Applied Microeconomics: Supervision 8

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The essay question (question 4) will be marked. Limit 1500 words, be precise with your answer and note essay technique comments on the course web page.

1. Why do many insurance companies pay for routine checkups and dental care. What can explain this? How might this type of coverage affect the premium paid?

2. There are two types of workers $\theta \in \{1, 2\}$. A workers of type θ faces a cost of education $c(e; \theta) = e/\theta$,and his utility over wage and education is given by
$$u(w, e, \theta) = w - c(e, \theta).$$
Firms hire workers to maximize profits. A worker of type θ contributes marginal product equal to θ.

   (a) What are the possible separating and pooling equilibirum?

   (b) Why can a pooling equilibrium be sustained in Spence's signalling model but not in the Rothschild-Stiglitz screening model?

   (c) Explain why in both models, the "good" types (high productivity in Spence, or low risk in Rothschild-Stiglitz) lose out in a separating equilibrium.

3. Each year on the 1st of April, one in 2 Belgians develops Arcanumitis, a nonlethal but embarrassing condition which causes its victim to suddenly turn purple. Doctors believe that Arcanumitis is caused by a genetic factor, but there is as yet no way for anyone (including those afflicted) to assess whether any individual person will turn purple. The disutility of being purple is so large that anyone to whom this happens is willing to pay the €900 price of a drug that instantly reverses the effect.

   (a) Let utility over wealth be given by
   $$u(w) = \sqrt{w}$$
   Consider a person with a wealth of €2500. What is the maximum amount that this person will pay for insurance against the financial risk posed by Arcanumitis? How large is the risk premium?

(b) Suppose all Belgians are like the person in part (a). There is a single insurance company whose administrative costs are €5 per customer. Under what conditions will this company be able to reliably make a profit selling insurance in this market?

(c) Suppose that another company with identical costs enters the market. What outcome do you expect?

(d) A pharmaceutical company is developing a genetic test that predicts whether a person carries the Arcanumitis gene. In laboratory trials, the test returned positive in 2/3 of all cases. Subjects who tested "positive" later turned purple with probability 3/4. Those who tested "negative" never turned purple. If approved for commercial use, it is expected that insurance companies will use the test to set insurance premiums. What result do you expect? Should use of the test be approved?

4. Suppose that an econometrician establishes that formal education signifcantly and positively affects wages even after innate abilities and education outside of school are controlled for. What conclusions might you draw regarding the human capital vs. signaling explanation of wages? Would these estimates justify government subsidies to education?