

Problem Set 10 - Information

1. Firms that produce low quality TVs have a marginal cost of production equal to £ 100. Firms that produce high quality TVs have a marginal cost of production equal to £ 200. Consumers value low quality TVs at £ 110 and high quality TVs at £ 210. What will the prices be if there is full information? If 25% of TVs are low quality, but consumers don't know which is which, what will happen in this market? What could we do to prevent this?
2. People cannot tell the difference between high quality heroin and low quality heroin. I value high quality heroin at £ 20 and low quality heroin at £ 5. The drug dealer values high quality heroin at £ 15 and low quality heroin at £ 4. At what critical percentage of low quality heroin do we get only low quality heroin in the market? That is, what percentage of low quality heroin do we need for there to be adverse selection?
3. It is a common saying that new cars lose 10% of their value the second you drive them off a lot. Defend this statement using the concept of asymmetric information.
4. While self-employed workers have the option to purchase private health insurance, many - especially younger - do not due to adverse selection. Suppose that half the population is healthy and the other half is unhealthy. The cost of getting sick is \$1,000 for healthy people and \$10,000 for unhealthy people. In a given year, any one person gets sick with probability .4. Each person's utility of wealth function is $U(W) = W^{0.5}$. Initial wealth for everybody is \$30,000. Although each person knows whether she is healthy, the insurance company does not (so they must charge the same price to everybody). The insurance company offers complete, actuarially fair insurance
 - a. If everybody purchases insurance, what is the price of the insurance?
 - b. At the price you determined, do healthy people purchase insurance?
 - c. If only unhealthy people purchase insurance, what is the price?
 - d. At the price you determined in c, do unhealthy people purchase insurance?
 - e. Given that each person has the option to purchase insurance? What is the price of the insurance?
5. If people could tell how safe a firm is, will firm under-invest in safety? Why or why not?

6. There was a superbowl ad a few years ago without any talking or information... it was just a video of a monkey standing for 30 seconds then the company's logo flashed on the screen. This add cost millions of dollars. Using what you learned in this lecture, can you describe why the firm did this?
7. Education is a continuous variable, where e_h is the years of schooling of a high-ability worker and e_l is years of schooling of a low ability worker. The education for these types of workers is c_h and c_l , respectively, where $c_l > c_h$. The wages they receive if employers can tell them apart are w_h and w_l . Under what conditions is a separating equilibrium possible? How much education will each type of worker get?
8. Suppose that only high quality workers can signal their ability by attending a technical school at cost c . Wages for highly productive employees are w_h ; wages for low productivity workers are w_l . If initially a pooling equilibrium occurs, can the firm alter the cost or payoffs to generate a separating equilibrium? How?
9. Suppose the wage of a high quality person is £ 10 and the wage of a low quality person is £ 5. Low quality people cannot get education and the cost of education for a high type is £ 3. θ is the percentage of people who are high quality. For what values of θ is separation a unique equilibrium? For what values of θ do we have multiple equilibria?
10. We have 40 high quality people and 20 low quality people. The wage for a high quality person is £ 500 and the wage for a low quality person is £ 100. The cost of going to school is £ 200 (and bad people cant attend). People are given a vote whether or not to ban education. What is the outcome?
 - a. Suppose the government lowers the cost of education to £ 100. What will happen in the labor market? What will be the result of the vote now?