2: Serve as implicit lenders to workers. It usually takes time before a worker's product reaches a market, as anyone who starts up a new business learns. Employers usually start paying workers almost immediately. In essence, they are giving workers money now for a product that can only be sold in the

future. To make employers do this, there has to be an implicit interest payment; the amount employers pay you for your product today is less than the amount they later sell it for.

1. As with lending in general, economists see mutual gains to trade from this implicit loan, where others cry "exploitation."

G. Extra Employer Activity #3: Implicit insurance. If a business goes bankrupt, do workers have to return their wages? No. Employers pay you a specific amount for a product, and then "spin the wheel" and see how well they do with it. If they get lucky, they earn more than they paid you; if they get unlucky, they earn less. This is essentially no different from any other insurance contract, where you pay someone a fixed amount, and then they bear the risk.

X. Aggregate Labor Markets, I: Labor Supply

A. If you add up everyone's labor supply curves, and abstract from differences between workers, you can draw the Aggregate Labor Supply curve. This curve shows the total number of hours people will choose to work at given wages.

B. For a single labor market, occupational choice basically guarantees that labor supply slopes upwards. But for the labor market as a whole, that doesn't really work.

C. Exceptions probably aren't enough to reverse this conclusion:

1. Non-workers entering the labor force
2. Immigrants

D. Depending on the relative strength of the substitution and income effects, then, the Aggregate Labor Supply curve could be positively or negatively sloped.

E. Empirically, males in the past did sell far more hours of their time than they do today. It definitely looks like the income effect was greater than the substitution effect in their case: as real wages increased, men have worked less.

F. Women sold far fewer than they do today, but this is a clear case where fun and "leisure" are different! Big effect for women: development of machines to do household tasks leaves them with surplus time, which more and more have chosen to sell.

G. For most purposes, it is more or less reasonable to assume that the Aggregate Labor Supply is vertical.

1. Typical hours of work have stopped falling for the past couple decades.
2. Intuitively, how many adult males want less than a 40-hour/week job?

H. Throughout this course, then, the Aggregate Labor Supply curve will normally be drawn as vertical.

XI. Aggregate Labor Markets, II: Labor Demand

A. Aggregate Labor Demand just shows the quantity of labor-hours people want to buy at a given real wage. It is just the sum of all employers' labor demand curves.

B. This takes us near complicated macro issues that are best avoided. Easy way out: Make the plausible assumption that *the central bank adjusts the money supply to keep the price level constant*.
C. Since Aggregate Labor Demand depends solely on the MVP of a unit of labor, and MVP=P*MPP, Aggregate Labor Demand is directly proportional to MPP.
D. Thus, at the aggregate level, higher average productivity ALWAYS translates into **higher** demand for labor, and vice versa for lower average productivity. Productivity gains are sometimes bad for workers in specific occupations, but are always good for workers in general.

XII. Aggregate Labor Markets, III: Market Equilibrium
A. Aggregate Labor Supply is determined by workers' labor/leisure trade-offs. Aggregate Labor Demand is determined by workers' productivity. So what determines average wages and employment?
B. If the wage is below the intersection of ALS and ALD, employers want to hire more workers than are willing to work. They accordingly bid up the wage.
C. If the wage is above the intersection of ALS and ALD, more workers are willing to work than employers want. Workers bid down the real wage.
D. At the intersection of ALS and ALD, the quantity of labor hours employers desire to buy and the quantity of labor hours employees desire to sell are equal.
E. What happens if...
    1. Workers get stronger?
    2. Someone invents a new productive technique?
    3. Someone invents the dishwasher?
    4. A new law bans the use of some machinery?
    5. Workers slack off more on the job?

XIII. Application: Multinational corporations and Third World Labor
A. Using what we've learned, what can we say about low wages in the Third World?
B. How about: on average, workers are much more productive in the rich countries than in the poor countries.
    1. Of course, this may be more the fault of bad economic policies than individual workers.
C. What can we say about bad working conditions?
D. How about: when people are poor, they are more willing to trade-off fun for income?
E. What would banning foreign employers from countries accomplish?

XIV. Fundamental Labor Fallacies
A. Fallacy #1: Make-work. Many variants: "Reduce the work-week to create more jobs," "NAFTA costs us jobs," "New machines destroyed jobs," "Immigrants are taking our jobs."

B. The essence of the fallacy: Focusing on effort instead of result. Bastiat calls this "Sisyphism," after the legendary Sisyphus. If people figure out a way to accomplish the same result with less labor, this means that there is **more** labor to accomplish some other goal.
    1. Partly, this is just a special case of the broken window fallacy, of measuring wealth by inputs rather than output. Saving one person's job may make *that* person better off, but it also means wasting valuable labor.
    2. Additional confusion: a decline in labor demand only leads to involuntary unemployment if real wages cannot fall.
    3. Unemployment is frequently just a symptom of *shifts* in labor demand, not a lower level. Unemployment and job search go together, and job search is vital for prosperity.

C. Fallacy #2: Subsistence wages. Many variants: "Employers pay whatever they want," "The workers are exploited," "Without unions and regulation, workers would still live in poverty."

D. The essence of the fallacy: Employers have to compete for workers; employers care about their own profits, not the profits of employers in general. If the real wage is too low, then each employer can get richer by raising wages a little bit and attracting more workers.
    1. Lenin: "The capitalists will sell you the rope you are going to use to hang them."

E. Why then were wages once low in the West, and still low in the Third World? Two words: **marginal productivity.** When workers' productivity is low, employers won't pay a lot to hire them.
    1. Immigration restrictions are also a big part of the explanation for why wages can be so much lower in some countries than in Western countries. Otherwise, many would move to get higher wages.

F. How can real wages rise for everyone? Worker productivity has to increase. Efforts to "create jobs" by restricting machinery, or union activity such as slow-downs are directly counter-productive.

XV. Time Allocation, Opportunity Cost, and Comparative Advantage

A. What is the "cost" of an hour you spend doing nothing? Most people would say "zero," but economists point out that you could have been working.
    1. If you can pick your hours exactly, then you should value an hour of time at your wage.
    2. If you want to work **more** hours than your employer permits, then you should value an hour of time at less than your wage.
    3. If you want to work **fewer** hours than your employer permits, then you should value an hour of time at more than your wage.

B. This all comes back to "opportunity cost." If you spend an hour "doing it yourself" to save $5, is that smart? Probably not.
C. It often makes sense to hire people to do things you are quite able to do yourself, because this frees up your time for what you do best.
D. Tyler on time: You can probably make your life a lot better if you always factor in your opportunity cost of time when you make decisions.
E. In international trade, economists call this the principle of "comparative advantage." But it works just as well for individuals.
F. Warning: If you *like* doing something, the time you spend on it "costs" you less; if you *hate* doing something, the time you spend on it "costs" you more. Be sure to count this!

Shifts in Labor Demand

Product Demand Elasticity	MPP	P	MVP=MPP*P	Labor Demand
Workers' physical productivity rises.				
relatively elastic	↑	↓ a little	↑	↑
relatively inelastic	↑	↓ a lot	↓	↓
Workers' physical productivity falls.				
relatively elastic	↓	↑ a little	↓	↓
relatively inelastic	↓	↑ a lot	↑	↑
Product demand rises.				
any	no change	↑	↑	↑
Product demand falls.				
any	no change	↓	↓	↓

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Weeks 3-4: Labor Market Regulation and Labor Unions

I. Unemployment As a Labor Surplus
   A. Intuitively, we often think of "unemployment" as a situation where people who are willing and able to work are somehow denied the chance to do so.
   B. At the equilibrium wage, there are neither labor shortages nor surpluses; unemployment is voluntary (not in the sense that it is cause for celebration, but in the sense that people do not want to work more **at the market wage** for jobs they are **able** to do).
      1. Analogy: Voluntary datelessness.
   C. So how is involuntary unemployment possible? *Only if the prevailing wage is too high!*
   D. This is no different from any other surplus good. "Surplus" means "surplus at the current price."
   E. More generally, there are only three possibilities:
      1. Market wage=equilibrium wage; the labor market clears.
      2. Market wage<equilibrium wage; there is a labor shortage.
      3. Market wage>equilibrium wage; there is a labor surplus.
   F. Note: there is no case where workers are *both* "under worked" and "underpaid." If they are under worked, they are overpaid; if they are underpaid, they are overworked.
   G. This simple application of S&D runs contrary to almost all popular beliefs about labor. But there can be little doubt that it is correct.
   H. The general solution to all involuntary unemployment boils down to: reduce the market wage until the surplus disappears.
   I. The "buy-back-the-product" fallacy. Does reducing wages "reduce demand"? Of course not. Lower wages may mean less income for employ*ees*, but also mean more income for employ*ers*.

II. Unemployment on the Free Market: Wage Fairness and Unionization
   A. Economists standardly assume that unregulated markets clear. Could this assumption be wrong in labor markets?
   B. Case 1: Wage fairness. There is good evidence that workers regard wage cuts as "unfair."
      1. Review: real versus nominal wages.
   C. Perceived unfairness hurts morale, which typically leads to lower productivity. So employers are reluctant to cut wages when labor demand decreases or labor supply increases.
   D. The result: if equilibrium wage is below prevailing wage, jobs will be "rationed." Qualified, willing labor remains unsold *because workers are overpaid.*

E. Interesting: employees seem to resist *nominal* wage cuts much more fiercely than *real* wage cuts. Nominal wage cuts hardly ever happen; real wage cuts are far more common.
F. How serious would the problem of surplus labor be under laissez-faire? It would definitely exist, but the historical record suggests that it would be fairly mild.
G. Case 2: Unionization. Unions are basically labor cartels; their goal is to push wages up by restricting competition between workers. Unions are "price-fixers."
H. The natural side effect is to create labor surpluses. Ideally (from the union's point of view), the surplus workers won't belong to the union anyway, so none of the members suffer. In practice, though, the unemployment often spills over onto union members.
I. In economic terms, what are "scabs"? They are workers who undersell the cartel. If enough scabs exist, unions have little success.
J. Assuming the government prevents violence and threats of violence, it is difficult - though not impossible - for unions to keep wages up. They succeed best when:
    1. Labor demand and labor supply are highly inelastic. Small, highly skilled craftsmen are a good example.
    2. The social stigma of "being a scab" is very high.
K. Under laissez-faire, involuntary unemployment created by unions would again exist, but not much of it. As long as employers can legally hire non-union workers, and non-union workers feel physically safe to accept such offers, market forces sharply check the power of unions.

III. Unemployment on the Free Market: Corrective Government Policy
A. Is there anything government could do about the preceding problems? In principle, yes.
B. For real wage rigidity, intervention could help by pushing wages *down*. If workers blame the government instead of the employer, presumably they don't blame the employer for being "unfair."
C. For nominal rigidity, the government has an easier solution: print more money to raise the price level until the nominal wage clears the market. If workers are clueless, they may never "see what hit them."
D. Similarly, unions might be banned, much as other cartels are illegal under the antitrust laws.

IV. Government Policy in the Real World, I: The Minimum Wage
A. In the real world, government policies bear little resemblance to the kinds of "corrections" economic theory points toward.
B. It is almost impossible to find governments that try to force wages *down*. Instead, governments around the world deliberately push wages *up* and prevent market adjustment.
C. Classic example: the minimum wage.

D. Suppose the equilibrium wage is $10/hr. If the government imposes a minimum wage of $15/hr., there will be unemployment. Employers will want to hire fewer people than want to work at the market wage.

E. Simple question for proponents: Why not $1,000,000/hour?

F. Interesting: Unions of skilled workers often support the minimum wage strongly. Altruism for unskilled workers, or masked self-interest?

G. In the U.S., the minimum wage itself is fairly low (less than 5% of the U.S. workforce earns it). In other countries like France, the minimum wage affects a large percentage of the workforce.

H. Even though most governments deliberately try to push wages up, at the same time many also try to erode real wages by inflating. (Whether they think of it in these terms is another matter).

I. Yet reducing unemployment with inflation often fails. Employed workers catch on and negotiate cost-of-living adjustments, leading to spiraling inflation.

J. In some cases, one arm of the government actively tries to undo the harm done by the other arm. One branch raises the (nominal) minimum wage, the other tries to reduce the (real) minimum wage via inflation!

   1. What does the real minimum wage look like when inflation is always positive?

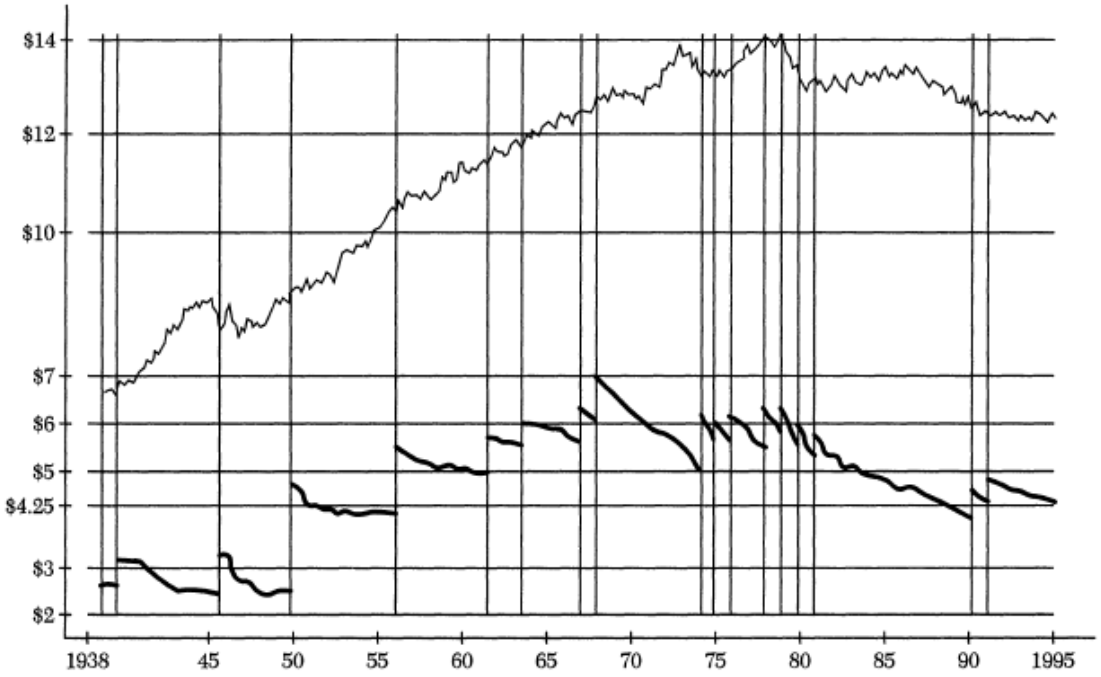


Figure 2. U.S. Real Minimum Wages and Average Wages of Manufacturing Production Workers, $1995

V. Government Policy in the Real World, II: Pro-Union Laws
   A. It is much more common for governments to encourage unionization than it is to make it illegal. Pro-union efforts by governments take a variety of forms.
   B. One of the most common is to "look the other way" in the face of union violence against strike-breakers, employer property, etc. Laws limiting union liability serve the same function.
   C. Some more explicit regulations:
      1. Require employers to "recognize" and "bargain in good faith" with any union that gains the support of a majority of workers in a firm.
      2. Making it illegal to fire workers for striking or union organizing.
      3. Banning "yellow dog" contracts, where employees are non-union as a condition of employment.
   D. When governments strictly enforce pro-union regulations, levels of unionization - and unemployment - can reach high levels.
   E. Other countries with the same laws on the books may escape most of the bad effects by weak enforcement.
      1. Alternate book title: "Why U.S. Unemployment Is So Low"

VI. Additional Labor Market Regulations
   A. There are numerous other laws that work much like the minimum wage. Even if their short-run effect is to increase labor demand, the long-run effect is exactly the opposite.
   B. What happens if the government adopts the following measures, while forbidding wages to fall? (Alternately, if strong unions prevent wages from falling).
   C. Case 1: Mandated benefits. What if the government mandates new benefits (safety, health, family leave, etc.) and forbids wages to fall?
   D. Case 2: Regulations against lay-offs and firing. How will employers respond if they know that they must continue employing workers they don't need? Are bad at their job?
   E. Case 3: Plant-closing laws. What if the government penalizes firms for (or forbids) closing plants?
   F. Case 4: Employment lawsuits. What if employees can sue their employers for discrimination, harassment, unfair termination, etc.?
   G. Case 5: Mandatory overtime. What if employers are legally required to pay "time-and-a-half" for overtime?
   H. How do these results change if wages are flexible?
   I. Related regulation: Unemployment insurance, welfare, and so on reduce the supply of labor. If they are generous enough, they can "convert" involuntary unemployment into voluntary unemployment. This in turn reduces downward pressure on wages.
      1. How can this be graphed?

