

## Übungsblatt 3

- **3-1 Comparative statics with respect to  $w$**

A risk averse agent faces a situation, where, with probability  $\pi$ , she will suffer a monetary loss  $L$  of her initial wealth  $w$ . She can buy insurance cover  $C$  at price  $pC$ , where  $p$  is the exogenously given premium rate.

a) What effect has a marginal increase in her initial wealth  $w$  on her optimal demand for cover  $C^*$ ? Under what conditions do you get unambiguous results?

b) Use your results from a) and analyze the problem for the following utility functions:

(i)  $u(w) = \ln w$

(ii)  $u(w) = w - aw^2$

(iii)  $u(w) = -e^{-aw}$

Explain, why results in (i), (ii) and (iii) differ.

- **3-2 Comparative statics with respect to  $\pi$**

a) An agent has a logarithmic utility function [ $u(w) = \ln w$ ]. Her situation is the same as in 3-1. How does the optimal cover  $C^*$  change, if suffering a loss becomes more likely, i.e., if the loss probability  $\pi$  increases?

b) The same agent, bad enough, has now another problem. Instead of a higher probability for the bad things to happen, these bad things now become worse. That is, the possible loss  $L$  increases ceteris paribus. How does her demand  $C^*$  change?

(As we have the same poor agent, her utility function is still  $u(w) = \ln w$ .)

- **3-3 Insurance demand by firms; reinsurance**

Standard economic theory suggests, that firms are risk neutral agents. Nevertheless we find numerous examples where firms buy insurance cover and they do that in huge amounts.

a) What are possible explanations for the firms' irrational acts? Is it possible that buying insurance is optimal even for risk neutral agents?

**b)** Especially surprising is the existence of reinsurance companies. Do the arguments from a) hold for them, too? Are there other plausible explanations for their existence?