Section Notes 15

Covering material from Lecture on March 7^{th}

Class Outline

1. Number of Firms in Perfect Competition
2. Welfare Analysis

1 Number of Firms in Perfect Competition

Perfect Competition implies that firms act as "price-takers" and don't believe prices change when they maximize profits. However, for the entire market prices still depend on the amount of production in the economy. Since identical firms will all produce the same amount of quantity for a given price, we can think about price as a function of the number of firms in the industry.

Problem: (P&R, Chapter 8, Exercise 10)
Suppose you are given the following information about a particular industry.
Market Demand is $Q^D = 6500 - 100P$, Market Supply is $Q^S = 1200P$, and each firm's total cost function is $C(q) = 722 + \frac{q^2}{200}$. Assume that all firms are identical and that the market is characterized by pure competition.

a. Find the equilibrium price, quantity, output supplied, and the profit of each firm.

b. Would you expect to see entry into or exit from the industry in the long run? What effect will entry or exit have on market equilibrium?

c. What is the lowest price at which each firm would sell its output in the long run? What are its profits?

d. What is the lowest price at which each firm would sell its output in the short run? Is profit positive, negative, or zero at this price?

Problem: (P&R, Chapter 8, Exercise 12)

A number of stores offer film developing as a service to their customers. Suppose that each store offering this service has a cost function $C(q) = 50 + 0.5q + 0.08q^2$.

a. If the going rate for developing a roll of film is \$8.50 is the industry in long-run equilibrium? If not, find he price associated with long-run equilibrium.

b. Suppose now that a new technology is developed which will reduce the cost of film developing by 25%. Assuming that the industry is in long-run equilibrium, how much would any one store be willing to pay to purchase this new technology

2 Welfare Analysis

So we know that welfare is affected by government interventions, but by how much? We can determine this by calculating changes in consumer surplus, producer surplus, government revenues, and deadweight losses.

Problem: (P&R Chapter 9, Exercise 2)
Suppose the market for widgets can be described by the following equations:

$$\begin{aligned} P &= 10 - Q^D \\ P &= Q - 4^S \end{aligned}$$

where P is he price in dollars per unit and !Q is the quantity in thousands of units. Then:

a. What is the equilibrium price and quantity?

b. Suppose the government imposes a tax of \$1 per unit. What will the new equilibrium quantity by? What price will the buyer pay? What amount per unit will the seller receive? What are tax revenues?

c. What is the welfare impact of the tax?

d. Now suppose that the government takes away the tax and instead gives a \$1 per unit subsidy. What will the equilibrium quantity be? What price will the buyer pay? What amount per unit will the seller receive? What will be the total cost to to the government?

e. What is the welfare impact of the subsidy?