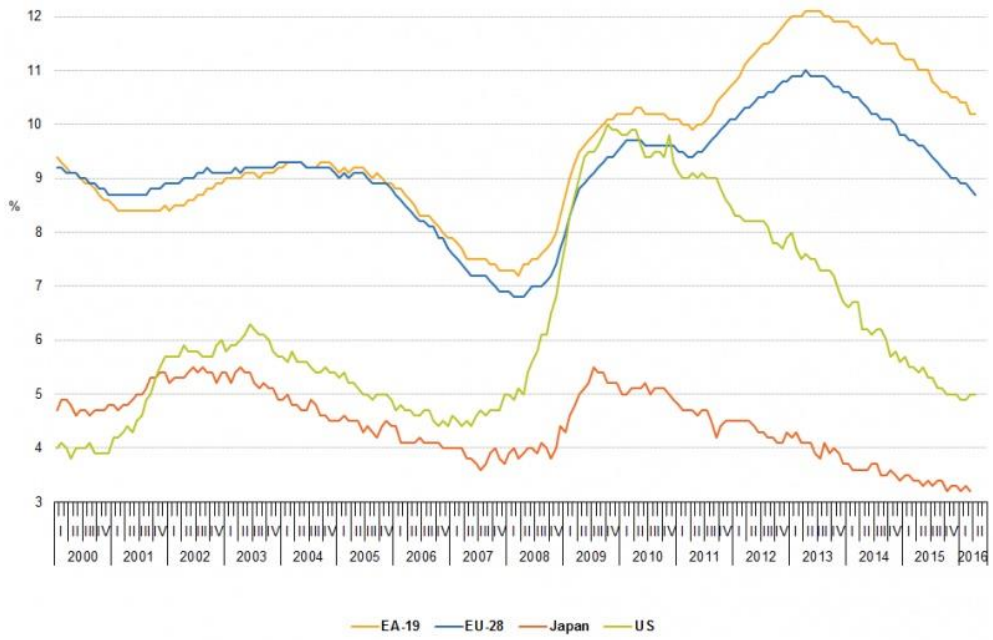
VII. Application: European Unemployment

A. Labor market regulations in Europe are typically very strict. Over the last twenty years, the average U.S. unemployment rate has been roughly 6%, versus 9% for Europe.
B. Most economists blame European countries' stricter labor market regulations.
C. What have European labor policies been like?
    1. High legal minimum wages. (E.g. 34% of median in U.S. vs. 60% in France).
    2. High unemployment/welfare benefits with long durations.
    3. Firing/layoff regulations.
    4. Mandatory benefits (vacation, sick leave, maternity leave, etc.) (How does the interaction between mandatory benefits and nominal and real rigidity work?)
    5. High unionization rates with strong legal support for unions. (Note: In some countries like France, non-union workers still have their wages determined by union negotiations).
D. Apologists for European labor marker were quick to note that in March 2009, U.S. unemployment surpassed Europe's. But:
    1. This was only a blip. European unemployment is once again more than 2 percentage-points worse than ours.
    2. You should *expect* more flexible labor markets to respond more rapidly to negative shocks. The key question is long-run performance.

FIGURE 2
Unemployment Rate in the United States and EU-15, 1993-2009

Source: Eurostat (2009).

E. What happened since? What you'd expect. U.S. has recovered, EU has not. And European exceptions have relatively free labor markets.



VIII. Occupational Licensing

A. Most econ textbooks discuss labor unions at length, but at least in the United States, occupational licensing is much more important.
   1. Almost 30% of American workers now need a license to legally do their jobs. Only about 12% belong to unions – and more than half of them are government employees.

B. Licensing clearly raises the wages of licensed workers; they make about 15% more than you'd otherwise expect. (Roughly as big a bonus as unionized workers get).

C. People often claim that occupational licensing raises quality and protects the public, but:
   1. For many licensed occupations – barber, interior decorator, athletic trainer – this argument fails the laugh test.
   2. The average study of the effect of licensing on quality finds a moderately *negative* effect on quality. (Not so surprising: Licensing inhibits innovation).
   3. Higher quality is often not worth the extra price. Markets (or government *certification*!) let consumers decide for themselves. Licensing makes everyone pay full price.

D. Unregulated markets have simple mechanisms to ensure quality:
   1. Reputation
   2. Guarantees
   3. Lawsuits (much less important, but a useful last resort)

E. We already heavily rely on these mechanisms – see eBay and Amazon Marketplace. Why can't we rely on them in labor markets?

F. Medical licensing: Is this really such a hard case after all?
   1. Medical licensing clearly raises medical prices.

2. *Many* medical tasks now performed by doctors could easily be performed by less-trained (and cheaper) workers. The same goes for other medical professionals.
3. HMOs and insurance companies make reputation work much effective than you'd initially think.

IX. Regulation Under Slavery
- A. A great deal of supposedly "pro-labor" regulation is actually counter-productive. Would the same hold under slavery?
- B. For the most part, no. Under slavery, the popular intuition turns out to be exactly correct.
- C. Example #1: A minimum wage for slaves. If enforced, this means that slaves get more than subsistence. At the same time, it decreases the demand for slaves, which reduces the incentive to hunt for additional slaves.
- D. Example #2: Worker health and safety regulation for slaves. Due to regulation, slaves have more safety and health, and still receive the same subsistence earning they would have gotten anyway. This also reduces the demand for slaves, which hurts the slave trade.
- E. Example #3: Banning or regulating the punishments that owners can inflict on slaves.
- F. Example #4: Boycotting products of slave labor.
- G. With sufficiently strict regulation, slave-owners will want to free their slaves! Thus, the "Why not a minimum wage of $1,000,000?" argument can be easily answered under slavery: "The higher the better."

X. Slavery and "Wage Slavery" Compared
- A. Socialists and defenders of slavery alike have frequently derided free labor markets as "wage slavery," equating the condition of slaves and free laborers.
- B. This had cache in the emerging industrial economies like the U.S. and Britain in the 19th century. (E.g. Dickens) It remains a popular way of thinking about life for workers in the Third World.
- C. As workers - free or slave - become more productive, labor demand rises. The difference:
  1. Free laborers capture the benefits of rising labor productivity for themselves.
  2. Under slavery, in contrast, it is slave-owners who capture the benefits of rising labor productivity. Slave-owners don't have to worry that slaves will leave them for a better-paying offer.
- D. Free workers also get to make their own trade-off between income and safety and comfort. When a master decides to send his slave to mine diamonds, he only maximizes his expected income. A free worker makes a trade-off between expected income and safety and comfort.
- E. The toned-down version of the "wage slavery" story is that free workers are "exploited." It is easy to see how slaves are exploited:

They get less than their free market wage. In what sense are free workers exploited?

F. Ex: Western observers look at "sweatshops" in poor countries and cry "exploitation." This is both false and harmful for Third World workers:
   1. False: Investing in the Third World is not especially profitable; otherwise everyone would do it. (How much do *you* invest in the Third World?)
   2. Harmful: If boycotts reduce the demand for Third World products, labor demand for Third World labor falls.

XI. Why the Standard History of Labor Is Wrong

A. Most history books tell a story something like this:
   1. In the days before the minimum wage, unions, etc., life was terrible for workers because employers paid them whatever they felt like paying them.
   2. But then government became more progressive, and changed the laws.
   3. Life is now better for workers because employers' greed has been tamed.

B. This makes no sense at all. Why?

C. Employers compete with other employers; they care about their own profits, not the profits of employers in general. Workers have always earned their marginal productivity.

D. Why then were workers paid less in the past? Their marginal productivity was lower! As technology progressed, the marginal productivity of workers increased, and labor demand accordingly went up.

E. Suppose government had imposed strict regulations when productivity was low? The result would have been higher wages for the lucky, but permanent unemployment (and probably starvation) for the rest.

F. The problem of workers in the Third World isn't lack of regulation, but low productivity. Of course, low productivity can be a product of a crummy political system, but you can't solve that problem with labor market regulation.

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Weeks 5: Immigration and Immigration Restrictions

I. Immigration and the Labor Market
   A. What happens to the Aggregate Labor Market when people from another country come here to work?
   B. Let's start with the admittedly unrealistic assumption that all workers are identical. Then immigration:
      1. Increases Aggregate Labor Supply.
      2. Has no effect on Aggregate Labor Demand. (There's no reason why immigration would affect MPP, and the central bank continues to target P, so MVP=MPP*P stays the same).
   C. Conclusion: Immigration reduces native wages.
   D. Does this mean that immigration is bad for humanity? Absolutely not. Immigrants clearly gain from immigration; otherwise they wouldn't come.
      1. If immigrants have a low standard of living here, imagine how awful it was in their country of origin.
   E. Does this mean that immigration is bad for Americans? Not for American *employers* of labor – including everyone who owns stock or a retirement stock, or who hires a nanny, housekeeper, or elder care professional.
   F. Immigration also helps anyone who owns a home or land - more people means higher housing prices.
      1. Most estimates say that if immigrants raise population in an area by 1%, housing prices go up by roughly 1%.
      2. Note: What is the nationality of almost all the owners of U.S. real estate?

II. Immigration and Comparative Advantage
   A. In the real world, native workers and immigrant workers are *far* from identical.
      1. Most obvious difference: Current immigrants tend to be either low-skilled or high-skilled compared to Americans. Potential immigrants tend to be very low-skilled compared to Americans.
      2. Slightly less obvious difference: Holding overall skill constant, natives usually speak much better English.
   B. These facts imply that immigration can actually raise American wages. Why? Comparative advantage: People with different skills produce more *total* output if they specialize and trade.
   C. Simple example: Many highly educated American women stay home with their kids because it is so expensive to hire a nanny.

Many women in Mexico know how to take care of children, but have little education.

D. Suppose that in a day, American and Mexican women can produce:

	American Woman	Mexican Woman
Computer Programs Written	4	.1
Children Cared For	2	2

E. Both sides can increase production by immigration and specialization! Have ten Mexican women switch from writing computer programs to childcare (-1 program, +20 childcares), and one American woman switch from childcare to computer programs (+4 programs, -2 childcares). The world is richer by 3 programs and 18 childcares.

F. How can we show this in an Aggregate Labor Market diagram? Thanks to comparative advantage, trade effectively raises MPP. Suppose that post-immigration, computer programs and childcare have equal prices. Then immigration effectively changes the productivity table to:

	American Woman	Mexican Woman
Computer Programs Written	4	2 (by trading childcare for programs)
Children Cared For	4 (by trading programs for childcare)	2

G. Implication: immigration increases *both* ALS and ALD. Therefore:
   1. The effect on average native wages is now ambiguous.
   2. The effect on world living standards is clearly positive.

III. The Distributional Effects of Immigration on Native Wages

A. Since workers aren't identical, some natives can lose even if most gain, and some natives can gain even if most lose.

B. Natives tend to lose when they're *selling* the same skills that immigrants are selling. Natives tend to gain when they're *buying* the same skills that immigrants are selling.
   1. People often claim that economics professors favor immigration because we don't have to worry about foreign economists coming here to "take our jobs." True or false?

C. In recent decades, the United States has had two main kinds of immigration:
   1. Legal high-skilled immigration.
   2. Illegal low-skilled immigration.

D. Economists have estimated the effects of this immigration on native wages. Let's look at two sets of estimates:
   1. Borjas and Katz, for Mexican immigration from 1980-2000.
   2. Ottaviano and Peri, for 1990-2006.

E. Borjas and Katz break workers into four educational/skill categories. Key assumption: Natives and immigrants with the

same education level are identical. Estimates of the *total* effect of immigration on native wages:

Worker Type	**Short-Run**	**Long-Run**
High school dropouts	-8.4%	-4.8%
High school graduates	-2.2%	+1.2%
Some college	-2.7%	+0.7%
College graduates	-3.9%	-0.5%
All native workers	*-3.4%*	*0.0%*

F. Borjas is probably the most respected critic of immigration in the world. But his estimates are shockingly positive compared to what normal people think. Even dropouts only lose 4.8% total (not per year).

G. Ottaviano and Peri assume that native and foreign labor are different, even if they have the same level of education. Natives have a comparative advantage in language skills, foreigners have a comparative advantage in non-language skills. Estimates of the *total* effect of immigration on native wages:

Worker Type	**Short-Run**	**Long-Run**
High school dropouts	-0.7%	+0.3%
High school graduates	-0.6%	+0.4%
Some college	0.0%	+0.9%
College graduates	-0.5%	+0.5%
All native workers	*-0.4%*	*+0.6%*

H. Notice: On Ottaviano and Peri's more reasonable assumptions, native workers enjoy long-run gains from immigration. Even native drop-outs slightly gain.

1. The only workers who lose from immigration are earlier immigrants. They suffer quite a bit materially, but don't forget that immigrants are often eager to reunite their families.

IV. Immigration Restrictions and Their Effects

A. Wages are very low in many populous Third World nations. Tens of millions of people would be overjoyed to come to the U.S. and take what Americans see as "bad jobs."

B. Why don't they come? Because it is:

1. Virtually impossible for low-skilled workers to come here legally (unless they already have close family members in the U.S.).
2. Very expensive for low-skilled workers to come here illegally. Smugglers ("coyotes") charge rural Mexicans two *years* income (about $3000) to take them across the border. Fees for more distant countries are vastly higher.

C. Immigration restrictions probably have more effect on labor markets than *all other government policies combined*. They clearly "work" in the sense that they drastically reduce immigration.

D. What are the other effects of immigration restrictions?

E. Effect #1: Drastically reducing world output. Immigration laws prevent workers from moving to the most productive locations in the world to do whatever they do best. Rough estimates say that world output would DOUBLE under open borders.

F. Effect #2: Drastically increasing world poverty. Merely moving from a Third World country massively increases workers' income. People from the poorest countries typically gain 1000% or more. One immigrant can keep a large extended family alive back home.

