Discussion 3

1 Topics

- Demand and Supply
- Consumer Surplus, Producer Surplus and Deadweight Loss
- Price Ceiling, Price Floor and Tariff

2 Problems

1. For each of the following markets, predict the change in price and quantity sold using a supply-and-demand graph:
   (a) The market for automobiles: Auto workers' unions successfully campaign for higher wages.
   (b) The market for beef: Chicken becomes cheaper.
   (c) The market for coffee: Cream becomes cheaper.
   (d) The market for bread: Low-carb diets go out of style, and a drought ravages the wheat crop.
   (e) The market for paperback books: Kindle becomes popular, and paper gets more expensive.
2. Suppose a serious Zombie virus burst out in a small town in Atlanta recently and Beta-4 antivirus is only known efficient medicine for this disease. Suppose the local demand for Beta-4 before this burst-out was $P = 250 - 0.5Q$ and the local supply for Beta-4 is $P = 50 + 0.5Q$.
   (a) Before the burst-out of Zombie virus, what was the equilibrium price and quantity of Beta-4 antivirus?
   (b) After the first week of burst-out, the demand for Beta-4 in Atlanta changes to $P = 1550 - Q$. Suppose this town could still import Beta-4 from other places in US at its previous price. What was the quantity of Beta-4 imported from other places?
   (c) Suppose all the long distance transportation was closed after a month of burst-out. Therefore this town cannot buy any Beta-4 from other places. To avoid the rapid growth of price, the local government set up a price ceiling

of $ 250 per unit. What was the quantity of Beta-4 supplied and demanded in the market? How big was the deadweight loss (compared to free market)?

(d) Suppose local residents use guns to shoot the head of Zombie to protect themselves. In this scenario, what is the most likely relationship between gun and Beta-4 antivirus? (hint: complement or substitute)

3. Consider the pumpkin market in USA. Suppose the domestic demand for pumpkins is given by $Q = 100 - 2P$, and the domestic supply is given by $Q = 2P - 20$. Consider this market opening up to trade. For simplicity assume the USA is "small" in the pumpkin market, so its presence does not affect the world price.

(a) If the world price for pumpkins is $40, what will be the quantity demanded and supplied in the domestic market? Will the US have excess demand or supply? How large is it? How much will consumer and producer surplus change compared to the closed market case?

(b) If the world price for pumpkins is $10, what will be the quantity demanded and supplied in the domestic market? Will the US have excess demand or supply? How large is it? How much will consumer and producer surplus change compared to the closed market case?

(c) Suppose that the world price for pumpkins is $10, and now the US government implements a tariff of $10, then how many pumpkins will be imported? How much revenue is raised for the government? What is the deadweight loss caused by the tariff? Illustrate on a diagram.

4. The following equations describe consumption of brats in Wisconsin on a given day. The first equation represents the male population, the second one represents the female population.

$$P = 100 - \frac{1}{4}Q_1$$

$$P = 125 - \frac{1}{2}Q_2$$

(a) Graph both demand curves side by side.

(b) Find the market demand equation and graph it next to the others.

(c) Suppose the supply for brats is $P = Q$, what is the equilibrium quantity and price of brats?