

### Homework Assignment #1 – Part I

Some of these questions are open-ended and a bit wacky, while others are pretty straight- forward and foreshadow things to come later in the semester. Give them a whirl. Be brief. I really want you to just spend some time thinking about some of these issues.

1. What is the opportunity cost of:
  - a. getting married
  - b. freedom of speech
  - c. a law prohibiting college-age students from drinking alcohol
  - d. a policy to reduce global warming

This one is very open-ended. A lot of you will mention

- a. Dating (yes, that's the world you'll choose) other people, spending your money that way you want, etc...
  - b. Having to listen to nutballs with bad ideas...
  - c. The sanity of college students, increased illegal drug usage, more DUIs...?
  - d. Higher priced industrial goods, fewer fun gas guzzling cars...?
2. A baker is willing to bake a cake if he can sell it for at least \$6 (to cover the costs of ingredients, the use of his oven, and his time and effort). A customer is willing to pay \$10 for a cake.
  - a. Would some trade help both the baker and the customer? What trade?
  - b. How much do the baker and the customer gain from the trade you proposed in part (a)?
  - c. How would your answer to part (a) change in the government imposed a \$2 tax on every cake sold?
  - d. How would your answer to part (a) change if the government imposed a \$5 tax on every cake sold?
    - a. Any trade of cake for between \$6 and \$10. For example, a cake for \$9.
    - b. The baker gains \$3 (\$9 - \$6), the customer gains \$1 (\$10 - \$9)
    - c. The trade will still occur. The combined gains from the trade (\$4) exceed the amount of the tax (\$2). The price that is paid will depend on who collects the tax...more later...
    - d. The trade will not occur. There is not trade that will benefit both the baker and the customer now. Taxes have sucked away all the gains from trade, what a shame, more later...

3. Do people always benefit from voluntary trades? Why might voluntary trades leave them worse off rather than better off? (Think of an example in your own life?)

No, sometimes you make trades that make you worse off after the fact. Things change, mistakes are made, new information is revealed. But when you do make a voluntary trade, you *expect* to benefit (or else you wouldn't have made the trade in the first place). I expected to benefit from my decision to skateboard on my friend's half-pipe when I was 12. As it turned out, I required 24 stitches. I did not expect to fall and hurt my head.

4. Give examples of the following. Bonus points for comedy, double bonus points for clean (able to be put on the exam) funny:

Fallacy of composition, post-hoc fallacy, other-conditions fallacy, selection bias

I hope they're funny.

5. Suppose another year of college will increase your lifetime earnings by \$30,000. The costs of tuition and books add up to only \$8,000 for an additional year. Comment on the following: "Because the benefit of \$30,000 exceeds the \$8,000 cost, you should complete another year of college."

You also have to consider the opportunity cost of the time you would spend in college. If you could be earning \$24,000 a year working, now the true opportunity cost of college is  $\$24,000 + \$8,000 = \$32,000$ . In this case, you should not do the extra year of college.

6. To celebrate its fiftieth anniversary, a gasoline station sells gasoline at the price it charged on its first day of operation: \$0.10 per gallon. As you drive by the gas station, you notice a long line of people waiting to buy gasoline. What types of people would you expect to join the line?

Derelicts, college students, teenagers, and other people with a low opportunity cost of an hour spent in line. People with low values of time will be in line, and we are unlikely to see surgeons and lawyers. In the past, in a roughly similar situation (gas price controls), rich people paid teenagers to wait in line for them. Ask a communist about who waits in line some time.

### Homework Assignment #1 – Part II

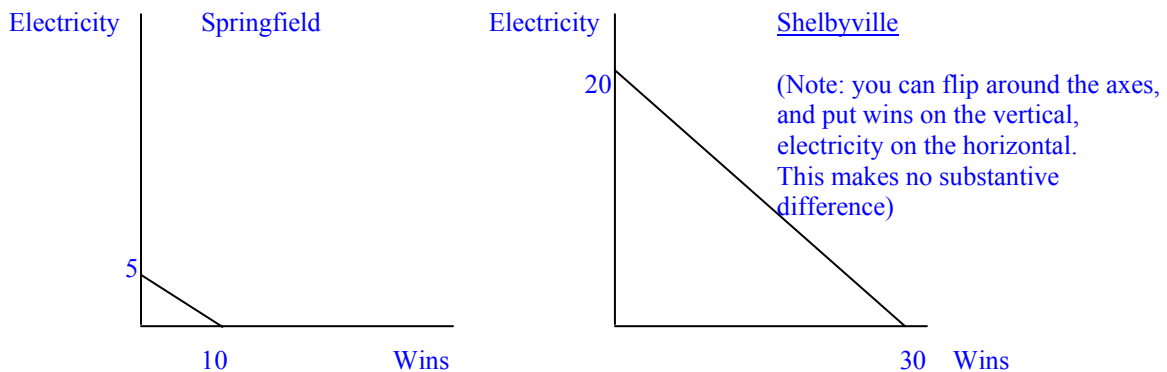
There are two cities in the world, Springfield and Shelbyville. There are only two productive activities, making electricity, and winning softball games.