G. Effect #3: Reducing average American income. Low-skilled Americans who don't own a home or other assets may gain from immigration restrictions, but only a small minority of Americans are in this category.

H. Effect #4: Shielding American eyes from the sight of severe poverty. Conditions in many populous Third World countries are awful, so we should expect immigrants to keep coming here even if their living standards seem very low to us. Open borders would drastically reduce global poverty, but make remaining poverty much more visible.

V. Arguments for Immigration Restrictions

A. All First World countries severely restrict immigration. Economically, however, these policies are a disaster. Why would anyone favor them?

B. Argument #1: Immigration restrictions prevent American poverty.

C. Response: The net effect of immigration on Americans' standard of living is probably positive. (See above).

D. Argument #2: Immigration restrictions protect American taxpayers.

E. Response: Immigrants don't just collect benefits; they also pay taxes. Estimates of the net fiscal effect of immigration vary, but no major study finds a large negative effect on American taxpayers.

F. Implausible? Remember:

1. A lot of government spending – like the military and interest on the national debt – is "non-rival." Immigration means we can average these expenses over a larger number of taxpayers.
2. Government spends far more on the old than the poor. Immigrants tend to be young, so even the low-skilled collect a lot less than you'd think.
3. Adult immigrants' own governments have already paid for most of their education, so our taxpayers don't have to.

G. Argument #3: Immigration restrictions protect American culture.

H. Response: Markets provide strong incentives to learn English. The vast majority of second-generation immigrants are fluent. And America's cultural centers have unusually high foreign-born populations.

I. Argument #4: Immigration restrictions protect American liberty.

J. Response: Immigrants are no more than modestly less pro-liberty than natives – and they have low voter turnout. Immigrants also probably reduce native support for the welfare state, because people don't like paying taxes to help out-groups.

VI. Alternatives to Immigration Restrictions
- A. Even if the preceding complaints are valid, there are certainly cheaper, more humane solutions than immigration restrictions.
- B. Immigration and American poverty: If immigrants are reducing the living standards of low-skilled Americans, there's no need to reduce immigration. We could simply charge immigrants an admission fee or extra taxes, then use the revenue to compensate low-skilled Americans.
- C. Immigration and American taxpayers: If immigrants aren't paying their way, we could restrict immigrants' eligibility for various government benefits.
- D. Immigration and American culture: If immigrants aren't learning our language and/or culture, we could make passing grades on language or "cultural literacy" tests a condition of entry.
- E. Immigration and American liberty: If immigrants are bad voters, we could restrict their right to vote.
- F. If any of these alternatives to immigration restrictions seem unfair, they're clearly *less* unfair than preventing people from coming at all.

VII. Why the Standard Story of Immigration Is Wrong
- A. The standard story of immigration: In earlier times, when America was underpopulated, free immigration was a good idea. Once the economy matured, however, immigration restrictions became necessary. Without these restrictions, our economy and our society would collapse.
- B. This story makes little sense.
- C. Most of the United States remains virtually empty, so why aren't we still "underpopulated"? Wages are much higher now than they were in the 19th-century, so economically speaking we're more underpopulated than ever.
- D. Immigration restrictions weren't imposed because the "economy matured." They were imposed because of racial and ethnic prejudice: first against the Chinese and Japanese, then against Southern and Eastern Europeans.
- E. At the time, most Americans favored immigration restrictions because they were convinced that these unpopular racial and ethnic groups were "inferior" and would remain so. But most Americans were wrong.
  1. Chinese, Japanese, and Southern and Eastern Europeans have been at least as successful as the rest of the population.
  2. Even if most Americans were right, there was no reason to restrict immigration. Comparative advantage implies

mutually beneficial trade even when one side is worse at everything.

F. Open borders would not lead to “economic collapse.” In fact, there are strong reasons to expect open borders to lead to the most rapid economic growth in human history.

G. There’s no good reason to think that open borders would lead to “social collapse” either.
   1. Immigration would probably improve our fiscal outlook by attracting large numbers of young taxpayers to help support our growing retired population.
   2. Immigrants would have a strong incentive to learn English, and make our culture more innovative.
   3. Even if immigrants wanted to vote, few would vote to “kill the goose that lays the golden eggs.”

H. Open borders would however lead to massive economic and social *changes*.
   1. World poverty and inequality would plummet, but we’d have to actually see a lot of the poverty and inequality that remain.
   2. There would be a massive expansion of housing and industries. New cities would spring up almost overnight – like in China today.
   3. At least initially, immigrants would live in very crowded housing and work in jobs we consider awful.
   4. Low-skilled labor would be so cheap that many American natives would hire household servants, drivers, nannies, etc.

I. Something to think about: Getting rid of immigration restrictions is a lot like getting rid of Jim Crow laws.
   1. Like Jim Crow, immigration restrictions deprive vast numbers of people of their basic right to sell their labor to any willing buyer.
   2. Ending immigration restrictions, like ending Jim Crow, will lead to massive economic and social changes.
   3. The friends of Jim Crow predicted the collapse of civilization if these laws were repealed. Friends of immigration restrictions predict the same if we open our borders today.
   4. The doomsayers were wrong then, and they’re wrong now. The end of Jim Crow ultimately led to a richer and better world. There’s every reason to think that the end of immigration restrictions will have the same effect on a far larger scale.

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Weeks 6-7: Human Capital

I. Present Discounted Value (PDV)
   A. What determines the sale value today of a future payment - positive or negative?
      1. Ex: If you issue a certificate that pays $1, 10 years in the future, what could you sell it for today?
      2. Clearly the answer is not $1! No one would pay $1, because they are foregoing 10 years worth of interest.
   B. But how much less? Just figure: "How much money would I have to put in the bank today in order to have $1, 10 years from now?" With a constant interest rate, that comes out to: $1/(1+n)^{10}. If e.g. the interest rate is 10%, then you would need $1/(1.1)^{10}= $1/2.59= $.386. $.386 is what economists call this asset's **present discounted value** (PDV).
   C. Similarly, a future *cost* is less harmful than it seems on its face. If you learn you will need a $1000 operation 30 years from now, ask: "How much money must I put in the bank today in order to have $1000 three decades from now?" If the interest rate is 5%, then the answer is $1000/(1.05)^{30}=$231.38.
   D. One step harder: What is the total amount people will pay for a whole set, or "bundle," of future benefits and costs? Just add up what they would pay for each item separately. That sum is the *income stream's* PDV.
   E. In the real world, people have to make educated *guesses* about <u>both</u> future payments and future interest rates. We can think of something's current market price as its *expected* PDV.
      1. Important: When economists say people "maximize profits," what they actually mean is that they are maximizing PDV. (For 1 period, they are equivalent).
   F. You can apply the PDV formula to virtually anything: houses, land, buildings, stock, bonds, animals, etc. E.g. what is the PDV of a chicken?
   G. General rule: The lower the interest rate, the more the future counts.

II. Rate of Return on Investment
   A. Once you know an asset's PDV, you can calculate your rate of return on this investment.
   B. Ex: If you get $100 in dividends from a stock worth $10,000, and the stock's value doesn't change, what was your rate of return? 1%. If you get $100 in dividends from a stock worth $10, what would you rate of return be then? 1000%.

C. Ex: If you get no dividends from a stock but it rises in price from $400 to $500, what was your rate of return? 25%.

D. In general, the rate of return for a year is:

$$\frac{\text{net income} + \text{change in asset price}}{\text{initial asset price}}$$

E. Basic economic logic suggests that equally risky assets must have the **same** expected rate of return. Otherwise, people would sell the asset with the lower rate of return and buy the asset with the higher rate of return, until their rates of return are equal.

F. Of course, two gambles can have the same expected return, even though one turns out to pay much more than the other. For example, it is not surprising that some people win at blackjack and others lose. But if there are two casinos next to each other, and one gives better odds, something strange is going on.

III. Slaves As Investments

A. What slave-owners like about owning slaves is that the slave can't easily say "no." The owner can threaten violence or death to make the slave do as he is told.

B. But the slave owner still can't give the slave nothing. In order to take advantage of the slave, it is still necessary to provide the slave with his "subsistence" (food, shelter, etc.).

C. They must also pay some costs of “enforcement” - guarding and monitoring the slave.

D. So what is the most a slave-owner would pay to buy a slave? The logic of PDV directly applies: The sale price will equal the PDV of the slave's lifetime earnings, minus the PDV of his subsistence, minus the PDV of enforcement.

E. Similarly, suppose a slave-owner is weighing whether to train his slave to be a metal smith. This means foregone earnings - the slave could have been working instead of training. But it also means higher earnings for the master in the future. The profit-maximizing slave-owner will pick the level of training that maximizes the slave's PDV.

F. Or suppose that a slave-owner is deciding whether to allow his slaves to have children (who are also legally slaves). If a slave has a child, the mother will bring in less income for a while, and the enslaved child will have little productive value for many years; but eventually the master will have two slaves instead of one. The profit-maximizing slave-owner picks whichever PDV is higher.

G. What is the rate of return on a slave? If a slave sells for $3000, produces $300 in net income, and falls to $2850 in value, the rate of return is (300-150)/3000=5%.

H. In an economy with slavery, you would expect investments in slaves would earn the same typical return as anything else.

IV. You As An Investment: Human Capital Theory

A. Putting aside the moral repugnance of slavery, the same logic applies to *your* management of the person *you* own - yourself! This insight is known as **human capital** theory.
B. There are various things you can do with your time. Which is the best investment? Compare PDV!
C. Ex: Should you get another year of school? Add up the PDV of your foregone earnings during school and the extra income you expect to get after you've completed the schooling.
    1. Note: Since you forego earnings first, and get a raise afterwards, education makes less and less sense as interest rates rise.
D. What else can you do for your career, and how do you decide if they are good investments?
    1. Plastic surgery
    2. Speech classes
    3. An Armani suit
    4. A fancy car to impress clients

V. Application: The Rate of Return on Education
A. Are you wasting your time in college? Let's do PDV calculations to find out.
B. Assumption 1: One additional year of school will raise your average salary by $2500/year during your working life; finishing four years of college gives you $10,000 during your working life.
C. Assumption 2: You forego $15,000 worth of labor income for each year of college.
D. Assumption 3: You have to pay $10,000 for school and extra school-related expenses.
E. Assumption 4: The interest rate will be 8% during your lifetime.
F. Assumption 5: You are 18 years old now and will work until you are 68.
G. Conclusion: Putting all this into Excel, we find that going to college has a PDV of $7136 more than the alternative.
H. What if:
    1. The interest rate rose to 9%? PDV falls to -$3978. You'd be better off quitting school and putting your earnings and tuition in the stock market.
    2. Your wage without college rises to $17,000 (but the marginal benefit of college stays the same)? PDV falls to -$18.
    3. The benefit of college were $10,000 for your first 20 years of work, but $30,000 for all remaining years? PDV rises to $41,241.

VI. General Versus Firm-Specific Training
A. People get experience on-the-job, but there are two basic kinds:
    1. General
    2. Firm-specific

B. General skills are skills that you can use in other firms or even other industries. Typing is a good example.
C. Firm-specific training, in contrast, really only has value in a specific firm. A good example is learning the names of your co-workers. You're more productive on that job, but if you quit this knowledge is valueless.
D. Will employers invest in general skills? At first glance, there seems to be little point. After they invest in you, you will be more productive in both your current and alternative jobs. They will have to give you a suitable raise to retain you.
E. On second thought, though, this only means that if you want general training from your firm, *you* will have to pay for it by working for less. Internships are a standard example.
F. What about firm-specific training? By definition, such skills won't help you get a better offer elsewhere. So if a firm gives you some firm-specific training, your productivity rises, but market forces don't force them to give you a corresponding raise. You are more likely to get firm-specific training without a dock in your pay.
G. However, the difference between general and firm-specific training may be weaker than it seems. Why? Firms have reputations for giving raises, and often even have formal pay scales. If one firm pays employees the full value of their firm-specific training, and another doesn't, the latter will not be able to attract employees in the first place.
    1. If this argument is right, then employees will have to accept lower pay for all costly training, but receive their full MVP wherever they work.
H. In the real world, firms often seem to initially overpay (you get your full salary even during the first few weeks or months when you are using up other employee's time by asking questions). Ideas?

VII. Application: Understanding the Life Cycle
A. Most people have a standard life pattern: get school when you're young, then work until retirement. (Alternate pattern involves taking breaks from the labor force to have children).
B. Human capital theory sheds considerable light on this pattern. Why don't people work for 20 years, then go to college, then go back to work for 20 more years?
    1. Because then they would only get to reap the benefits of education for 20 years instead of 40.
    2. Opportunity cost of time is lower when you're younger, so you give up less income.
C. Why retire? After a point, you become a less and less productive worker, and your wage will reflect that. It makes more sense to work doing your most productive years, and enjoy leisure when it's cheaper.

D. Work-hour patterns fit this story too. People work the most hours during their peak-earning years (mid-40's to early 50's).

VIII. Accounting for Compensating Differentials

A. But isn't there any difference between how you regard yourself and how a slave-owner regards a slave? Yes! As discussed earlier, a free worker can factor "fun" and discomfort into their calculations.

B. How can you quantify this? Simple. Ask yourself, "How much extra would someone have to pay me to do this unpleasant task rather than something else?" Or, "How much would I be willing to give up for the extra fun of this other job?"

C. Then, when you calculate PDV, add or subtract these numbers from your income in the appropriate time period.

D. For example, suppose you expect to suffer in an Internet start-up for five years. You figure it would take $30,000/year to compensate your for your suffering. Afterwards, you earn $10,000 extra for the next 20 years in an atmosphere with a normal fun level. With a 10% interest rate, the PDV is -$39,627!

E. Or suppose you are considering relocating from Rochester, NY to Fairfax, VA. You figure that you would be willing to pay $7000 to live in Fairfax rather than Rochester. If it costs $10,000 to move, and you have to take a $6000 pay cut for 10 years, should you move? No, sorry, the PDV of the move is -$2855.

F. In sum, human capital theory does not say that workers care only about money income. Rather, it provides an accounting framework for managing your life.

G. Something to consider: Do you actively dislike school compared to work? Then you should count your "pain and suffering" as one of the costs of attending school.

IX. Education Subsidies: The Failure of Externality Arguments

A. Externalities are *non-excludable* benefits and costs. The basic logic of selfishness then goes:

1. If benefits are non-excludable, then each individual beneficiary gets them whether or not he pays for them.
2. If beneficiaries get the benefits whether or not they pay for them, then they won't pay for them.
3. If providers receive no pay for providing benefits, they won't provide them.
4. Thus, due to non-excludability, potential social benefits don't materialize.

B. Even if a good is partly excludable, less than 100% of the potential social benefits will normally be realized.

1. Caveat: Inframarginal externalities

C. It is easy to see why people see externalities of pollution clean-up. But where are the externalities of education?

D. Most externalities arguments for education amount to the absurdity that anything beneficial is an externality. "We all benefit from

education." How is that different from "We all benefit from steel." Yes, there's a benefit, but doesn't the market pay people to provide that benefit?!

E. The sophisticated externality arguments focus on non-job-related aspects: crime ("Uneducated youth turn to crime,") and political culture ("An educated electorate votes better,") are probably the leading contenders.

F. The crime argument is again weak. We could just as easily increase the severity of punishment. (More on this later!)

G. The political education argument is stronger; there is no clear way to pay people for being smart voters. But you certainly could just restrict the franchise to people with a certain education level! Same effect, and no subsidy needed.

