

## SECTION NOTES 25

Covering material from Lecture on April 25<sup>th</sup>

### CLASS OUTLINE

1. Sequential Game
2. Assymmetric Information

**HW Remark:** What does it mean for a market to be efficient? What does it mean for an outcome in a game (i.e. pay-off matrix) to be efficient?

## 1 Sequential Game

**Problem:** (P&R, Chapter 13, Exercise 10)

Defendo is introducing a new video game and will become a monopoly. It can use a publicly available technology  $A$ , with an annual cost given by:  $C^A(q) = 10 + 8q$ . Alternatively, they created a new technology that only they have with an annual cost given by  $C^B(q) = 60 + 2q$ . They face an annual market demand of  $P = 20 - Q$ , where  $Q$  is total demand.

- a. If Defendo knew they would maintain monopoly for the entire life of product (with no threat of entry), what technology should they adopt and what are their profits?
- b. Suppose a competitor, Offendo, wants to also introduce the product and has access to technology  $A$ . If Offendo enters, Defendo will have no timing advantage.
  - i. If Defendo adopted technology  $A$ , and Offendo enters, what is the annual profit of each firm?
  - ii. If Defendo adopted technology  $B$ , and Offendo enters, what is the annual profit of each firm?
  - iii. Which technology should Defendo adopt, if Offendo is threatening entry? What are their profits and what is consumer surplus?
- c. What happens to social welfare as a result of the threat of entry?

## 2 Assymmetric Information

**Problem:** There are many buyers who value high-quality used cars at the full-information market price of  $p_1$  and lemons at  $p_2$ . There are a limited number of potential sellers who value high-quality cars at  $v_1 \leq p_1$  and lemons at  $v_2 \leq p_2$ . Everyone is risk neutral. The share of lemons among all the used cars that might potentially be sold is  $\theta$ .

1. Under what conditions are all cars sold? When are only lemons sold? Are there any conditions under which no cars are sold?
2. Suppose that the buyers incur a transaction cost of \$200 to purchase a car. This transaction cost is the value of their time to find a car. What is the equilibrium? Is it possible that no cars are sold?