If Springfield spends all of its time making electricity, it can produce 5 megawatts. If Springfield spends all of its time winning softball games, it can produce 10 softball wins.

If Shelbyville completely specializes in making electricity, it can produce 20 megawatts. If Shelbyville completely specializes in softball, they can produce 30 wins.

Both cities can produce any linear combination of these levels of output (for example, Springfield can produce 2.5 megawatts of electricity and 5 softball wins).

1. Sketch the PPCs for both countries, making sure to label your graph. A rough sketch will do.



2. What is Springfield's opportunity cost of producing 1 megawatt of electricity?

$10 \text{ wins} / 5 \text{ MW electricity} = 2 \text{ wins} / \text{MW electricity}$ .  
Springfield's opportunity cost of producing a MW of electricity = 2 wins.

3. What is Springfield's opportunity cost of producing 1 softball win?

$5 \text{ MW electricity} / 10 \text{ wins} = 0.5 \text{ MW electricity} / \text{win}$ .  
Springfield's opportunity cost of producing a win =  $\frac{1}{2}$  MW of electricity

4. What is Shelbyville's opportunity cost of producing 1 megawatt of electricity?

30 wins / 20 MW electricity = 1.5 wins / MW electricity.  
Shelbyville's opportunity cost of producing a MW of electricity = 1.5 wins.

5. What is Shelbyville's opportunity cost of producing 1 softball win?

20 MW electricity / 30 wins = 0.67 MW electricity / win.  
Shelbyville's opportunity cost of producing a win = 2/3 MW of electricity

6. Who has the comparative advantage in softball win production?

Springfield. It is the low cost producer of wins. Springfield's opp. cost of a win is 1/2 MW of electricity while Shelbyville's opp. cost of a win is 2/3 MW.

7. Who has the comparative advantage in electricity production?

Shelbyville. It is the low cost producer of electricity. Shelbyville's opp. cost of a MW electricity is 1.5 wins while Springfield's opp. cost of a MW of electricity is 2 wins.

8. Which city has the absolute advantage in both activities?

Shelbyville. If both cities completely specialize in win production, Shelbyville produces the most (30 vs. 10). Likewise, for electricity production, Shelbyville produces the most (20 vs. 5).

9. Suppose each city selects autarky, and spends half of its time on each activity. How much of each good is produced?

Springfield produces 5 wins and 2.5 MW of electricity. Shelbyville produces 15 wins and 10 MW of electricity. The total is 20 wins and 12.5 MW of electricity.

10. Suppose each city completely specializes in the activity in which it has the comparative advantage. How much of each good is produced?

Shelbyville completely specializes in electricity production and produces 20 MW of electricity. Springfield completely specializes in win production and produces 10 wins.

11. Suppose that Smithers makes the following offer to Shelbyville and Springfield. He will offer \$3 for each megawatt of electricity produced and \$1 for each softball game produced. If both Shelbyville and Springfield's objectives are to maximize their own revenue, how many of each good is produced?

Simply check to see which offer results in maximum revenue for each city. If Springfield spends all of its time producing wins, it will produce 10 wins, resulting in \$10. If they spend all of their time producing electricity, they will produce 5 MW, resulting in \$15. Springfield will produce electricity. (Checking the endpoints works because we always assume linear PPCs.)

By the same logic, Shelbyville will earn \$60 from producing electricity (20 MW), but only \$30 from producing wins (30 wins). Thus, both cities will produce electricity, and 35 megawatts of electricity will be produced by the two cities combined.

12. In your answer to #11, do you end up with one city producing the good that they do not have the comparative advantage in? If so, why would they do such a rambunctious thing?

While normally we would expect that people will specialize in the good in which they have the comparative advantage, sometimes, a good will become so relatively valuable, that it will induce even the high cost producer to produce it. Consider a poor third world country where people are near starvation, with two goods, food and high-powered computers. It might be the case that society would value the food a great deal.

In this question, I have explicitly put dollar values on the two goods so that I can make electricity very valuable.

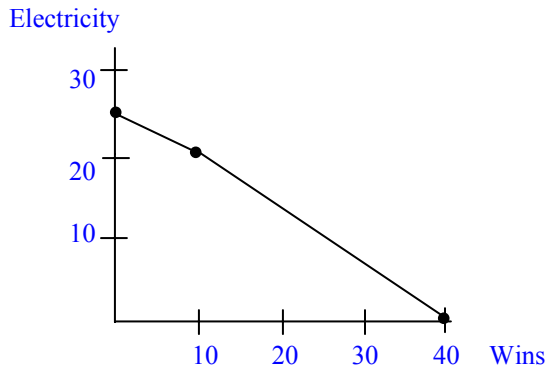
13. Sketch society's PPC. Make sure the three "important" points are there.

The three important points are:

25 MW, 0 Wins (both completely specialize in electricity)

0 MW, 40 Wins (both completely specialize in wins)

20 MW, 10 Wins (each completely specialize in the good in which they have a comparative advantage...This is the answer to #10)



Though it is reasonably hard to see as I have drawn it, this curve does have a kink.