X. Education Subsidies and Credit Market Imperfections

A. A quite different argument concedes that education is a private good, but focuses on "credit market imperfections." In essence, the problem is that it is difficult to credibly promise to repay an educational loan. With a house, they can repossess the house if you default. But they can't repossess your brain if you default on a student loan.

B. Still, the problem is less serious than it sounds. The IRS doesn't take excuses for failure to pay taxes; why couldn't lenders be given a comparable level of legal authority to attach your wages if you default?

C. Even under the current legal regime, your parents or other relatives or an employer could cosign for you. Or schools might loan you money themselves, and refuse to release transcripts for former students who default.

D. Economists who take credit market perfections seriously normally point to the measured rate of return to education. They say that it is unusually large, indicating a failure of credit markets to equalize rates of return on different investments.

E. If you assume that foregone earnings are the *only* cost of education, then on NLSY data the rate of return to education is 12.6% (controlling for no other variables).

F. But this number is surely too high:

1. It costs resources to educate people. Counting these costs would definitely reduce the rate of return.
2. This is an estimate of the average, not the marginal rate of return. (The marginal rate would be lower. Can you explain why?)
3. It does not control for intelligence, which is highly correlated with education.

G. (There's another big problem with return-to-education estimates we'll deal with after the midterm).

XI. Intelligence and Human Capital

A. We all have an intuitive notion of what is means to be "intelligent." Empirical research on intelligence is one of the best-developed areas of psychology.

B. In practical terms, researchers usually measure intelligence with IQ (Intelligence Quotient) or related tests. These tests have come under angry attack on a number of grounds. We'll briefly consider each in turn:
   1. Cultural bias
   2. "There is no one thing that constitutes 'intelligence.'"
   3. Imperfection

C. Complaint #1: "Cultural bias." There are large group differences in performance on IQ tests. Jews do about 1 SD better than average, blacks about 1.2 SDs worse. Critics blame this on cultural bias - supposedly, the tests measure familiarity with middle-class lifestyles rather than ability. Unfortunately for this argument, it has been carefully tested and shown to be wrong. If you use IQ tests to predict performance on practical tasks – like ability to drive a tank through an obstacle course – IQ tests actually *over*state the performance of members of groups with low average IQs.

D. Complaint #2: "There is no one thing that constitutes 'intelligence.'" Everyone is good at some things and bad at others, or so the claim goes. Still, the fact is that for a wide range of mental problems, people who are good at some are usually (not always) good at all of them, and vice versa. Think about the SAT Verbal versus Math scores. There are some people who are great at Verbal and terrible at Math, but there are a lot more who are great at both or terrible at both.

E. Complaint #3: Imperfection. There are several varieties of this complaint. One is that the same person has received very different test scores at different times. Another is that world-renowned geniuses (Feynman is a common example) got low IQ scores. All this may be true, but it's irrelevant. IQ scores are more reliable than anything else, and if you tested 100 geniuses their average score would be very high.

F. Intelligence is a lot like "strength." There is some ambiguity, but at root we know what we mean, we know there are real differences, and we know that people who are strong by one measure are usually strong by other measures, too.

G. There is a second debate about the extent to which IQ is hereditary or environmental. There is no time to resolve this here, but evidence from carefully-constructed twin and adoption studies finds that the variance is about 80% genetic. Unclear where the remaining 20% comes from - it doesn't seem to be family environment.

H. Why do I bring all this up? Because controlling for IQ sharply reduces the measured return to education to a mere 7.5%. (1 extra

percentile of IQ bumps you up .7%; a year of education is thus worth about as much as 11 percentiles of IQ).

I. This is actually the central argument of the much-maligned book *The Bell Curve* by Charles Murray and Richard Herrnstein: The market pays a lot for intelligence. Intelligence isn't the whole story, but it is on par with education in explanatory power.

XII. Personality, Culture, and Human Capital

A. Another well-developed field in psychology is the study of *personality*. To my knowledge, unfortunately, there is little cross-over between this literature and labor economics.

B. My hypothesis: What the main personality tests call Conscientiousness is probably another important determinant of income. Ignoring it probably leads us to over-state the effect of education. (In contrast, IQ and Conscientiousness are roughly unrelated).

1. Note for the curious: In the popular Myers-Briggs personality test, Conscientiousness is captured by the Judging-Perceiving axis.

C. Curious about your personality? You can take the Myers-Briggs test at: http://www.keirsey.com/cgi-bin/keirsey/newkts.cgi and the Five-Factor test at: http://cac.psu.edu/~j5j/test/ipipneo1.htm

D. Sowell presents a great deal of historical evidence on the economic importance of culture. This is a complicated issue, though, because culture is hard to measure. Many leap to the conclusion that unexplained group differences must stem from "discrimination."

E. We'll deal with discrimination later. But: Let us suppose, as I guess most Americans do, that *religious* discrimination is no longer important in the U.S.

F. What are the labor income differences for different religions, controlling for education, experience, and intelligence?

Religious Background	**Earnings Residual**
None	0
Protestant	232
Baptist	-615
Episcopalian	2,388
Lutheran	-97
Methodist	-912
Presbyterian	-1,572
Roman Catholic	1,588
Jewish	11,939
Other	-483

G. Maybe this reveals massive discrimination in favor of Jews, mild discrimination in favor of Episcopalians and Catholics, and mild discrimination against Presbyterians and Methodists, but I doubt it.

Rather, I'd say that much of this represents various cultural differences that have made some denominations more economically prosperous than others.

	A	B	C	D	E	F	G	H
1	Age	Period	Net Flow	PDV		Net Flow	PDV	Dif
2	18	0	0	0	1.12559052	15000	15000	-15000
3	19	1	0	0		15000	13326.3383	-13326.34
4	20	2	0	0		15000	11839.4195	-11839.42
5	21	3	0	0		15000	10518.4072	-10518.41
6	22	4	24112.6433	15021.8395		15000	9344.7902	5677.049
7	23	5	24112.6433	13345.741		15000	8302.12235	5043.619
8	24	6	24112.6433	11856.6573		15000	7375.79272	4480.865
9	25	7	24112.6433	10533.7217		15000	6552.82059	3980.901
10	26	8	24112.6433	9358.3959		15000	5821.67359	3536.722
11	27	9	24112.6433	8314.20996		15000	5172.1061	3142.104
12	28	10	24112.6433	7386.53163		15000	4595.0157	2791.516
13	29	11	24112.6433	6562.36128		15000	4082.31557	2480.046
14	30	12	24112.6433	5830.14975		15000	3626.82122	2203.329
15	31	13	24112.6433	5179.63652		15000	3222.14976	1957.487
16	32	14	24112.6433	4601.70589		15000	2862.63051	1739.075
17	33	15	24112.6433	4088.25929		15000	2543.2255	1545.034
18	34	16	24112.6433	3632.10175		15000	2259.45889	1372.643
19	35	17	24112.6433	3226.8411		15000	2007.35423	1219.487
20	36	18	24112.6433	2866.79841		15000	1783.37877	1083.42
21	37	19	24112.6433	2546.92836		15000	1584.39392	962.5344
22	38	20	24112.6433	2262.74859		15000	1407.61129	855.1373
23	39	21	24112.6433	2010.27687		15000	1250.55361	759.7233
24	40	22	24112.6433	1785.97531		15000	1111.02003	674.9553
25	41	23	24112.6433	1586.70074		15000	987.05525	599.6455
26	42	24	24112.6433	1409.66072		15000	876.922144	532.7386
27	43	25	24112.6433	1252.37438		15000	779.077408	473.297
28	44	26	24112.6433	1112.63764		15000	692.149939	420.4877
29	45	27	24112.6433	988.492369		15000	614.921615	373.5708
30	46	28	24112.6433	878.198913		15000	546.31023	331.8887
31	47	29	24112.6433	780.211719		15000	485.354329	294.8574
32	48	30	24112.6433	693.157686		15000	431.199731	261.958
33	49	31	24112.6433	615.81692		15000	383.087565	232.7294
34	50	32	24112.6433	547.10564		15000	340.343632	206.762
35	51	33	24112.6433	486.060988		15000	302.368958	183.692
36	52	34	24112.6433	431.827543		15000	268.631401	163.1961
37	53	35	24112.6433	383.645328		15000	238.658195	144.9871
38	54	36	24112.6433	340.839161		15000	212.029323	128.8098
39	55	37	24112.6433	302.809197		15000	188.371632	114.4376
40	56	38	24112.6433	269.02252		15000	167.353606	101.6689
41	57	39	24112.6433	239.005673		15000	148.680717	90.32496
42	58	40	24112.6433	212.33803		15000	132.091302	80.24673
43	59	41	24112.6433	188.645895		15000	117.352892	71.293
44	60	42	24112.6433	167.597267		15000	104.258956	63.33831
45	61	43	24112.6433	148.897192		15000	92.6260074	56.27118
46	62	44	24112.6433	132.283623		15000	82.2910338	49.99259
47	63	45	24112.6433	117.523754		15000	73.1092102	44.41454
48	64	46	24112.6433	104.410753		15000	64.9518711	39.45888
49	65	47	24112.6433	92.7608677		15000	57.704707	35.05616
50	66	48	24112.6433	82.4108468		15000	51.2661631	31.14468
51	67	49	24112.6433	73.2156548		15000	45.5460154	27.66964
52	68	50	24112.6433	65.0464388		15000	40.4641072	24.58233
53	Total PDV			134113.577			134113.577	2.49E-07

G.

	A	B	C	D	E	F	G	H
1	Age	Period	Net Flow	PDV		Net Flow	PDV	Dif
2	18	0	-15000	-15000	1.06537277	15000	15000	-30000
3	19	1	-15000	-14079.5789		15000	14079.5789	-28159.16
4	20	2	-15000	-13215.6361		15000	13215.6361	-26431.27
5	21	3	-15000	-12404.7061		15000	12404.7061	-24809.41
6	22	4	24112.6433	18717.0952		15000	11643.5359	7073.559
7	23	5	24112.6433	17568.5879		15000	10929.0722	6639.516
8	24	6	24112.6433	16490.5546		15000	10258.4489	6232.106
9	25	7	24112.6433	15478.671		15000	9628.97605	5849.695
10	26	8	24112.6433	14528.878		15000	9038.12854	5490.749
11	27	9	24112.6433	13637.3656		15000	8483.53626	5153.829
12	28	10	24112.6433	12800.5576		15000	7962.97454	4837.583
13	29	11	24112.6433	12015.0974		15000	7474.35522	4540.742
14	30	12	24112.6433	11277.8341		15000	7015.71827	4262.116
15	31	13	24112.6433	10585.8104		15000	6585.22393	4000.586
16	32	14	24112.6433	9936.25014		15000	6181.14532	3755.105
17	33	15	24112.6433	9326.54786		15000	5801.86155	3524.686
18	34	16	24112.6433	8754.25776		15000	5445.85116	3308.407
19	35	17	24112.6433	8217.08419		15000	5111.68608	3105.398
20	36	18	24112.6433	7712.87235		15000	4798.02583	2914.847
21	37	19	24112.6433	7239.59965		15000	4503.61221	2735.987
22	38	20	24112.6433	6795.36763		15000	4227.26423	2568.103
23	39	21	24112.6433	6378.39431		15000	3967.87335	2410.521
24	40	22	24112.6433	5987.00707		15000	3724.39906	2262.608
25	41	23	24112.6433	5619.63589		15000	3495.8647	2123.771
26	42	24	24112.6433	5274.80713		15000	3281.35352	1993.454
27	43	25	24112.6433	4951.13754		15000	3080.00505	1871.132
28	44	26	24112.6433	4647.32878		15000	2891.01161	1756.317
29	45	27	24112.6433	4362.16215		15000	2713.61507	1648.547
30	46	28	24112.6433	4094.49374		15000	2547.10383	1547.39
31	47	29	24112.6433	3843.24984		15000	2390.80996	1452.44
32	48	30	24112.6433	3607.42263		15000	2244.1065	1363.316
33	49	31	24112.6433	3386.0661		15000	2106.40497	1279.661
34	50	32	24112.6433	3178.29232		15000	1977.15299	1201.139
35	51	33	24112.6433	2983.26783		15000	1855.8321	1127.436
36	52	34	24112.6433	2800.21032		15000	1741.95564	1058.255
37	53	35	24112.6433	2628.38548		15000	1635.06679	993.3187
38	54	36	24112.6433	2467.10405		15000	1534.73679	932.3673
39	55	37	24112.6433	2315.71907		15000	1440.56318	875.1559
40	56	38	24112.6433	2173.62329		15000	1352.1682	821.4551
41	57	39	24112.6433	2040.24671		15000	1269.19726	771.0495
42	58	40	24112.6433	1915.0543		15000	1191.31753	723.7368
43	59	41	24112.6433	1797.54388		15000	1118.21661	679.3273
44	60	42	24112.6433	1687.24406		15000	1049.60126	637.6428
45	61	43	24112.6433	1583.71239		15000	985.196253	598.5161
46	62	44	24112.6433	1486.53357		15000	924.743225	561.7903
47	63	45	24112.6433	1395.31778		15000	867.99968	527.3181
48	64	46	24112.6433	1309.69911		15000	814.737999	494.9611
49	65	47	24112.6433	1229.33413		15000	764.744529	464.5896
50	66	48	24112.6433	1153.90046		15000	717.818729	436.0817
51	67	49	24112.6433	1083.09551		15000	673.772362	409.3231
52	68	50	24112.6433	1016.63524		15000	632.428742	384.2065
53	Total PDV			234779.135			234779.135	-1.14E-07

