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 Econ 321

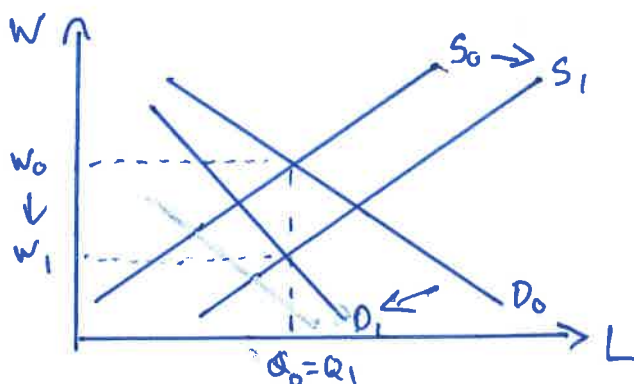
HW#4 (Please type all answers)

I. Using S&D diagrams, show what would happen to the labor market in the state of Virginia if each of the following happened. In 1-2 sentences, explain your answer. (Hint: There is a very high level of mobility between states!)

Note: Since there is high mobility between states, labor supply in Virginia slopes forward; it isn't vertical!

A. The federal income tax rises.

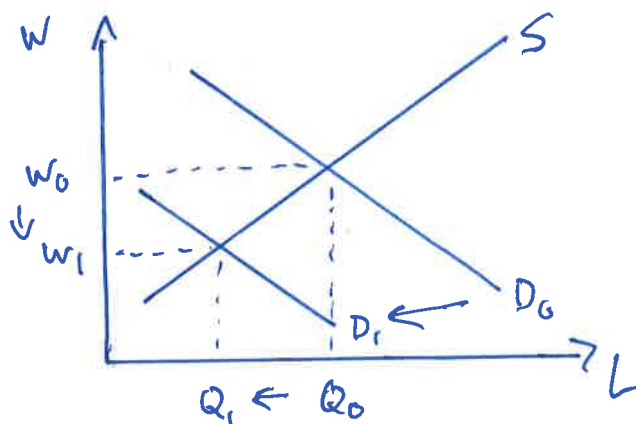
Two effects that balance each other out, leaving the equilibrium quantity of labor approximately unchanged. Labor demand in Virginia falls - workers now receive a lower after-tax wage. But: labor supply from other states rises - *holding wages fixed*, workers would be more willing to move to Virginia because their outside options are worse.



B. The Virginia state income tax rises.

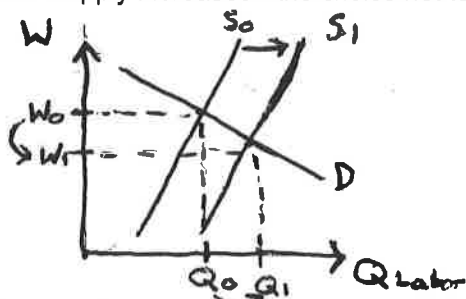
Labor demand in Virginia falls - workers now receive a lower after-tax wage.

(Strictly speaking, any tax change can be represented as *either* a demand shift or a supply shift! But for simplicity, in this class I've said we'll just think of income taxes as shifting labor demand - employers are now willing to pay less after-tax for a given quantity of labor).



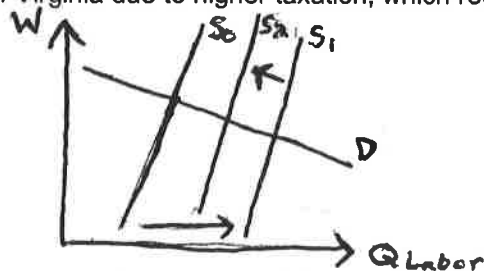
C. Virginia reduces welfare payments.

Virginia labor supply increases - the choice not to work becomes less attractive.



D. Virginia imposes a "head tax" of \$1000/person.

The effect is ambiguous: Labor supply increases because of the negative wealth effect (everyone is \$1000 poorer, so they buy less of everything, including leisure). But some people may leave the state of Virginia due to higher taxation, which reduces labor supply.



- II. What would happen if the state of Virginia made the state income tax more progressive? What if it made the state income tax *regressive* (tax rate falls as income rises)? (3-4 sentences)

The amount of labor supplied would decrease as the tax system became more progressive, particularly for high-income tax-payers. We would also expect a shift from cash to non-cash compensation - again particularly for high-income workers. In contrast, making the tax system regressive would have the opposite effect - people would work more, especially high-income workers. With a regressive system, employers of *low*-income workers would try to switch from cash to non-cash payments.

