1 Master in Industrial Organization and Markets

Universidad Carlos III
Microeconomics III (Information Economics)
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Problems Moral Hazard

Problem 1. The consumers in an economy own 1 unit of wealth each. They are subject to risk. If a consumer is not careful, she may loose her wealth with probability $p = 0.75$. On the other hand, if a consumer is careful, this probability is 0.25. The utility function of the consumers is $u = \sqrt{x} - e$, where x is wealth and e takes the value 0.1 if the consumer chooses to be careful and 0 otherwise. In the economy, there is perfect competition among the insurance companies which, in addition are risk neutral.

(a) Argue that a policy that insures completely the consumers generates a moral hazard problem.

(b) What would be the price of the above full insurance policy? Would the consumers buy it?

Problem 2. Suppose that in a principal-agent relation there are two possible outcomes, whose values are 10000 and 100 . The agent chooses among two possible efforts, which are not observable by the principal. The distribution of probabilities on outcomes as a function of the efforts is summarized in the following table

		Results	
		10000	100
Efforts	$e = 0$	1/4	3/4
	$e = 2$	3/4	1/4

The principal is risk-neutral and the agent is risk-averse. The preferences are described by the utility functions

$$B(x, w) = x - w, \text{ and } u(w, e) = w^{1/4} - e$$

where x represents the outcome, w the salary and e is the effort. The level of reservation utility of the agent is $u^R = 1$. Suppose that the principal is a monopolist.

a) Write and solve the problems of the principal when he can observe the effort of the agent. Determine the salaries of the agent and the profits of the principal. Justify what would be the level of effort chosen by the principal.

b) Write and solve the problems of the principal when he cannot observe the effort of the agent. Determine the salaries of the agent and the profits of the principal. What would be the level of effort chosen by the principal?

c) Compare the utilities and profits of the contracts computed in parts (a) and (b). Which situation is preferred by each of the agents? How much would the principal be willing to pay to be able to monitor the effort?