	A	B	C	D	E	F	G	H
1	Age	Period	Net Flow	PDV		Net Flow	PDV	Dif
2	18	0	-15000	-15000	1.03016849	15000	15000	-30000
3	19	1	-15000	-14560.7249		15000	14560.7249	-29121.45
4	20	2	-15000	-14134.314		15000	14134.314	-28268.63
5	21	3	-15000	-13720.3905		15000	13720.3905	-27440.78
6	22	4	20032.0371	17786.5644		15000	13318.5888	4467.976
7	23	5	20032.0371	17265.6847		15000	12928.5539	4337.131
8	24	6	20032.0371	16760.059		15000	12549.9411	4210.118
9	25	7	20032.0371	16269.2406		15000	12182.416	4086.825
10	26	8	20032.0371	15792.7958		15000	11825.6539	3967.142
11	27	9	20032.0371	15330.3037		15000	11479.3395	3850.964
12	28	10	20032.0371	14881.3557		15000	11143.167	3738.189
13	29	11	20032.0371	14445.5551		15000	10816.8393	3628.716
14	30	12	20032.0371	14022.5169		15000	10500.0681	3522.449
15	31	13	20032.0371	13611.8674		15000	10192.5735	3419.294
16	32	14	20032.0371	13213.2438		15000	9894.08395	3319.16
17	33	15	20032.0371	12826.2939		15000	9604.33565	3221.958
18	34	16	20032.0371	12450.6758		15000	9323.07262	3127.603
19	35	17	20032.0371	12086.0577		15000	9050.04639	3036.011
20	36	18	20032.0371	11732.1174		15000	8785.01572	2947.102
21	37	19	20032.0371	11388.5423		15000	8527.74649	2860.796
22	38	20	20032.0371	11055.0287		15000	8278.01138	2777.017
23	39	21	20032.0371	10731.2822		15000	8035.58977	2695.692
24	40	22	20032.0371	10417.0165		15000	7800.26748	2616.749
25	41	23	20032.0371	10111.9541		15000	7571.8366	2540.118
26	42	24	20032.0371	9815.82548		15000	7350.09532	2465.73
27	43	25	20032.0371	9528.36897		15000	7134.84773	2393.521
28	44	26	20032.0371	9249.33063		15000	6925.90368	2323.427
29	45	27	20032.0371	8978.46393		15000	6723.07855	2255.385
30	46	28	20032.0371	8715.52956		15000	6526.19315	2189.336
31	47	29	20032.0371	8460.29523		15000	6335.07355	2125.222
32	48	30	20032.0371	8212.53543		15000	6149.55088	2062.985
33	49	31	20032.0371	7972.03128		15000	5969.46125	2002.57
34	50	32	20032.0371	7738.5703		15000	5794.64554	1943.925
35	51	33	20032.0371	7511.94622		15000	5624.94931	1886.997
36	52	34	20032.0371	7291.95884		15000	5460.22264	1831.736
37	53	35	20032.0371	7078.41378		15000	5300.31999	1778.094
38	54	36	20032.0371	6871.12239		15000	5145.10009	1726.022
39	55	37	20032.0371	6669.90153		15000	4994.4258	1675.476
40	56	38	20032.0371	6474.57342		15000	4848.16401	1626.409
41	57	39	20032.0371	6284.9655		15000	4706.1855	1578.78
42	58	40	20032.0371	6100.91025		15000	4568.36483	1532.545
43	59	41	20032.0371	5922.24506		15000	4434.58024	1487.665
44	60	42	20032.0371	5748.81208		15000	4304.71353	1444.099
45	61	43	20032.0371	5580.45808		15000	4178.64997	1401.808
46	62	44	20032.0371	5417.03434		15000	4056.27818	1360.756
47	63	45	20032.0371	5258.39645		15000	3937.49005	1320.906
48	64	46	20032.0371	5104.40428		15000	3822.18063	1282.224
49	65	47	20032.0371	4954.92177		15000	3710.24805	1244.674
50	66	48	20032.0371	4809.81686		15000	3601.59341	1208.223
51	67	49	20032.0371	4668.96135		15000	3496.12073	1172.841
52	68	50	20032.0371	4532.23079		15000	3393.73681	1138.494
53	Total PDV			399714.75			399714.75	2.31E-06

	A	B	C	D	E	F	G	H
1	Age	Period	Net Flow	PDV		Net Flow	PDV	Dif
2	18	0	-15000	-15000	0.94485672	15000	15000	-30000
3	19	1	-15000	-15875.423		15000	15875.423	-31750.85
4	20	2	-15000	-16801.937		15000	16801.937	-33603.87
5	21	3	-15000	-17782.5237		15000	17782.5237	-35565.05
6	22	4	15455.0879	19391.3329		15000	18820.339	570.9939
7	23	5	15455.0879	20523.0407		15000	19918.7228	604.3179
8	24	6	15455.0879	21720.7968		15000	21081.21	639.5868
9	25	7	15455.0879	22988.4558		15000	22311.5417	676.9141
10	26	8	15455.0879	24330.0972		15000	23613.6774	716.4199
11	27	9	15455.0879	25750.039		15000	24991.8077	758.2312
12	28	10	15455.0879	27252.8507		15000	26450.3679	802.4828
13	29	11	15455.0879	28843.3687		15000	27994.0519	849.3169
14	30	12	15455.0879	30526.7119		15000	29627.8276	898.8843
15	31	13	15455.0879	32308.2975		15000	31356.953	951.3446
16	32	14	15455.0879	34193.8593		15000	33186.9927	1006.867
17	33	15	15455.0879	36189.4652		15000	35123.8365	1065.629
18	34	16	15455.0879	38301.5378		15000	37173.7173	1127.82
19	35	17	15455.0879	40536.8742		15000	39343.2324	1193.642
20	36	18	15455.0879	42902.6682		15000	41639.3636	1263.305
21	37	19	15455.0879	45406.5336		15000	44069.5006	1337.033
22	38	20	15455.0879	48056.5284		15000	46641.4642	1415.064
23	39	21	15455.0879	50861.181		15000	49363.5314	1497.65
24	40	22	15455.0879	53829.5174		15000	52244.4627	1585.055
25	41	23	15455.0879	56971.0904		15000	55293.5295	1677.561
26	42	24	15455.0879	60296.0105		15000	58520.5445	1775.466
27	43	25	15455.0879	63814.978		15000	61935.8931	1879.085
28	44	26	15455.0879	67539.3178		15000	65550.5666	1988.751
29	45	27	15455.0879	71481.0158		15000	69376.1981	2104.818
30	46	28	15455.0879	75652.7573		15000	73425.0992	2227.658
31	47	29	15455.0879	80067.968		15000	77710.3004	2357.668
32	48	30	15455.0879	84740.8572		15000	82245.5925	2495.265
33	49	31	15455.0879	89686.4633		15000	87045.5712	2640.892
34	50	32	15455.0879	94920.7026		15000	92125.6839	2795.019
35	51	33	15455.0879	100460.42		15000	97502.2799	2958.14
36	52	34	15455.0879	106323.444		15000	103192.662	3130.782
37	53	35	15455.0879	112528.643		15000	109215.144	3313.499
38	54	36	15455.0879	119095.987		15000	115589.107	3506.88
39	55	37	15455.0879	126046.611		15000	122335.064	3711.547
40	56	38	15455.0879	133402.884		15000	129474.726	3928.158
41	57	39	15455.0879	141188.481		15000	137031.069	4157.412
42	58	40	15455.0879	149428.457		15000	145028.412	4400.045
43	59	41	15455.0879	158149.33		15000	153492.492	4656.838
44	60	42	15455.0879	167379.167		15000	162450.549	4928.618
45	61	43	15455.0879	177147.672		15000	171931.412	5216.26
46	62	44	15455.0879	187486.281		15000	181965.592	5520.689
47	63	45	15455.0879	198428.267		15000	192585.383	5842.885
48	64	46	15455.0879	210008.845		15000	203824.96	6183.884
49	65	47	15455.0879	222265.282		15000	215720.497	6544.785
50	66	48	15455.0879	235237.024		15000	228310.276	6926.749
51	67	49	15455.0879	248965.817		15000	241634.813	7331.005
52	68	50	15455.0879	263495.844		15000	255736.99	7758.853
53	Total PDV			4380662.89			4380662.89	-0.000477

	A	B	C	D	E	F	G	H
1	Age	Period	Net Flow	PDV		Net Flow	PDV	Dif
2	18	0	-15000	-15000	0.9972718	15000	15000	-30000
3	19	1	-15000	-15041.035		15000	15041.035	-30082.07
4	20	2	-15000	-15082.1822		15000	15082.1822	-30164.36
5	21	3	-15000	-15123.442		15000	15123.442	-30246.88
6	22	4	17379.7562	17570.7188		15000	15164.8147	2405.904
7	23	5	17379.7562	17618.7864		15000	15206.3005	2412.486
8	24	6	17379.7562	17666.9855		15000	15247.8999	2419.086
9	25	7	17379.7562	17715.3165		15000	15289.613	2425.703
10	26	8	17379.7562	17763.7796		15000	15331.4403	2432.339
11	27	9	17379.7562	17812.3754		15000	15373.3819	2438.993
12	28	10	17379.7562	17861.1041		15000	15415.4384	2445.666
13	29	11	17379.7562	17909.9661		15000	15457.6098	2452.356
14	30	12	17379.7562	17958.9617		15000	15499.8967	2459.065
15	31	13	17379.7562	18008.0914		15000	15542.2992	2465.792
16	32	14	17379.7562	18057.3555		15000	15584.8177	2472.538
17	33	15	17379.7562	18106.7544		15000	15627.4526	2479.302
18	34	16	17379.7562	18156.2884		15000	15670.204	2486.084
19	35	17	17379.7562	18205.9579		15000	15713.0725	2492.885
20	36	18	17379.7562	18255.7633		15000	15756.0582	2499.705
21	37	19	17379.7562	18305.705		15000	15799.1615	2506.544
22	38	20	17379.7562	18355.7832		15000	15842.3827	2513.401
23	39	21	17379.7562	18405.9985		15000	15885.7221	2520.276
24	40	22	17379.7562	18456.3512		15000	15929.1801	2527.171
25	41	23	17379.7562	18506.8416		15000	15972.757	2534.085
26	42	24	17379.7562	18557.4701		15000	16016.4531	2541.017
27	43	25	17379.7562	18608.2371		15000	16060.2688	2547.968
28	44	26	17379.7562	18659.143		15000	16104.2043	2554.939
29	45	27	17379.7562	18710.1882		15000	16148.26	2561.928
30	46	28	17379.7562	18761.373		15000	16192.4362	2568.937
31	47	29	17379.7562	18812.6978		15000	16236.7333	2575.964
32	48	30	17379.7562	18864.163		15000	16281.1516	2583.011
33	49	31	17379.7562	18915.769		15000	16325.6913	2590.078
34	50	32	17379.7562	18967.5163		15000	16370.353	2597.163
35	51	33	17379.7562	19019.405		15000	16415.1368	2604.268
36	52	34	17379.7562	19071.4357		15000	16460.0431	2611.393
37	53	35	17379.7562	19123.6088		15000	16505.0722	2618.537
38	54	36	17379.7562	19175.9246		15000	16550.2246	2625.7
39	55	37	17379.7562	19228.3835		15000	16595.5004	2632.883
40	56	38	17379.7562	19280.9859		15000	16640.9002	2640.086
41	57	39	17379.7562	19333.7322		15000	16686.4241	2647.308
42	58	40	17379.7562	19386.6228		15000	16732.0726	2654.55
43	59	41	17379.7562	19439.6581		15000	16777.8459	2661.812
44	60	42	17379.7562	19492.8385		15000	16823.7445	2669.094
45	61	43	17379.7562	19546.1644		15000	16869.7686	2676.396
46	62	44	17379.7562	19599.6361		15000	16915.9186	2683.718
47	63	45	17379.7562	19653.2542		15000	16962.1949	2691.059
48	64	46	17379.7562	19707.0189		15000	17008.5978	2698.421
49	65	47	17379.7562	19760.9307		15000	17055.1276	2705.803
50	66	48	17379.7562	19814.99		15000	17101.7847	2713.205
51	67	49	17379.7562	19869.1972		15000	17148.5695	2720.628
52	68	50	17379.7562	19923.5526		15000	17195.4822	2728.07
53	Total PDV			819736.122			819736.122	0.00011

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Weeks 8-9: Taxation and Redistribution

I. Taxes and Redistribution: The Basic Facts

A. There are widespread misconceptions about the numbers on taxation and spending. Let's start with some basic facts.

B. For the federal budget in 2015, expenditures are comprised of roughly:

Source	**Share**
Social Security	23.9%
Defense	15.8%
Domestic Discretionary	15.8%
Medicare	17.2%
Net Interest	6.1%
Income Security	8.2%
Medicaid	9.5%
Other Retirement/Disability	4.4%
Other	6.1%
Offsetting receipts	-7.0%

C. Main facts to note: payment for the old add up to 41% of the budget, over twice spending on defense. Payments for the poor come out to something like 18%.

D. For the federal budget in 2015, revenues are comprised of roughly:

Source	**Share**
Individual Income Taxes	47.4%
Payroll Taxes	32.8%
Corporate Income Taxes	10.6%
Excise Taxes/Customs	4.1%
Other	5.1%

E. Main facts to note: most taxes come from the items you see listed on your paycheck - income taxes, social security taxes, and Medicare-type taxes.

II. The Leaky Bucket: The Deadweight Costs of Taxes and Redistribution

A. Taxes and redistribution take wealth from some people and give it to other people. That's pretty obvious, and there's no need to study economics to appreciate it.

B. What's not obvious: The **deadweight costs** of taxation and redistribution. In addition to transferring wealth, they also destroy some wealth in the process.

C. The leaky bucket: in the process of transferring wealth, some "slips out," benefiting no one. (Ice cream in the desert analogy makes the same point).

D. Landsburg on "Why Taxes Are Bad"

E. How can wealth simply be destroyed? Many ways.
   1. The effort of preparing tax forms, along with accountants, tax lawyers, etc.
   2. Production foregone because of taxes
   3. Production foregone because of redistribution
   4. Diversion of effort into less productive - but less taxed - lines of work
   5. Producing things people value less (like medicine) instead of things they value more (like vacations).

F. Basic idea: A tax that can't be avoided ("lump-sum taxes" or "head taxes") merely transfers income. A tax that can be avoided will have deadweight costs because people change behavior to do so.

III. Labor Taxation and Marginal Tax Rates

A. Taxation of labor income is a basic part of the U.S. tax code. As income rises, your assessed tax liability rises too.

B. Key question: When you earn $1 more, how much more in tax do you pay? If the answer is $1, you have a 100% *marginal tax rate*; if the answer is $.25, you have a 25% *marginal tax rate*.

C. What are marginal federal taxes, and what are the cut-points? Here they are for 2016 for single filing status:

Min $	**Max $**	**Marginal Rate**
0	9,275	10%
9,275	37,650	15%
37,650	91,150	25%
91,150	190,150	28%
190,150	413,350	33%
413,350	415,050	35%
415,050	--	39.6%

D. Of course, you pay more than just the federal income tax. You also pay SS tax, state income tax, etc. Adding up all of them (and appropriately adjusting for deductibility!) tells you the critical question: If you work one more hour, what do you earn after taxes?

IV. Leisure Subsidies and Marginal Benefit Reductions

A. The government also subsidizes leisure by paying people who have little or no income. Standard forms are welfare, unemployment insurance, and SS.

B. Analytically, welfare-type programs are surprisingly similar to income taxes. Two aspects:
   1. Give people, say, $500/month if they have $0 income.
   2. REDUCE their welfare payment 1:1 if they earn anything greater than $0.

C. The initial payment makes it feasible to live without working. The greater its size, the fewer people work.

D. The 1:1 reduction feature leaves no incentive to work *more* than zero. So if you go on welfare, you don't work at all.

E. Bottom line: standard welfare programs first increase people's wealth, then raise their marginal tax rates to 100%. Both discourage work.

V. Policy and Labor Supply: Income and Substitution Effects

A. So how do government tax and redistribution programs affect the quantity of labor supplied?

B. Since tax laws apply throughout the economy, not merely isolated sectors, we need to think in terms of Aggregate Labor markets.

C. From the point of view of workers, **proportional** labor income taxation (a "flat tax") is equivalent to a decline in Aggregate Labor Demand. They get paid proportionately less for each hour of work.

D. Does this *necessarily* reduce hours worked? Surprisingly, no.

E. In Aggregate Labor markets, you have to think about both the income and the substitution effects. Higher taxes reduce the return to work; but they also make people poorer, discouraging the consumption of everything - including leisure.

F. Assume - as before - that income and substitution effects balance out, so Aggregate Labor Supply is vertical. Then proportional labor income taxation has NO effect on total hours worked!

1. Absurd? What would you do if the tax rate were 95%?

G. Still, on reflection, the assumption of perfectly vertical labor supply may be too strong. This may be sensible for prime-age males, but it overlooks some less obvious channels, such as:

1. Female labor supply. Married women in particular pay a lot of attention to their after-tax earnings when they decide whether to stay in or re-enter the labor force.
2. Retirement age. People nearing retirement age may be more likely to stop working as tax burdens rise.
3. Others?

