

Cole's Prelim Problem Econ 704

There is a principal and agent who enter into a production/insurance arrangement. In each period the agent chooses how much to work. The agent is subject to both a production, θ , and a disutility of effort, ω , shock which are his private information. One unit of effort produces θ units of output where $\theta \in \Theta = \{\theta_1, \dots, \theta_N\}$, where $\theta_i < \theta_{i+1}$. The agent's disutility shock $\omega \in \Omega = \{\omega_1, \dots, \omega_M\}$, where $\omega_i > \omega_{i+1}$. The agent's payoff within the period is given by

$$u(c) - v(\omega l)$$

where $u(\cdot)$ is strictly concave and $v(\cdot)$ is strictly convex, and his output is given by

$$y = \theta l.$$

The principal's is given by

$$y - c.$$

Assume that both the principal and the agent care about their expected payoffs and discount future payoffs (where relevant) at rate β .

A. Consider a one-period version of this model. Define a contract between the principal and the agent. Construct the optimal contracting problem. To standardize notation, use " y " for output and " c " for consumption in your contract.

B. Characterize the optimal one-period contract using your contracting problem. Are the outcomes degenerate; i.e. does the agent produce the same output for all θ and ω ?

C. Consider a two-period version of our arrangement. Define an optimal contract and construct the optimal contracting problem and its associated first-order conditions.

D. Does a version of inverse Euler the condition hold for the two period contract? Be sure to prove your answer.