Microeconomics III (Information Economics)

Master in Industrial Economics. Spring 2012

Problems Chapter 2

Problem 1.

The quality in the used cars market is variable. Suppose, that the quality of a given car, measured in monetary units, can be any number between 2.000 and 6.000, with uniform probability. The distribution of quality is known to everybody and owners know the quality of the car they are selling, but not the buyer. All the agents are risk neutral.

(a) If a buyer thinks that all cars are in the market, what is the maximum price he is willing to pay?

(b) At the previous price, what is the quality of the cars in the market?

(c) Find the equilibrium in this market.

Suppose now buyers value each car at a price 20% higher than the owner. The sell prices for the owners are as before.

Suppose that there are more buyers than sellers, so that at the competitive price each buyer pays his reservation price.

(d) What is the new equilibrium?

Problem 2

In the insurance market there are two types of agents A and B, in equal proportions. Both types of agents have the same initial wealth w = 1 and the same preferences on money represented by the utility function $u(x) = \sqrt{x}$, where x is money. However, their risk of loss is different. Agents of type A have a probability of loss of 0.5 , whereas the probability of loss for type B agents is 0.2. The insurance companies can distinguish the types of the agents but the agents do not know their types.

(a) Compute the competitive equilibrium in this market.

The government regulates the market and forces the companies to offer a unique full insurance policy and cannot reject any customer.

(b) Compute the new equilibrium and explain why this would not be an equilibrium if there were no regulation.

(c) Discuss the efficiency in each situation and, if possible, compare them.

Problem 3

(*Separating equilibrium in the model where "The principals compete for the agents". Based on Exercise 22b in Microeconomics by Thomas Nechyba*). Suppose a perfect competitve insurance market. Agents face the possibility of a bad outcome in which their consumption is x_1 and the possibility of a good outcome in which their consumption is x_2. Suppose further that there are two consumer types, consumers of type δ facing outcome x_1 with probability δ and consumers of type ϕ facing outcome x_1 with probability ϕ. We assume that $\delta<\phi$. Each type knows the risk he or she faces but the insurance companies do not which type any given individuals

represents. Insurance companies know the fraction γ of the population of type δ (and the remaining fraction (1-γ) is of type ϕ). INsurance companies offer insurance contracts that are defined by an insurance premium p and and insurance benefit b (if a consumer purchases an insurance contract (p, b), his or her consumption in the good state is $(x_2 - p)$ while his or her consumption in the bad state is $(x_1 + b - p)$. Suppose that the utility function of the agents is $u(x) = \alpha \ln(x)$. Suppose that $x_1 = 10,\ x_2 = 250,\ \delta = 0.25$ and $\phi = 0.5$. Find the contracts $(p_\delta, b_\delta), \left(p_\phi, b_\phi\right)$ that can be a separating equilibrium in this market.

- Find the contracts $(p_\delta, b_\delta), \left(p_\phi, b_\phi\right)$ that can be a separating equilibrium in this market.
- Can you say something about how the equilibrium insurance contract for the low risk type δ changes as the high type becomes riskier. i.e. as ϕ increases?

More problems:

Problem 4. (exercise 1, page 160, of the book by Ines Macho Stadler and Perez Castrillo)
Problem 5. (exercise 2, page 160, of the book by Ines Macho Stadler and Perez Castrillo)
Problem 6. (exercise 3, page 161, of the book byInes Macho Stadler and Perez Castrillo)
Problem 7. (exercise 4, page 161, of the book by Ines Macho Stadler and Perez Castrillo)
Problem 8. (exercise 6, page 162, of the book by Ines Macho Stadler and Perez Castrillo)