H. **Progressive** tax systems - where the marginal tax rate increases - are much more likely to reduce hours worked. Even with roughly equal income and substitution effects, they can reduce hours worked.

I. Hard to graph, but intuitively simple: Progressive rates let people earn enough to be comfortable, but then tax them at ever higher rates on their last hour of work.

1. If female labor supply and retirement age is sensitive to proportional taxation, then they will be even more sensitive to progressive taxation.

J. What about redistribution? Recall that this raises recipients' income AND (progressively) raises their marginal tax rate. This can be decomposed into two effects:

1. Higher tax amounts to a reduction in ALD.
2. Money not to work reduces ALS.

K. Some have argued for simply abolishing welfare due to these effects.

L. A more moderate proposal has been the "negative income tax." The essential idea is to reduce the marginal tax rate on welfare recipients below 100% to leave them with an incentive to work.

VI. Policy, Compensating Differentials, and Human Capital Acquisition

A. While labor taxation probably doesn't have a large effect on the quantity of hours worked, it probably has big effects on the **occupations** people enter.

B. Key feature of tax codes: You pay tax on income, but not "fun." Thus, the higher taxes get, the more people will choose jobs for their "fun," rather than their usefulness to others.

C. More generally, you generally do not pay tax on "non-cash income" such as free meals, coffee, etc. (Though there are some legal limits - on parking to take one example).

D. Suppose everyone received equal pay so long as they worked. Everyone would then do what **they** loved, regardless of whether anyone else liked it. There would be millions of actors, athletes, professors, etc., but few that any wanted to watch.

1. Employers in this example would try to attract more productive workers with enormous non-cash benefits.

E. In my view, the shift into fun and non-cash income is the biggest real-world effect of income taxation. It is particularly harmful that the most talented people face the highest marginal tax rates, and thus the weakest incentive to apply their abilities in a socially useful way.

F. If foregone time is the only cost of human capital acquisition, then proportional taxes don't affect it. Why? You get less, but also lose less.

G. But human capital acquisition does fall if:

1. Taxes are progressive
2. Schooling is costly or unpleasant

H. This effect may take time to reveal itself for life-cycle reasons.

VII. Rationales for Redistribution

A. Rationale #1: Redistribution as a return on investment. For the largest program, SS, people supposedly get money because they previously contributed to the program. They are just being paid a "return on their investment."

B. Problems:

1. If people really want to invest, they can do it on their own.
2. Actual returns don't match contributions very well. The first recipients of SS got a windfall; present recipients get a below-market return.

C. Rationale #2: Redistribution as insurance. Another story is that these are "insurance" programs. People may not actually benefit from them, but they are assured that if they get sick, lose their job, etc., they will be cared for.

D. Problems:

1. If people really want insurance, they can buy it on their own.
2. Premiums and benefits rarely adjust for risk like a real insurance policy. The rich, for example, are extremely unlikely to go on welfare, but pay more to support these programs than the poor.

E. Rationale #3: Egalitarian redistribution. A third account is that redistribution deliberately aims to make poor people better off by making rich people share with them.

F. Problems:
1. Programs that benefit the elderly actually don't do this. Why? Because the rich live longer than the poor on average, so they wind up collecting more money from SS and Medicare.
2. More importantly, if this were the real reason for redistribution, none of it would be spent on the *relatively* poor people in the U.S. It would go to *absolutely* poor people in other countries.

G. Rationale #4: Externalities. Redistribution reduces crime, begging, and so on.

H. Problems:
1. Are the elasticities even close to high enough to make this a good idea?
2. Will the elderly turn to crime?

VIII. Programs Big and Small: The Old Versus the Poor

A. Most redistribution focuses on the elderly: SS and Medicare amount to 35% of the budget. The American poor get about 13% of the budget.

B. Egalitarian arguments cut against old-age programs for demographic reasons: the wealthy on average out-live the poor by over a decade.

C. Moreover, if people wanted to make investments or buy insurance, they could do so on their own.

D. The real argument for old-age programs is mostly *paternalism*: "People aren't rational enough to save for their retirement, so we must force them for their own good." But:
1. Why force foresighted people who *are* planning for their future to participate?
2. Isn't lack of foresight in large part a product of paternalism itself? Spencer quote.

E. Egalitarian arguments also cut against real-world poverty programs, since they help relatively poor Americans, not absolutely poor foreigners.

F. Both kinds of programs have important incentive effects.
1. Old-age programs distort retirement decisions.
2. Poverty programs affect not only work incentives, but are also probably the key to high teen pregnancy.

G. Much of the money spent on the old and poor is for health care, which probably does little to benefit them considering the cost.
H. This is particularly clear for the old: Health care for the elderly is very expensive, but at best slightly lengthens what are probably the worst years of your life.
I. The same basic argument works for the poor. They value health care less than the rich because they have more pressing priorities. Imagine: If you were earning $10,000/year, how much would you want to spend on health care?

IX. Redistribution in Reverse: Immigration Restrictions
A. Actual redistribution looks more like "tribalism": it's not about helping the poor, but "taking care of your own" even if it means harming foreigners.
B. Probably the best example: many favor immigration restrictions because people are "coming here to collect welfare."
1. A simple compromise would be to give immigrants "second-class citizen" status: eligible to work but not collect welfare.
C. Some frankly complain that immigration should be stopped because it hurts wages for low-skilled Americans.
D. Either way, the idea is to help *relatively* poor Americans at the expense of *absolutely* poor foreigners.

X. Why the Standard View of the Welfare State Is Wrong
A. The "standard view" of the welfare state: there is a trade-off between compassion and efficiency. The most compassionate policies would fully take care of the poor, but these would have severe efficiency costs. Real-world policies try to strike a reasonable balance. Life was terrible back in the 19th century before the welfare state existed; only "mean," and "uncaring" people could prefer it to what we have now.
B. This is wrong on several levels.
C. First, most of the welfare state is about helping the old, not the poor.
D. Second, the help for the poor goes to *relatively* poor Americans who are already quite fortunate by global standards.
E. Third, the goal of "helping the (American) poor" is probably the main justification for immigration restrictions that greatly harm poor foreigners.
F. In the 19th century, people had to fend for themselves, but anyone was free to move to the U.S. and try their luck. Policy was far more "compassionate" then than it is now, all things considered.

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Weeks 10-11: Information Economics and Labor

I. Probability
   A. Everyone is familiar with probability to some degree, from rolling dice, playing cards, and so on.
   B. Basic postulate of probability theory: events range from impossible (probability=0) to certain (probability=1).
   C. Probability language allows us to **quantify uncertainty**.
   D. Even though people rarely put a precise number on each event, they almost always have some probabilities in the back of their minds.
   E. When people are asked difficult questions, they often say "I don't know." But what if they HAD to guess? Note: in real life, you have to guess all of the time.
   F. Common sophism: "No one can 'know' X."
      1. If this means "No one can know X **with certainty**," then it's obvious but uninteresting.
      2. If this means "No one has any idea at all about X," then it is clearly false.

II. Search Theory
   A. Must economists assume "perfect information"? Not at all: there is an extremely general theory of economic action under uncertainty, known as "search theory."
   B. Basic assumptions of search theory:
      1. More time and effort spent "searching" increase your probability of successful discovery.
      2. Searching ability differs between people.
      3. People can make a reasonable guess about the probabilities of different events and their ability to influence those probabilities.
   C. Main conclusion: People search so that the marginal cost of searching equals the <u>expected</u> marginal gain of searching.
      1. Qualification: You may need to adjust for a searcher's degree of risk-aversion if they are gambling a lot of their wealth.
   D. The (endless) applications:
      1. Prospecting for gold.
      2. Searching for a job.
      3. Dating.
      4. Rational amnesia.
   E. Main conclusion: If the economics of perfect information doesn't make sense, try search theory. It explains almost everything else.

III. Search Theory and Unemployment

A. In spite of the insight it offers, the supply-and-demand model of labor markets oversimplifies. It assumes that employer and worker characteristics are perfectly known to all.

B. In reality, people have to search for good "matches," where the skills of the worker fit the requirements of the job. These "requirements" are not always easy to quantify; and even when they *can* be quantified, people may pretend (or convince themselves) that they have more skills than they actually do.

C. Such search takes time: interviewing, comparing options, reading the want ads, and even re-locating.

D. Such search can be a frustrating experience for both workers and employers: workers don't have a job, face rejection, etc.; employers spend work hours going over applications, interviewing candidates, don't get their first choice, etc.

E. While S&D captures much of what goes on in labor markets, you need search theory to explain why "finding a job" seems **harder** than "buying a loaf of bread." Matching people to jobs is a tricky business fraught with uncertainty; matching people to loaves of bread is not.

F. What positive function then does job search serve? The better the "fit" between jobs and talents, the greater productivity is. (Imagine randomly assigning people to different jobs!)

G. How much should a worker search? You trade-off between the lost wages of searching, and the potentially higher wage you will earn if you find a good match. Employers make the same trade-off.

H. Insofar as unemployed workers are engaged in useful search activities for unknown opportunities, it makes sense to view them as voluntarily unemployed.

I. It is a much bigger puzzle if workers' best match is obvious, but unemployment persists. With flexible wages, this wouldn't happen - unemployed workers would bid wages down.

IV. The Natural Rate of Unemployment

A. Unemployment will always exist because people have to spend time searching for suitable jobs.

B. At any given time, some people are finding jobs, others are leaving them.

C. What determines the typical level, or "natural rate," of unemployment, where the people getting jobs and losing jobs approximately balance out?

D. Demographics play a key role. Younger people are less certain about what they want to do, and are changing more rapidly. Women are much more likely to quit or start work for family-related reasons. According, more young people and more women typically lead to a higher natural rate of unemployment.

1. This is not a bad thing; remember that search serves a vital economic function.

E. Similarly, more highly educated workers change jobs much less. Being more specialized, they have probably already found a good match. Less educated workers change jobs more; their best use is less certain, and changes more.

F. Regulation can greatly increase the natural rate, as discussed earlier.

V. Job Security: Insurance as a Normal Good

A. One important aspect of jobs is their "security." The more secure a job is, the less likely you are to lose it.

1. Note the close connection to imperfect information.

B. Why do some people have more job security than others? We can understand this using our standard notion of "compensating differentials."

C. Job security is basically a form of insurance that employers offer employees in exchange for lower wages.

D. Better-paid jobs are more pleasant in most ways (as are jobs in richer countries). Simple explanation: Benefits are a normal good; the richer people are, the more they want.

E. Does this work for job security? Yes! Empirically, high-income people have much more job-security than low-income people.

F. Can you make people better-off by legally giving them more job security? In general, no. This just forces them to spend more on job security than they want.

V. Signaling and Education

A. Sometimes, schools teach skills that people eventually use on the job, like reading and writing. In other words, some kinds of schooling make workers more **productive**.

B. But much of what schools teach seems pretty useless, at least from employers' perspective. ("What does this have to do with real life?") Why should they care if you studied Aristotle?

C. And yet, employers do on average pay you more for completing these apparently useless classes. How is this possible?

D. Maybe the point of school isn't to acquire skills, but to show, or **signal**, your pre-existing attributes. Signaling explanations of apparently wasteful behavior have become increasingly popular within economics.

E. Signaling models build on three key assumptions:

1. There are different "types" of people and firms: able and unable, smart and dumb, honest and dishonest, hard-working and lazy...
2. It is difficult to observe "types" directly.
3. However: different types (may) have different costs (lower disutility) of performing the same *observable* activity.

F. So why then would employers pay more to workers who complete useless schoolwork?
    1. Employers want people who are smart, hard-working and/or conform to "the rules."
    2. People who are smart, hard-working and/or conform to "the rules" find it easier/cheaper to get through school.
G. School doesn't improve them; rather, their ability to finish school shows *they were good all along!*
    1. Similarly, people who are dumb, lazy, and or non-conformist have trouble finishing school. They find it too painful to finish, so they don't.

VI. The Signs of Signaling
A. The ubiquity of useless education.
B. The handsome rewards of useless education.
C. In case you're not convinced:
    1. Sheepskin effect
    2. Malemployment and credential inflation
    3. Speed of employer learning
    4. Education premium: personal vs. national
D. You might be signaling if…
    1. You bother to enroll or pay tuition.
    2. You worry about failing the final exam, but not subsequently forgetting what you learned.
    3. You don't think cheating is "only cheating yourself."
    4. You seek out "easy A's."
    5. You rejoice when teachers cancel class.

VII. Criticisms and Replies
A. "We'd just do IQ tests instead."
    1. Reply: Education signals a *package* of traits employers desire: intelligence, work ethic, and conformity.
B. "Employers know true productivity after a few months."
    1. Reply: Researchers find otherwise. In any case, firing aversion and "dehiring" undermine employer learning.
C. "Learning how to learn."
    1. Reply: Educational psychologists find this is mostly wishful thinking.
D. "Character formation."
    1. Reply: Plausible, at least for K-12. But work must be even better, and the experience premium is only 2-3% per year.
E. "There has to be a cheaper way."
    1. Reply: Signaling *has* to be expensive to be an effective. Otherwise everyone would do it.
F. Punchline: Signaling explains some otherwise very puzzling facts, and the a priori objections only apply to the most simple-minded versions of the theory.

VIII. Signaling and Education Subsidies

A. I have already critiqued arguments that education has positive externalities and is under-provided.

B. They look pretty weak. But one point I didn't make at the time was that these arguments assume that education is **productive**.

C. If education is - in part - **signaling**, then the argument for subsidies gets even weaker. The signaling argument suggests that the externalities of education are actually *negative*!

D. Why?
   1. If education is mere signaling, then average worker productivity is independent of education.
   2. If employers pay workers for productivity, then, increases in education can't raise worker income.
   3. How then can education raise one worker's income? By decreasing the income of other workers by the same amount!

E. This means that insofar as education is signaling, it has negative externalities.

F. Why? If education is pure signaling, then at least at the margin, the ***social*** *benefit of education is zero*. Gains to workers who get more are balanced by losses to workers who don't. If productivity stays the same, employers and consumers aren't better off either.
   1. I say "at the margin" because there are clear social benefits of better job matching. **Some** signaling serves a useful social function. But once people are already matched to their jobs, raising education levels further has no additional social benefit.

G. Signaling models provide some formal structure for complaints about "credentialism." As education levels rise, employers tighten job requirements. So what is the point of increasing funding for education?

H. Support for education subsidies probably stems from a "fallacy of composition." If you got rid of subsidies for education, you might not be able to *afford* a four-year degree, but you would also not *need* such a degree to get ahead.

I. If education were 100% signaling, there would be a strong economic case for **taxing** it. We could all have the same relative rank, but spend less time and money on schooling.

J. Because real-world education is a mix of job-training and signaling, putting special taxes on education is probably not such a good idea. But the case for taxes is much stronger than the case for subsidies of the sort we currently have.

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Weeks 12-13: Discrimination

I. Wage *Differences* versus Wage *Discrimination*

A. People don't earn the same income, and neither do groups. There are, on average, large wage differences.

B. From the NLSY (1992 data): Average annual labor income was $17,100. Compared to white males, what did members of other groups earn on average?

