Homework 2

Eco 10350, Prin of Macro, Kevin R Foster, Colin Powell School at CCNY

Due 8am Friday Feb 15

(I think of the deadline as being midnight somewhere on the planet after class, operationalized as 8am EST in NYC on day after)

Each student should submit a separate assignment, even if it is an identical computer file to the rest of your study group. When submitting assignments, please include your name and the assignment number as part of the filename. Please write the names of your study group members at the beginning of your homework.

- 1. What are the names of the people currently in your study group? (could be null set for now, although I wouldn't advise that to be optimal in long run)
- In the OpenStax textbook, please answer the "Problems" at end of Chapter 3, #53, & #55 then at end of Chapter 5, #35 and #36. (I'll start referring to these problems as 3.53, 3.55, 5.35 and 5.36)
- 3. Consider demand elasticities:
 - a. What goods do you personally demand (be creative!), which have a low price elasticity?
 - b. Which have a high price elasticity?
 - c. If we narrow the range to just phone apps, which ones would be highest/lowest elasticity? (You can discuss variations in how these are priced there are various ways for the developer to get paid.)
- 4. Consider the supply and demand for gasoline. Sketch the changes (if any) for each contingency.
 - a. What would be the effect of a slowdown in Chinese economic growth? Would price increase or decrease? Would quantity increase or decrease?
 - b. What would be the effect, on supply and demand for gasoline, of tighter sanctions on Venezuela? Would gas prices increase or decrease? Would quantity of gas sold increase or decrease?
 - c. What would be the effect of new battery technology lowering the cost of hybrid or electric vehicles? Would gas prices increase or decrease? Would quantity of gas sold increase or decrease?
 - d. How does fracking and enhanced recovery of 'tight oil' react to gasoline prices? What is that effect in the gasoline market?
 - e. How does the gasoline price affect employment in the Detroit area?
- 5. Consider a market that can be represented by a linear demand curve, $Q_D = 100 P_D$, (where Q_D is the quantity demanded and P_D is the price that demanders pay) and a linear supply curve that $Q_S = 4P_S$ (where Q_S is the quantity supplied and P_S is the price that suppliers get).

- a. Graph the two functions with P on the vertical axis.
- b. At a price of 10, how many units are demanded? How many are supplied?
- c. At a price of 30, how many units are demanded and supplied?
- d. Set $P_D=P_S$ and $Q_D=Q_S$ and solve the system of equations to find the equilibrium (find the intersection of the lines). Show on the graph.
- 6. A locality can use its coast for tourism (people are attracted to pristine coastline) or business/industry (which destroys the tourist appeal). It wants to choose what percent of coast should be preserved for tourism and how much should be kept for industry. Assume that the two industries can be modeled as follows. The coast (C) can be used for tourism, T, or business, B, where each is a percentage so $C_T + C_B = 100$. The jobs from businesses (in hundreds) can be modeled as $B = \sqrt{3C_B}$ and the number of tourists (in thousands) is $T = \sqrt{2C_T}$. From combining the first two equations we can write $B = \sqrt{3(100 C_T)}$; from the third equation we can write $C_T = \frac{T^2}{2}$.
 - a. If 100% of the coast is used for tourism, what is the maximum number of tourists? If 100% were used for business, what is the maximum number of jobs? If there were a 50/50 split, how many tourists and how many jobs?
 - b. Write the equation giving B as a function of T. Graph it. (You can use Excel to plot points if it's easier.)
 - c. What is the opportunity cost, of business given up, if the island moves from zero to one tourist unit? (You can use calculus or find the change between values.)
 - d. What is the opportunity cost, of business jobs given up, for each unit of tourism, if the island moves to 100% tourism? Plot the opportunity cost.
 - e. Do the same exercise (find opportunity cost and plot), but find opportunity cost in terms of tourists, for integer units of business jobs.
 - f. What is the best combination? What additional information is needed, to answer this?