

PROBLEM SET 1

DUE AT THE BEGINNING OF LECTURE ON TUESDAY, JANUARY 30TH

You may work together on the problems, but your answers must be ***in your own words*** and ***handwritten***. You also must ***list the other students with whom you worked***.

For all questions be sure to explain your answers and to use graphs whenever appropriate.

1. This problem asks about opportunity costs in various situations.

- a.** You run a very small software company where you do both all the coding and all the long-term planning. You average 3 lines of code per minute. What is the opportunity cost of devoting 2 of your working hours to long-term planning?
- b.** A family leaves their home in Berkeley unoccupied when they go to Scotland for a year-long sabbatical. What is the opportunity cost of the decision to leave the house empty?
- c.** A family buys 6 tickets to a Broadway musical for \$200 apiece, for a total cost of \$1200. But between when they buy the tickets and the time of the show, several of the stars leave the cast, and the price of tickets in the resale market falls to \$50 apiece. After the fall in price, what is the opportunity cost of using the tickets to attend the show?

2. Consider the PPC for the U.S. economy for health care and for all other goods and services.

- a.** Draw the production possibilities curve (PPC) for the U.S. economy based on this categorization, with health care on the horizontal axis and all other goods and services on the vertical axis. Why is the PPC for the U.S. economy likely to be bowed out? Explain in words what the following represent: the point where the PPC intersects the vertical axis; the point where the PPC intersects the horizontal axis; the slope of the PPC at a given point.
- b.** Suppose there is a cutback in the number of H-1B visas that reduces the number of highly-skilled foreign workers who are allowed to work in the U.S. How, if at all, would this development affect the PPC?
- c.** The U.S. population is aging, and older people tend to consume more medical care. How, if at all, would this development show up in the PPC diagram?
- d.** Suppose that initially there is discrimination that prevents women from working in the health care sector (but not in other parts of the economy). How would a reduction in such discrimination show up (if at all) in the PPC diagram?

3. A Scottish restaurant serves two dishes, haggis and scones, and has three workers, Angus, Fiona, and Hamish. Each worker works 8 hours per day. While all three can produce both dishes, they differ in the number of each good they can produce in an hour. The following table shows the number of servings of haggis or the number of servings of scones each worker could produce in an hour.

	<u>Haggis/Hour</u>	<u>Scones/Hour</u>
Angus	4	2
Fiona	1	5
Hamish	1	1

- a. For each worker, what is the opportunity cost of 1 haggis (in terms of scones)? Of 1 scone (in terms of haggis)?
 - b. Draw the production possibilities curve (PPC), with haggis on the horizontal axis, for the restaurant (for a single day) when there is no specialization—that is, when each worker divides their time between haggis production and scone production in the same way as the other two workers. Identify and explain the vertical intercept, the slope, and the horizontal intercept of the PPC in this case. Why does the PPC without specialization have the shape that it does?
 - c. Draw the PPC for the restaurant when the three workers specialize according to comparative advantage. Again, identify and explain the vertical intercept, the slope(s), and the horizontal intercept of the PPC in this case. Also, give the quantities of haggis and scones that correspond to any kinks in the PPC. Why does the PPC with specialization have the shape that it does?
- 4.** Describe and show on a separate graph how each of the following developments would affect the market price and quantity of paper in the United States.
- a. Overharvesting of forests in the past leads to a rise in the price of pulpwood (the type of wood that is used to make paper).
 - b. Greater environmental awareness causes many people to prefer to read digital copies of documents rather than hardcopies.
 - c. The government imposes a minimum price on paper that is above the initial equilibrium price.
 - d. The government introduces a new subsidy on paper. (A subsidy is a negative tax; instead of collecting money from people, the government gives them money.) Suppose that the subsidy is paid to sellers and takes the form of \$0.50 per ream of paper.
- 5.** Suppose the supply and demand curves for some good both shift out.
- a. Does the quantity of the good bought and sold rise, fall, stay the same, or is it not possible to tell?
 - b. Does the price of the good rise, fall, stay the same, or is it not possible to tell?
- 6.** Consider the residential market for natural gas (that is, the market for natural gas sold to households).
- a. Do you think the price elasticity of household demand for natural gas in the short run (for example, over a few weeks) is likely to be fairly high or fairly low?
 - b. Suppose that, because of the widespread adoption of fracking, the price of natural gas for residential consumers falls. In light of your answer in part (a), what would you expect to happen to total spending on residential natural gas in the short run?
 - c. Do you think the price elasticity of household demand for natural gas in the longer run (for example, over a few years) is likely to be greater than, less than, or roughly equal to the price elasticity in the short run?