Group	**Labor Income Gap**
Black	-$6200
Other Non-White	-$3700
Female	-$12,000

C. No one disputes that there are large wage differences. The debate, rather, is about *why*. Are these gaps partly or wholly explained by the fact that groups differ in average characteristics relevant to marginal productivity?

D. Two kinds of characteristics: the ones we measure (or "observe") like education and IQ, and the ones we don't, like culture and creativity. Can wage differences be explained by differences in observable characteristics?

1. If so, we don't even need to worry about unobservable characteristics.

E. Let's start with an easy one. What if we control for marital status and number of children? A lot of women have no labor income because they don't work and/or don't work as much because they take care of kids.

F. Suppose we compare never-married, childless males and females? The -$12,000 gap shrinks to a mere -$1,100 gap! It's not even "statistically significant" as econometricians say.

G. Now let's move to something harder. Is there any way to account for racial income differences? Let's start by controlling only for education and experience. What then?

H. The "other non-white" gap essentially disappears, but the white-black gap only mildly shrinks.

Group	**Labor Income Gap**
Black	-$5300
Other Non-White	-$700

I. What if, following up on earlier discussions, we also control for measured intelligence? (The NLSY administered extensive intelligence tests to people surveyed).

J. Other non-whites actually earn *more* than observably identical whites; the white-black gap drastically shrinks.

Group	Labor Income Gap
Black	-$2300
Other Non-White	+$1100

K. Many scholars who have studied black poverty have put some blame on differences in family structure. On average, blacks are much less likely to marry and remain married; yet blacks on average have more children. What if we add in controls for family variables?

L. Remaining black-white gap shrinks still further, becoming statistically insignificant. Other non-whites look even better off than before.

Group	Labor Income Gap
Black	-$900
Other Non-White	+$1700

M. There are definitely large differences in labor earnings, and they match the popular stereotypes about which groups the market treats "unfairly."

N. But it is wrong to infer discrimination from inequality. You must control for real group differences first.

O. Once you do so, there is little evidence of discrimination. (And some of it cuts the wrong way!) Labor income differs between groups because - on average - groups differ in education, intelligence, family structure, etc.

II. Compensating Differentials and Apparent Discrimination

A. Suppose some differences **did** persist controlling for observable characteristics? In the interests of full disclosure, adding controls for education, experience, and IQ actually increases the male-female gap to -$2000. (Still not statistically significant, though).

B. Should we immediately infer discrimination? Another explanation: Different fun/money trade-offs.

C. One especially plausible instance: Women seem much more likely than men to enjoy jobs that involve nurturing and caring. Teaching and nursing are the classic examples.

1. In contrast, on average, men seem to focus more on money.

D. If these claims are right, then without discrimination of any kind, women will earn less. Why? Because more of them trade-off money for satisfaction.

E. More generally, if on average some groups focus more on money, we should expect to see wage gaps. If we had good measures of "focus on money" we could even statistically control for it.

III. Discrimination as a Preference

A. We have seen that the empirical case for discrimination is weak.

B. Interestingly, many economists doubted - on *theoretical* grounds - that discrimination had much effect long before much data was available.

C. Why? Let us begin by defining "discrimination" more precisely. In economic terms, we can think of pure dislike or hatred for others as a *taste for discrimination*, a willingness to pay to avoid people you don't like.

D. For example, suppose a Serbian employer hates Croatians. But how much is he willing to pay for this? Would he give up $1,000,000 to avoid hiring a Croatian? Probably not. There is some amount of money sufficient to make the Serbian hire the Croatian in spite of his discriminatory taste.

E. Similarly, how much in wages would an Israeli worker be willing to give up to work at a firm with no Palestinians?

F. Or, how much extra would a Romanian consumer pay to shop at a Romanian-owned store rather than a Turkish-owned store?

IV. Discrimination by Employers

A. Once we understand this notion of the "taste for discrimination," we can use it to analyze a variety of cases. Let us begin with employer-on-worker discrimination.

B. Assumptions:

1. Most employers have a taste for discrimination against Asians. Their willingness to pay to satisfy this taste ranges from $2/hour/worker to $0/hour/worker, with an average of $1/hour/worker.
2. No one else has discriminatory tastes.
3. Asian and non-Asian workers are equally productive.
4. Labor markets are competitive and there are no anti-discrimination laws.

C. What happens? Labor demand for Asians is lower and they earn lower wages - at first.

D. Who hires them? The **least-discriminatory** employers! If the wage gap is $1.00, then employers who value discrimination by less than $1.00 hire only Asians.

E. More racism thus means lower profits. Less racist employers hire cheaper Asian labor, while more racist employers higher more expensive non-Asian labor.

F. Thus, over time the most racially tolerant employers become a larger and larger part of the market, and racist employers are driven out of business.

G. This shifts employers' distribution of discriminatory tastes in the direction of tolerance - raising the demand for Asian labor and reducing the demand for non-Asian labor. So the wage gap falls.

H. As long as there are enough employers who care solely about money, not race, the ultimate effect is that racist employers are driven from the market, and equally-productive labor earns the same wage.

I. Even if most people are racist, selective pressure favors non-racist employers. Businesspeople are competing to make money; any goals other than making money - good or bad - hold them back.
J. In other words, more greedy, less racist employers tend to drive less greedy, more racist employers out of business.
K. Corollary 1: Government regulation is necessary to **sustain** discrimination by profit-seeking employers.
L. Corollary 2: Discrimination is much more likely to appear in the *non-profit* sector.

V. Discrimination by Workers
A. We now turn to worker-on-worker discrimination.
B. Assumptions:
1. All non-Asian workers have a taste for discrimination against Asians.
2. No one else - including employers - has discriminatory tastes.
3. Asian and non-Asian workers are equally productive.
4. Labor markets are competitive and there are no anti-discrimination laws.
C. Employers who make non-Asians work with Asians will have to pay the non-Asians a compensating differential. This reduces demand for Asian labor.
D. Simple solution: segregated workplaces. If non-Asian workers don't like Asians, employers can save money by setting up all-Asian plants.
E. Given the assumptions, this leads to full segregation and equal wages for both types of employees. Racism doesn't disappear, but it doesn't have any impact on wages.

VI. Discrimination by Consumers
A. Last case - suppose consumers don't like Asians. What then?
B. Profit-maximizing solution: move Asian workers out of the public eye - essentially, another form of segregation.
C. This does mean lower demand for Asian labor, and lower Asian wages, but the effect is probably small. People rarely know anything about 95% of the people who worked to produce their groceries.
D. Still, markets are less likely to weed out discrimination by consumers than any other form of discrimination.
E. But how common is it? Consumers today are probably more inclined to boycott firms for racism than tolerance. (Note further that anti-discrimination laws provide little protection against consumer-on-worker discrimination).

VII. Occupational Discrimination and Economies of Scale
A. The effects of worker-on-worker discrimination become more severe in industries with large economies of scale.

B. Why? If there are few economies of scale, then any disliked group of workers can get a "firm of their own" to avoid hostile co-workers.
C. As economies of scale rise, this becomes less feasible. You can't have an all-Albanian auto plant in the U.S.
D. Similarly, if there are very few people of a disliked group in an industry, it will be hard for them to have a "firm of their own."
E. This can conceivably be a self-reinforcing situation. Auto firms won't hire blacks; there aren't enough black autoworkers to set up their own firm; and since auto firms won't hire blacks, blacks don't learn how to become autoworkers.
F. In practice, though, people worked through cracks in the system. Some firms' workers are less racist than others. Minority workers who wanted to enter a non-traditional occupation sought them out and got their start there. Once you reach a "critical mass" of workers in an occupation, the separate firms solution becomes viable.
G. In a number of interesting cases, occupations started out as hobbies, creating the necessary "critical mass" indirectly. Minorities in athletics and entertainment are a good example. (Incidentally confirming that consumers don't care much about race).

VIII. Stereotypes and Information Economics
A. Gathering more information takes time, and time is foregone income. Thus, people inevitably - and sensibly - quit gathering information once they think their understanding is "good *enough*."
B. Of course, "mistakes will be made." People are choosing between two evils - wrong judgments and lost time.
C. This is the essence of stereotyping: Generalizing in a useful but fallible way based on limited information.
D. People use stereotypes all of the time. You may have wondered if I was the professor on the first day of class. Why? Because I don't fit the stereotypical age of a professor. Were you irrational to use this stereotype? Hardly. Most professors *are* older - I am still the youngest faculty member at Mason.
E. What would your day be like if you used no stereotypes? You use stereotypes about traffic patterns to choose your route to school. You use stereotypes about campus police to decide whether to illegally park. You use stereotypes about couples to guess whether two people are married.
F. Many people think stereotypes are plainly false. But it's an empirical question. This is a huge topic, but there is a lot of evidence that most stereotypes are right on average most of the time.
G. Moreover, people who don't like stereotypes still use them. "Police are bigots" is a stereotype. "White people make more money than black people" is a stereotype. Both may be true on average, but they are stereotypes nevertheless.

H. Not sure? Test your own stereotypes against objective statistics.
I. The basic stereotype fallacy: Confusing averages and universals. But does anyone actually do this?

IX. Statistical Discrimination
A. Suppose employers rely on a stereotype to make employment decisions, and that stereotype is true on average.
B. Is that "discrimination"? In a sense, yes - you are being judged for your group, not yourself. But in another sense, no - the group differences are real, and people don't *dislike* your group as such. Economists call this *statistical discrimination*.
C. A good example: gender and auto insurance premiums.
D. Another example: who cabbies will pick up late at night.
E. Unlike taste-based discrimination, statistical discrimination can survive and thrive in markets. If group differences are real, and it is costly to judge case-by-case, then people who *don't* discriminate lose money.
F. Important point: Statistical discrimination does **not** reduce *mean* group income. It just narrows the distribution. People who exceed their group stereotype's performance level are under-paid; people who fall short of their group stereotype's performance level are over-paid.
G. Once they understand the idea of statistical discrimination, many people become concerned about "self-fulfilling prophesies."
1. Ex: People think teen-age males are criminally inclined (and they are), this angers the teen-age males, leading them to commit more crimes.
2. Ex: People think men aren't good with children. So no one lets men work with children, and as a result their skills do not develop.
H. This is possible, but hardly the only possibility. Perhaps members of stigmatized groups respond by trying harder to distinguish themselves from their group average.
I. Interesting psychological research exists along these lines: When individuals clearly violate stereotypes, people *over*-react. This means that the marginal payoff of demonstrating ability is actually greater if people assume you're less able because of your group.

X. The Effect of Discrimination Laws
A. Suppose, once again, that discrimination is a pure taste. What do anti-discrimination laws accomplish?
B. If they correctly identify discrimination, then very little. Markets already severely punish employers who pay more for workers than necessary.
1. They might however exacerbate worker-on-worker discrimination by forbidding segregation.
C. However, if "discrimination" laws blur the line between "difference" and "discrimination," effects can be severe. The law then

effectively requires employers to pay workers of different ability levels the same; employers respond by preferring the more productive group, making life even harder for the less productive group.

D. In other words, discrimination laws act as a price control, requiring equal wages in two labor markets where the market clears at different wage levels.

E. To some extent, though, discrimination laws might be seen as quantity restrictions (hire x workers of group y or else!). The short-run effect of this on group y can be positive; but in the longer-run employers figure out ways to avoid this burden.
   1. E.g. Relocate the firm to states with small "protected" populations.

F. For statistical discrimination, discrimination laws have the same negative effects. Groups are really different on average, but the law says employers must treat them the same. Firms then do their best to avoid paying people more than they're worth.

G. Ex: How might unregulated markets induce cab-drivers to pick up late at night in dangerous areas?

H. Similarly, able members of low-productivity groups might - in an unregulated market - agree to work for free on a temporary basis to prove themselves. This would probably be illegal under current law.

XI. Discrimination Laws In Practice

A. Under the discrimination laws, aggrieved individuals can sue employers for discriminating against them.

B. Employers can defend themselves by showing that the worker was judged on the basis of individual performance.

C. Still, the defense always labors under the equivocation between difference and discrimination.

D. Interestingly, most discrimination suits come from workers who say their current employer mistreated them, **not** from workers who say they were not hired in the first place.
   1. The irony is that an employer who was actually racist, or simply wanted to avoid legal headaches, is probably less likely to be sued than someone who gives individuals a chance.

E. If employers practice statistical discrimination, why would they want to fire a worker after hiring him? Only if he is below his group mean!

F. Discrimination laws have also severely curtailed the use of IQ tests, even though these are probably the best predictors of job performance available.

G. Interestingly, early developers of IQ tests often saw them as a way to judge people on their merits as individuals. But now they have fallen out of favor.

H. Question: If you really wanted to stop discrimination, which would make more sense to ban: IQ tests or face-to-face interviews?

XII. Why the Standard History of Discrimination Is Wrong

A. The standard story: White males arbitrarily discriminated against everyone else out of pure malice. Then activists "raised awareness" and discrimination laws were passed to open up opportunities for people other than white males. While a strong legacy of racism and sexism persists, these laws have created the progress that disadvantaged groups have enjoyed since 1965.

B. Why it's wrong:

1. Even if average levels of malice were high, employers are among the least racist people around. They are selected to care about profits, not skin color.
2. White males have earned more money on average, but most or all of that difference disappears controlling for characteristics.
3. Blacks and other groups were enjoying rapid economic progress long before any civil rights acts were passed. Asians already equaled or exceeded white income - even Japanese-Americans, who lost most of their wealth during WWII internment.
4. Lower-earning groups enjoyed progress before the civil rights laws in large part because their average characteristics were changing. Blacks were acquiring more education and skills, immigrants were acquiring language fluency, women were changing their family plans, and so on.
5. Most of the progress that non-white-males have enjoyed has been inevitable. On net, civil rights laws may have impeded their progress by making employers reluctant to hire people who might potentially sue them. There may have been some small effect; but as in other cases, there are probably negative long-run effects as well as positive short-run effects.

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Weeks 14-15: Economics of the Family and Population

I. The Market for Mates, I
   A. Most people today probably marry for love, but few regard all attributes as equally lovable.
   B. Instead, most people are looking for a partner with desirable traits, such as:
      1. Looks
      2. Income potential
      3. Youth
      4. Positive attitude
      5. Conscientiousness
      6. Shared interests
      7. Shared religion
      8. Similar views on desired family size
   C. Normally people with a lot of desirable traits find it easy to get someone else with a lot of desirable traits to marry them. "She's out of your league."
   D. When there is a wide difference in perceived "mate quality," people wonder "What does she see in *him*?"
   E. This suggests that we can look at dating/love/marriage as a special kind of market.
   F. Two interesting things.
      1. It is usually a barter market, where a given level of "male mate value" enables you to "buy" a given level of "female mate value." (Exception: dowries, bride-prices).
      2. The S of men in the market for male mates is the same as the D for women in the market for female mates.
   G. This market works more or less like others: If a lot of men die in a major war, the price of men increases (and the price of women therefore decreases).
   H. Trickle-down economics in the market for mates: What happens when men's income rises? When women's income rises?
   I. Another interesting application: Polygamy. Demand for women is higher under polygamy.
   J. How does the fraction of gay men and women affect the market for heterosexual marriage?

II. The Market for Mates, II
   A. There are some attributes that most people agree are good: looks, income potential, etc. On traits like these, we should expect to see (and do) "assortative matching." People with "good" attributes date/love/marry other people who also have "good" attributes; if

someone is weak on one good attribute, we expect them to be especially strong on some other good attribute.

