

separating equilibrium
through signalling

education as a 'pure signal'

(1)

education and productivity

(2)

critical education e^*

employer offers wage:

w_L

w_H

if

$e < e^*$

$e \geq e^*$

} contract

e^* defines a separating ep.
if $\bar{e}_L < e^* \leq \bar{e}_H$

$$L \quad u_L(0, W_L) = W_L = W_H - \bar{e}_L \cdot c_L = u(\bar{e}_L, W_H)$$

$$H \quad u_H(0, W_L) = W_L = W_H - \bar{e}_H \cdot c_H = u(\bar{e}_H, W_H)$$

$$\bar{e}_L = \frac{W_H - W_L}{c_L}$$

$$\bar{e}_H = \frac{W_H - W_L}{c_H}$$

$$c_L > c_H \rightarrow \bar{e}_L < \bar{e}_H$$

$$W_L \geq W^R = W_L^R = W_H^R$$

Participation constraint

$W_L = W^R$ employer is a monopsonist

$$W_H > W^R$$

THE WAGE TO THE EDUCATED WORKER MUST COVER THE EDUCATION COST

the contract does not meet:
incentive compatibility constraint

THIS CONSTRAINT SHOULD IMPOSE A CONDITION SUCH THAT (1) THE CONTRACTUAL WAGE IS w_H IF EDUCATION = e^* AND OUTPUT PER HOUR = a_H
(2) THE CONTRACTUAL WAGE IS ZERO OTHERWISE. MOREOVER THE WAGE w_H MUST BE LARGE ENOUGH TO MAKE THE H WORKER BETTER OFF BY SIGNING THIS CONTRACT, THAN WITH ANY OTHER COURSE OF ACTION.

(1) CHOOSING EDUCATION = e^* (2) PRODUCING OUTPUT PER HOUR = a_H (3)

Separating equilibrium
 through self selection
 Full information
 Take-it or leave-it contract

THE CONTRACT MEETS THE PARTICIPATION CONSTRAINT:

$$\begin{aligned}
 L \quad W_L &= W^R \text{ if } y_L \geq a_L \text{ and } W_L = 0 \text{ otherwise} \\
 H \quad W_H &= W^R \text{ if } y_H \geq a_H \text{ and } W_H = 0 \text{ otherwise}
 \end{aligned}$$

THE CONTRACT MEETS THE INCENTIVE COMPATIBILITY CONSTRAINT STATING THAT:

$$W_L(y = a_L) > W_L(y < a_L) = 0$$

$$W_H(y = a_H) > W_H(y < a_H) = 0$$

Asymmetric information

$$w_L \geq w^R$$

$$w_H \geq w^R$$

Particip. constraint

NOW THE EMPLOYER OFFERS TO EVERY WORKER THE CHOICE BETWEEN TWO CONTRACTS, ONE WITH WAGE w_L and task a_L , THE OTHER WITH WAGE w_H AND TASK a_H . IF THE TASK IS NOT ACCOMPLISHED THE WAGE IS ZERO

THE L WORKER HAS NO INCENTIVE TO CHOOSE THE H CONTRACT, BECAUSE HE CANNOT PRODUCE OUTPUT a_H

TO MAKE SURE THAT THE H WORKER WILL SELECT THE H CONTRACT, THE WAGE

w_H

must meet the
incentive compatibility
constraint

$$y_L = a_L \cdot L_L \quad \text{if } L_L = 1 \quad y_L = a_L$$

$$y_H = a_H \cdot L_H \quad \text{if } y_H = 1 \quad L_H = \frac{1}{a_H}$$

$$1 > a_L \cdot \frac{1}{a_H} = \text{time necessary to H for producing } a_L$$

$$\left(1 - \frac{a_L}{a_H}\right) \text{ rest time per hour of H if he produced } a_L$$

Information Rent $\rightarrow W^R \left(1 - \frac{a_L}{a_H}\right)$ Value of Rest time

$$W^R + W^R \left(1 - \frac{a_L}{a_H}\right) = \text{Value for H}$$

for H from signing contract L informat.

$$W_H \geq W^R + \left(W^R \left(1 - \frac{a_L}{a_H}\right) \right) \text{ Rent}$$

incentive compatibility constraint