

Cole's Prelim Problem Econ 704

Consider the following simple enforcement model. Assume that there is a single agent who ends up contracting with a single principal. The agent has stochastic income $y_t \in Y$ for $t = 1, 2, \dots$. These income draws are i.i.d. and occur with probability $\Pi(y)$. The agent has standard expected-utility-risk-averse preferences

$$E_0 \left\{ \sum_{t=1}^{\infty} \beta^t u(c_t) \right\},$$

where $u' > 0$ and $u'' < 0$. The principal has deep pockets and only cares about the expected cost of offering an insurance contract to the agent. The principal discounts his future costs at the same rate as the agent; i.e. β .

Assume that there is limited enforcement on the agent's part in the following sense. In any period, after seeing his income, the agent can run away. If the agent runs away in period t , then he/she consumes ϕy_t in the first period of the runaway, where $\phi \leq 1$, and then is in autarky thereafter consuming y_{t+j} for $j \geq 1$. We will consider two different cases of the principal's ability to commit below.

A) Here we want to assume that the principal can completely commit to the contract. To close the model, assume that in period 0 (before any income's have been realized) a number of principals compete to contract with the agent. Characterize the optimal contract. To do so, be sure to define a contract, and set-up the optimal contracting problem to determine the efficient contract. Most important of all, explain your results. Be sure to discuss how your results will depend upon ϕ .

B) Assume now that the principal can only commit within the period. The timing is as follows. Each period, before he sees his income, the agent contracts with a single principal whom he selects from a group of potential principals all of whom offer competing contracts. After agreeing to the contract and seeing his income, the agent can runaway as in (A). What will the efficient contract look like now and how does the extent of insurance depend upon ϕ ?

C) Return to the commitment world of (A). Assume also that there is a government which has the power to tax income and use these proceeds to pay transfers. Assume that the agent's after-tax income is

$$\tilde{y}_t = y_t(1 - \tau) + \tau E\{y\}.$$

The agent is contracting with the principal given that his income is $\{\tilde{y}_t\}$ here. Explain why a tax rate of $\tau = 1$ will make the agent better off as compared to a tax rate of $\tau = 0$. Is there a role of the principal with $\tau = 1$? Finally, explain why an intermediate tax rate $\tau \in (0, 1)$ may make the agent worse off.