B. This sparks competitive pressure to acquire these near-universally desired traits, and - to some degree - increases their quantity.

C. For other attributes, people disagree. For example, Jews prefer to marry other Jews, but Gentiles prefer Gentiles. Backpackers like to marry each other. There is far less competition on this margin, because each niche has a mix of advantages and disadvantages.

D. Some spouse correlations: spouses are similar in education, religion, hobbies, and - to a lesser extent - politics. Personality correlations are weak. There is very little evidence of any negative correlations - opposites do not, on average, attract.

E. Standard truism from evolutionary psychology: Men are naturally polygamous, women are naturally "hypergamous." Oversimplified slogan: Men desire every fertile woman, women desire the one best man. Effects in the market for mates:
   1. More desirable men get more partners
   2. More desirable women get *better* partners

F. Additional effects: As stigma against premarital sex falls and women's income goes up, the demand for high-status men rises a lot, and the demand for low-status men actually falls.

G. Divorce can also be analyzed from an economic point of view. Individuals try to get divorces when they decide they are better off without their spouse.

H. Make divorce cheaper - more people get divorced. Ban divorce - people think harder about who to marry.

I. Complication - women's mate value generally falls more rapidly than men's. Lifetime benefits of a marriage can be equal for both men and women, but men's benefits are more "front-loaded" than women's.

J. Evolutionary psychology also helps explain why women initiate most divorces. Men break their marriage contract by seeking more women, women break their marriage contract by seeking a better man.

K. Alimony might be one way to try to keep incentives well-aligned, but it creates perverse incentives in other ways.

III. Household Production and the Theory of Household Labor Supply, I

A. So far we've categorized time as either "labor" or "leisure." Now let's sub-divide "leisure" further into "household production" and "fun."

B. Household production is cleaning, cooking, shopping, caring for children, and all of the other chores people do when they aren't working for others.

C. Usually we think of "the economic agent" as an individual. But we could also think of "the economic agent" as a family or household.

D. Interesting insight: Households with a man and a woman can be seen as a *single economic agent* with two kinds of labor to allocate - husband labor and wife labor - between labor, household production, and fun.

E. If both husband and wife are equally good at household production, what is the obvious way to decide who will do most of it? The person with the lowest market wage! The family sells its high-value time in the labor market, saving low-value time for household production.
   1. Alternative: Have both husband and wife work, and pay someone else to do their household production. But for this to make sense the wife's wage must be fairly high (tax law reinforces this).

F. Two factors reinforce this point:
   1. If the lower-wage labor is actually better at household production.
   2. There are fixed costs of working - like commuting time.

G. In principle, either the husband or wife could be the higher-earner. But there are fundamental reasons why husbands usually earn more:
   1. Children reduce women's job experience and interrupt their careers.
   2. Anticipating this, women have weaker incentives to accumulate human capital. (Average education levels show little difference, but fewer women go into high-earning technical fields).

IV. Household Production and the Theory of Household Labor Supply, II

A. When needs for household production are large, there is a firm economic rationale for the traditional family, where the male earns almost all of the income and the female does almost all of the household production. The rationale in a nutshell:
   1. The family needs one person to do household production and another to hold down a job.
   2. If both are equally able to do household production, it makes sense for the higher-paid person to work outside the home. (Moreover, if women are actually better at household production, this decision is even clearer).
   3. Because child-bearing interrupts careers, the lower-earning person will normally be the woman. If women anticipate this, they invest less human capital, making the wage gap larger.
   4. With fixed costs of working, it makes little sense to work only a couple hours per week.

B. But: The need for household production is not fixed. It depends critically on both *technology* and the *number of children*.

C. Both factors slashed the need for household production during the 20^{th} century.

1. Technology for household production drastically improved - dishwashers, vacuum cleaners, washing machines, etc.
2. Average number of children has drastically fallen.

D. As time allocated to household production has fallen, women with children have become increasingly likely to remain in the job market - some in part-time work, others in full-time.

E. We are also seeing the rise of an even less traditional household structure, where women earn *more* than men, and largely support their children (if any) by themselves.
1. Gender imbalance in college suggests that this household structure is going to become common in the middle- and upper-classes.

F. Interesting links between husband and wife labor supply remain when both work.
1. If the demand for one kind of labor increases, the supply of the other decreases, all else equal. For example, if a wife's wage rises, then the family can afford to "buy" more of the husband's leisure. If a husband's wage rises, the family may decide that it can afford to have the wife stay home with the children.
2. Similarly, if one family member is temporarily unable to work, we would expect the other family member to work more due to this income effect.

V. Why the Standard History of Gender is Wrong

A. My take on the standard history of gender: Throughout human history, males arbitrarily forced women into a subordinate role. At long last, feminist thinkers began "raising awareness" of the plight of women. Through great struggle, women are at last - like men - able to pursue their dreams and ambitions, though of course full equality is still a long way off.

B. Why it's wrong:
1. The dating and marriage market has always been competitive. The only historical change involves ownership: Does a women own herself, or does her father own her?
2. Yes, women used to have very hard lives. But so did men!
3. The traditional family structure was technologically necessary for most of human history *assuming* women wanted to have children. An overwhelming majority did.
4. Family structure changed because technology reduced the burden of household production, and because families decided to reduce their number of children.
5. Technology also narrowed the male-female ability gap by de-emphasizing physical strength.
6. This for the first time made it feasible for women to have both careers and children.

7. Women broke into the business world quite rapidly considering the size of the change. Supposed "discrimination" reflected and continues to reflect real group *differences*.
8. Except for women who forego child-bearing, differences will persist until reproductive technology radically changes.
9. Women probably do face some *statistical discrimination*, but in the absence of regulatory burdens, women could contract around these. For example - penalty clauses for pregnancy enable women focused 100% on work to show how serious they are.
10. Feminist norms function as price controls in the marriage and dating market. "Raising awareness" has often been counter-productive insofar as it matters at all.

C. Note: We may be moving to a world where women are noticeably more successful than men. Productivity and competition provide better explanations than “reverse sexism.”

VI. The Economics of Family Size

A. While there is some element of chance, to a large extent families control the number of children they have.
B. We should expect the demand curve for children to have the usual negative slope. The cheaper it is to have kids, the more kids people have.
C. One big part of the expense is the mother's foregone labor earnings. The more income a mother can earn, the fewer kids we expect her to have. This is precisely what we see - high-income women have fewer kids, and family sizes are smaller in rich countries than in poor countries.
D. However, this argument is not air-tight. As wealth increases, demand for all goods - including kids - rises.
E. What we can say with confidence is that holding wealth constant, demand for kids is negatively sloped. Thus, changes in costs of childcare, free grandparent assistant, free schooling, and per-child tax deductions all increase family size.
F. Similarly, if children contribute to the family by working or doing chores, or eventually provide retirement income, family size will be greater than it otherwise would be.
G. Application: When children are expensive and/or single women are very poor, you see few non-marital births. In the pre-modern period, a husband's support was often crucial just to keep a child alive.
H. When children get cheaper, unmarried women have more kids. One simple way to make them cheaper is to pay benefits proportional to the number of children a mother has - a frequent criticism of the welfare system.

I. As incomes rise, it becomes more feasible for unmarried women to have children even without government help.

J. In the U.S., non-marital childbearing has risen for all social classes, but is much higher for poorer women. For poor women, extra welfare plausibly makes a big difference.

K. If higher income makes unmarried women more inclined to have children, why do the richest women have the fewest? Probably because on average they have higher "mate value" - when they want to have children, it is relatively easy to find a suitable husband. Lower-income women may face a choice between having a child without a husband or having no child at all.

VII. Family Size and the Quality-Quantity Trade-Off

A. Richer people and countries have fewer kids. The simple conclusion to draw is that kids, like potatoes, are "inferior goods."

B. However, richer people and countries also spend more time and money on *each kid*.

C. Most economists conclude that kids are a normal good after all. Its just that richer people care more about the *quality* of their kids than the quantity. They prefer one or two exceptionally healthy, smart, and ambitious kids to a three or four average kids.

D. The underlying idea is that there's a *quality-quantity trade-off*. You can improve your kids with investments of time and money. The more kids you have, the less time and money you've got per child – and the worse their outcomes.

E. Both economists and laymen take this quality-quantity trade-off for granted. But should they?

VIII. The Lessons of Behavioral Genetics

A. It's tempting to simply point to the fact that success runs in families and say "Yes." But this pattern could just as easily result from heredity!

B. A huge field known as "behavioral genetics" studies twins and adoptees to actually measure the effect of family environment on adult outcomes.

1. How adoption studies work
2. How twin studies work

C. Big lessons: the quality-quantity trade-off is vastly overrated. The long-run effect of parenting on kids' outcomes usually ranges from small to zero.

D. In *Selfish Reasons to Have More Kids*, I propose a "Parental Wish List" – the main traits parents hope to foster. Then I track down *all* the relevant twin and adoption research in medicine, psychology, economics, sociology, and beyond.

E. The Parental Wish List:

1. Health
2. Intelligence
3. Happiness

4. Success [education, income, crime]
5. Character
6. Values
7. Appreciation

F. Main results: Nurture/upbringing/parenting has little or no effect on health, intelligence, happiness, success, character, or fundamental values.

G. Parenting has a moderate effect on appreciation, and a big effect on superficial values (especially what religion and political party you *say* you belong to).

H. Key caveat: What you find depends on where you look. Behavioral geneticists focus on vaguely normal families in First World countries.

I. Upshot: Parents' may think they're substantially increasing their kids' quality by restricting their quantity. But they're wrong. Much parental "investment" yields roughly zero return.

J. In fact, if parental "investment" hurts the parent-child relationship, the return could easily be negative.

1. *Ask the Children*: Kids' main complaint isn't that their parents don't spend enough time with them. Their main complaint is that their parents are too tired, stressed, and angry!

K. Big life lesson: Behavioral genetics reveals a free lunch for parents and potential parents. You can get the kids of the quality you want for a fraction of the price the typical parent pays!

1. Graphs

IX. Family Size, Durable Goods, and Time Horizon

A. Kids have high upfront costs, and much of the benefit happens later in life.

B. In modern societies, most of this benefit is non-financial. Voluntary financial transfers from old to young vastly outweigh financial voluntary transfers from young to old.

C. Many people believe that in earlier times, people had kids purely for the financial return. But the evidence says that transfers have gone from old-young throughout all of human history.

1. Hunter-gatherer societies
2. Agricultural societies

D. Key Point: People used to die too young to enjoy much of their "pensions." The main reason to have kids has always been "consumption."

E. In some ways, parents' "retirement benefit" is bigger now than ever. The financial benefits are probably no worse than before, and the non-financial benefits are better and longer-lasting.

F. Since kids are "durable goods," economics advises us to maximize utility over our entire lifetimes – not myopically focus on how we're feeling today.

G. Do parents and potential parents actually do this? Or do people stop having kids because they're temporarily exhausted? I tend to think the latter.

X. What's the Optimal Number of People?
   A. People often worry about "overpopulation" or "underpopulation." What does this mean in economic terms?
   B. It's tempting to say "optimal population"="population with maximum GDP per capita." But:
      1. Anyone who has a baby rejects this at the household level. When my wife and I had twins, our family's per-capita income fell by 50% as a matter of pure arithmetic.
      2. By this standard, the existence of life-loving but below-average people is "suboptimal."
   C. Even by the "maximize per capita GDP" standard, though, the world still might be underpopulated. Consider: Over the last two centuries, both population and per capita GDP have massively increased.
   D. Furthermore, over the last 150 years, the real prices of food, fuel, and minerals have fallen by about 1%/year. The main commodity that keeps getting more expensive: labor. If we're "running out" of anything, it's people.
   E. In any case, economists' real standard for over- or underpopulation is whether *the marginal baby born has (on net) negative or positive externalities*.
   F. Slogan: "You don't have to raise the average to pull your weight."

XI. Negative Externalities of Population
   A. Many people, notes Landsburg, think that each child born gets a 1/7 billion share of world resources - implying negative externalities.
   B. This isn't how the world really works. Instead, when a family has one more child, each child in that family gets a *lot* less, with little effect on anyone else.
   C. This is especially clear from bequests. Picture a simple agricultural economy where kids always divide their parents' landholdings equally. If everyone but you has lots of kids, your kid inherits just as much land – and his land will actually be worth more due to higher demand.
   D. Lesson: With private property, parents who care about their kids automatically internalize any "poverty externality." Under socialism, in contrast, the poverty externality is very real. You can have an many kids as you like without reducing your family's consumption at all.
   E. Poverty aside, people also often worry about the negative *environmental* externalities of population.
   F. Key economic point: Limiting population to reduce environmental externalities is using a sword to kill a mosquito. Why not just raise the price of environmental damage with e.g. pollution taxes?

G. The same applies to congestion externalities. If the roads are crowded at rush hour, rush hour tolls are a much cheaper and humane solution than preventing people from existing.

XII. Positive Externalities of Population

A. Does population have any *positive* externalities? Yes!

B. Existence externality: Most people are happy to be alive, but parents can't charge you for the privilege of existing.
   1. In Singapore, though, you are financially responsible for your elderly parents.

C. Idea externality: Progress depends largely on ideas, and ideas come from people.
   1. Historically, almost all progress comes from populous, connected regions of the world – especially Eurasia.
   2. Historically, isolated areas with low populations have low, zero, or negative progress. See Tasmania.

D. Notice: Technology has now connected the whole world. A great idea anywhere quickly becomes a great idea everywhere.

E. Population increases both the supply and demand for new ideas. This is most obvious for languages, but works in all areas of idea creation.
   1. Imagine deleting half the names in your music collection, or half the Nobel prize-winners.

F. Choice externality: More population means more choices. See NYC vs. Hays, Kansas. The fact that urban rents are higher than rural rents shows that people prefer (people + the indirect effects of people) to splendid isolation.
   1. Question: Why don't people who complain about overpopulation move to the middle of nowhere?

G. Retirement externality: Government old-age programs are pyramid schemes. With lots of kids, low taxes can sustain high benefits. Low birth rates are a major reason why Social Security and Medicare are going to be in big trouble.
   1. What if government benefits for the elderly depended on your number of kids?

H. Even without government programs, the elderly benefit if other people have kids. Imagine: What would happen in seventy years if everyone stopped having kids today?

XIII. Why the Standard Story of Parenting Is Wrong

A. Standard story: People used to have lots of kids to help them run their farms. In the modern world, though, large families are no longer practical. To compete in today's competitive world, kids require massive parental investment. The only way parents can keep their lives halfway livable is to limit themselves to one or two kids. And we should be thankful they do, because overpopulation is a major world problem.

B. Why it's wrong:

1. Kids have *always* been bad investments from a purely financial point of view. Pre-modern farmers had lots of kids because they liked having lots of kids.
2. Behavioral genetics shows that parenting has little effect on kids' life outcomes. Parents make heavy sacrifices to help their kids, but these are largely waste, not "investment."
3. Parents are *slightly* less happy than otherwise identical non-parents. But their happiness gap is largely self-imposed. They could adopt a much more enjoyable parenting style without hurting their kids. Or have more kids and more fun at the same time.
4. The world remains underpopulated. Population and prosperity have been growing together for over two hundred years, and its no coincidence. Large populations are more creative, and creativity is the main cause of economic growth.