- III. The federal marginal tax rate in the 1970's rose to about 70%. How would you expect this to affect occupational choice and the proportions of wage and non-wage compensation? Why? (3-4 sentences)

With 70% marginal tax rates, you would expect that people would shift away from cash compensation to other things. When choosing occupations, people would be more likely to choose "fun" jobs rather than well-paid jobs. When selecting the form of compensation, people would focus more on non-cash compensation (benefits, company cars, paid vacations, etc.) instead of cash.

- IV. Pick one real government redistributive program. Which rationale would proponents most likely use to justify it - return on investment, insurance, or egalitarian? How well does this rationale actually fit the facts about the program? (3-4 sentences)

I picked subsidized student loans, where the government gives students educational loans at below-market interest rates. The main rationale is probably egalitarian - subsidized educational loans make it possible for lower-income people to go to college. There are several problems with the egalitarian rationale, however. For one thing, they are usually restricted to U.S. citizens; if the goal were really to help "poor students," the benefits would go to absolutely poor students in India or Zaire, not relatively poor students in the U.S. Moreover, on egalitarian terms, low-income people who *can't* succeed in college are needier than those who can, and are therefore more deserving of support.

- V. Propose a change in immigration policy that would admit more immigrants without - on net - hurting *any* Americans. (Make a case that might persuade an "intelligent tribalist.") Your policies may involve redistribution to anyone you like as long as you specify tax changes to pay for it. (1 paragraph)

A simple idea: Auction off citizenship to the U.S. Then use the money raised in the auction to make lump-sum compensatory payments to adversely affected Americans. (If immigrants have trouble raising money to buy citizenship, they could consent to automatic payroll deductions instead). For example, you could charge \$20,000 for U.S. citizenship, then use the revenue raised to create a "high school drop-out" fund that takes care of U.S. citizens without high school degrees. This way, all Americans could enjoy the benefits of immigration, even those Americans competing most directly with the new immigrants.

- VI. Suppose you are a partner at a law firm, and are deciding whether to continue interviewing job candidates. You value your time at \$300/hour, and it takes an hour to interview a candidate. If you find someone who is "good enough for the job" it is worth \$3000. Your searching abilities are as follows:

| Total Time Spent (hours) | Chance of Finding Someone Good Enough | Expected <i>Marginal</i> Benefit of Search |
|---------------------------------|--|---|
| 1 | 25% | .25*\$3000=\$750 |
| 2 | 45% | (.45-.25)*\$3000=\$600 |
| 3 | 60% | (.60-.45)*\$3000=\$450 |
| 4 | 70% | (.70-.60)*\$3000=\$300 |
| 5 | 75% | (.75-.70)*\$3000=\$150 |

- A. Fill in the 3rd column of the table. The "expected marginal benefit of search" is just the value of finding a "good enough" worker times the marginal increase in the probability of finding him.

(See table above).

- B. Search theory says you will set the marginal cost of search equal to the expected marginal benefit of search. If this is true, how long will you search for? (Feel free to round to the nearest table entry).

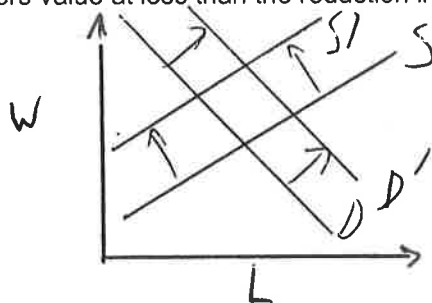
You will search for a total of four hours. At this point, $MB=MC=\$300$.

- C. Suppose you search until the marginal cost of search equals the expected marginal benefit, but you still haven't found a worker. Should you search some more, or give up? Why?

You should give up. After four hours, your chance of finding someone still rises, but it does not rise *enough* to make it worth your time.

- VII. Use S&D diagrams to analyze the effects of abolishing tenure for university professors. What happens to wages of "tenure-worthy" professors? What effect does this ban have on total surplus in the labor market? (3-4 sentences)

The S of professors decreases (academic jobs are less secure now, so they are less desirable to get), and D for professors rises (schools can now worry less about hiring an incompetent professor for life). If the government bans tenure, the effect on total surplus is presumably negative - it existed because professors were willing to give up more than enough wages to compensate universities to offer it. If a university decides to abolish tenure on its own, in contrast, this is presumably because professors prefer higher wages to the cost of the extra job security. (The tax system complicates this analysis, because it can lead firms to offer benefits that workers value at less than the reduction in pre-tax earnings).



