PROBLEM SET 1 SOLUTIONS

DUE ON GRADESCOPE BY 11:59PM ON MONDAY, SEPTEMBER 23

Student name:

Student ID:

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* here:

For all questions be sure to explain your answers and to use graphs whenever asked to. Write your answers in the spaces below.

1. This problem asks about opportunity costs in various situations.
    a. You have an afternoon off and can either put together two new bookcases or watch three TV shows. What is the opportunity cost of watching a TV show?

    The opportunity cost of watching a TV show is 2/3 of a new bookcase. This is the answer because your choice in this example is binary: watch TV or build bookcases.

    b. In lecture, when we discussed the opportunity cost of going to college instead of taking a job, we listed the explicit costs of college (such as tuition and books) and the earnings that you would forgo. But we did not list your living expenses, such as food and rent, while you were in graduate school. Should those be included as part of the opportunity cost?

    Living expenses such as food and rent are not listed because you would incur these expenses even if you don't go to college. Refinement: If living expenses are systematically higher in college than in your non-college job (for example college is located in an expensive area such as Berkeley), then the extra rent you have to pay to go to college would also be part of the opportunity cost (just like tuition and books).

2. Consider the example from lecture with Chris and Bill. Suppose a third person—Robinson—arrives on the island. In an hour, Robinson can catch 2 fish or gather 2 coconuts.

    a. If production is organized according to comparative advantage, in what order will the three inhabitants collect coconuts? (That is, if only one of the three collects coconuts, who will it be? And if two of them collect coconuts, which two will it be?)
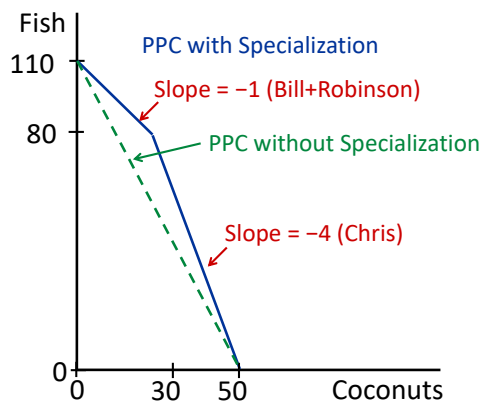
        Recall that in 1 hour, Bill can get 1 fish or 1 coconut, Chris can get 8 fish or 2 coconuts, and Robinson can get 2 fish or 2 coconuts.

        Hence, the opportunity cost of collecting 1 coconut is 1 fish for Robinson, 1 fish for Bill, 4 fish for Chris. Robinson and Bill have the same comparative advantage for collecting coconuts, and they both rank higher than Chris.

    b. Draw the production possibilities curve (PPC) when there is no specialization—that is, when each worker divides their time between fish and coconuts 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.

        With no specialization, in one hour, Chris+Bill+Robinson can catch 11 fish (1 from Bill and 8 from Chris, 2 from Robinson); or they can gather 5 coconuts (1 from Bill and 2 from Chris, 2 from Robinson). As they have 10 hours each, the PCC without specialization is the straight line 110 fish (y-axis) to 50 coconuts (x-axis).

Island PPC with and without specialization

Fish

110 — PPC with Specialization

    Slope = −1 (Bill+Robinson)

80 — PPC without Specialization

    Slope = −4 (Chris)

0

0   30 50   Coconuts

c. On the graph above, add the PPC 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 fish and coconuts that correspond to any kinks in the PPC. Why does the PPC with specialization have the shape that it does?

The PPC starts at 110 fish, 0 coconuts then slopes down -1 to 80 fish, 30 coconuts (as Robinson and Bill go first, their order does not matter as they have the same comparative advantage); then slopes down -4, to 0 fish, 50 coconuts. It is a bulge relative to no-specialization because of gains from specialization

3. Describe and show on a separate graph how each of the following developments would affect the rental price charged by landlords and the quantity of apartments rented in a city where rents are not regulated.

a. Climate change causes many people to move away from the city.

This reduces demand leading to a fall in price and quantity of rental apartments.

P
S_1
P_1
P_2
D_2
D_1
Q_2
Q
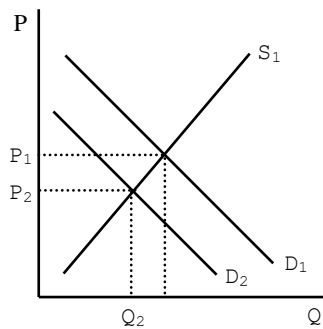
b. The opening of a new downtown light-rail system makes it cheaper to travel within the city.

This makes living inside the city more attractive which increases demand for rentals inside the city leading to an increase in price and quantity of rental apartments (reverse of a.)

P
S_1
P_2
P_1
D_2
D_1
Q_1
Q
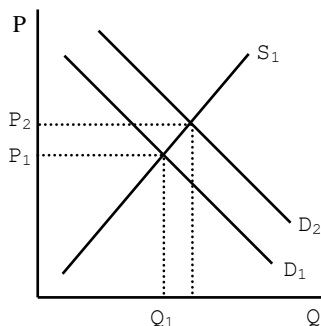
c. The city departs from its policy of not regulating the rental apartment market by placing a binding price ceiling on rents.

This will create excess demand leading to a shortage: price decreases and quantity decreases relative to market equilibrium.

P |
S$_1$

P$_1$ ......

$\overline{P}$

D$_1$

Q$_S$ Q$_1$ Q

Excess Demand
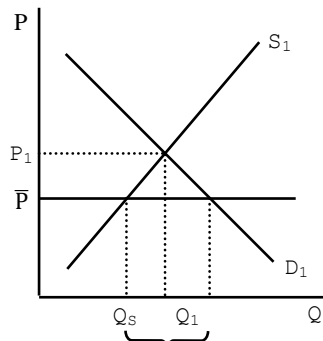
4. Read the following recent article on anti-price gouging laws that exist in many US states and that the Kamala Harris campaign proposes to apply to the entire US. https://www.axios.com/2024/08/20/price-gouging-kamala-harris-communism-kamunism

Comment on this policy in light of the textbook supply and demand model we saw in class. Discuss also whether the textbook model misses key relevant factors to judge the policy. Write your answer clearly and concisely in 10-15 lines below.

Key point: According to the basic supply and demand model seen in class. Price controls create a shortage but also allow to protect consumers from large price increases due to demand shift (as is the case in natural disasters when for example there are outages). Furthermore, in contrast to the standard model of consumption seen in class, people care about whether the price is fair. People do not think that increasing prices when there is a surge in demand is fair which explains why anti-price gouging policies are popular.

5. Empirical data analysis on the impact of gasoline taxes on gasoline prices (this is true empirical project much closer to actual research done by economists than previous exercises!)

    a. Taking the maps of gasoline prices and gasoline taxes in European countries that we discussed in class as data, depict the data on a graph with x-axis being gasoline taxes and y-axis being gasoline prices with each dot representing a country. Do the dots align in a way that suggest that gas taxes increase gas prices one-for-one?

See the graph below: it's clear the dots align along a line suggesting that gas taxes increase gas prices. The slope is indeed around one if not higher suggesting that consumers bear the full burden.

More sophisticated answer (not expected from the students at this level): The best fit line (that you'll learn in stats is the red line and it has a slope around 1.4). That either contradicts the standar theory (where consumers cannot bear more than 100% of the burden). More plausible: countries with low taxes such as Eastern Europe also have lower costs of running a gas station due to lower wages and real estate.

Gasoline Prices vs Gasoline Taxes with Line of Best Fit