

Übungsblatt 5

• 5-1 Adverse selection in insurance markets

In a particular population everyone runs the risk of loosing \$ 1,000 randomly. Each person's loss occurs independently from anybody else's. The probability π that the loss L occurs depends on the individual's type. 90% of the population are of the l type, who's loss probability π_l equals 10%. The rest of the population is of the h type and faces L with $\pi_h = 60\%$. Every individual knows its type, but nobody else does and there is no way to signal one's type. Each individual's utility is given by $u(y) = 1 - e^{-\lambda y}$. (For this form you have to regard y as a random variable that either equals $y_1 = -pC$ or $y_2 = (1 - p)C - L$, depending on the occurrence of the loss.)

a) The government regulates the insurance market and only allows pooling contracts. Assume that the government either allows only the same contract to be offered by every company or that there is only one single company in the market. It demands the insurance companies to break even, i. e. to make zero profits.

- i) Do there exist pooling full insurance equilibria for $\lambda = 0,002(0,0005)$?
- ii) For $\lambda = 0,0005$, does there exist any zero-profit pooling contract which would represent an equilibrium?

b) Now the government abandons regulation, and a competitive insurance market emerges.

- i) What happens to a company that still offers a pooling contract?
- ii) What are the Rothschild-Stiglitz contracts in this competitive insurance market? (Calculate P_l , P_h and C_h^{RS} , where $P_l = p_l \cdot C_l$. Do not try to calculate C_l^{RS} , but express C_l^{RS} as an implicit function of λ .)

- **5-2 Adverse selection in insurance markets with more than two types of agents**

Assume we have three different types of agents, who only differ in their probability π of suffering a loss L . Repeat your analysis in the Rothschild-Stiglitz framework and show that there are now two inefficient contracts whereas there is still no-distortion at the top! (diagrammatical argumentation is sufficient)

- **5-3 Adverse selection: Exclusiveness, Equilibrium-non-existence**

The existence of a Rothschild-Stiglitz separating equilibrium hinges on several crucial features. Some of them will be discussed below:

- a) Exclusiveness of contracts:

- i) Why is it necessary to make the implicit assumption that an insurer can observe the total amount of cover bought by an insured from all insurers?

- ii) How does an insurance company solve this monitoring problem in the real world?

- b) Destabilizing pooling contracts:

- What is the role of the share of high risk persons in society in this context?