- VIII. (Answer each of the following in 1-2 sentences)

- A. Which class in college has given you the *most* job-related skills?

Graduate microeconomics.

- B. Which class in college has given you the *least* job-related skills?

Ancient philosophy.

- C. What percent of the first class was "signaling" (as opposed to job-related training)? What percent of the second class was "signaling"?

20%; 100%.

IX. Carefully explain why Caplan thinks education is a better signal of conscientiousness than intelligence. (4-5 sentences)

Main reason: it is cheap and easy to assess intelligence with an IQ test. So there is no reason to make people go to school for years to signal intelligence; it is fairly easy to observe. (And if you ban IQ tests, you can guess IQ from interviews with some accuracy). In contrast, a personality trait like conscientiousness is easy to fake on a personality test or an interview. Everyone says they are hard-working, diligent, meticulous, etc. To find out if a job applicant is really conscientious, you need to examine their long-term behavior. Completed schooling is then one of the best measures to consider - while everyone says they are hard-working, only a fraction of people are hard-working enough to complete a four-year college degree.

X. Suppose there are seven workers. The PDV of their lifetime labor is as follows:

| Worker # | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| \$ PDV | 1,000,000 | 1,200,000 | 1,400,000 | 1,600,000 | 1,800,000 | 2,000,000 | 2,500,000 |

Employers cannot tell how productive a worker is, but they CAN tell whether a worker has a college degree, and they know the **AVERAGE** value of workers with and without college degrees. Competition forces them make worker pay equal their average PDV.

A. What will the PDV of lifetime earnings be for workers with and without college educations be if...? Fill in the following table.

(To fill in this table, just take the *average* PDV for workers with and without college degrees in each of the rows).

| Worker #'s w/ College Degrees | Without College PDV | With College PDV | College Premium |
|-------------------------------|---------------------|--------------------|------------------|
| 1-7 | -- | \$1,642,857 | -- |
| 2-7 | \$1,000,000 | \$1,750,000 | \$750,000 |
| 3-7 | \$1,100,000 | \$1,860,000 | \$760,000 |
| 4-7 | \$1,200,000 | \$1,975,000 | \$775,000 |
| 5-7 | \$1,300,000 | \$2,100,000 | \$800,000 |
| 6-7 | \$1,400,000 | \$2,250,000 | \$850,000 |
| 7 | \$1,500,000 | \$2,500,000 | \$1,000,000 |

B. Suppose you are worker #4. Workers #1-3 don't have college degrees; workers #5-7 do. What is your PDV of earnings without a college degree? With a college degree?

If you don't get a college degree, you get lumped in with workers #1-3, so you get \$1,300,000. (Look at the #5-7 w/college degree row, in **bold**). If you do get a college degree, you get lumped in with workers #4-7, so you get \$1,975,000. (Look at the #4-7 w/college degree row, in *italics*).

C. What are the **total** earnings of the *other* workers if you (still worker #4) get a college degree? If you don't?

If you do get a college degree, then workers #1-3 get \$1,200,000, and workers #5-7 get \$1,975,000. Total earnings for them: \$9,525,000.

If you don't get a college degree, then workers #1-3 get \$1,300,000, and workers #5-7 get \$2,100,000. Total earnings for them: \$10,200,000.

D. Suppose worker #4's college costs \$500,000 total. What is the net gain of college to worker #4? The net gain to all seven workers?

If #4 goes to college, he earns \$1,975,000; if he doesn't, he earns \$1,300,000. The net gain of college would be $\$675,000 - \$500,000 = \$175,000$: a gaining proposition for worker #4.

What about the net gain to all 7 workers? If worker #4 goes to college, he earns \$1,975,000, and the other six workers earn \$9,525,000. If worker #4 doesn't go to college, he earns \$1,300,000, and all other workers earn \$10,200,000. So:

Total Income If #4 Goes to College: $\$1,975,000 + \$9,525,000 - \$500,000 = \$11,000,000$

Total Income If #4 Does Not Go to College: $\$1,300,000 + \$10,200,000 = \$11,500,000$

In other words, the net social benefit of #4 going to college is $-\$500,000$, precisely the cost of going to college!