

Hiring under asymmetric information

Sketch of solution

$$Q1: \max_{q_1} \pi(q_1) - k \quad \Rightarrow \max_{q_1} \pi(q_1) - \theta c(q_1)$$

s.t. $k - \theta c(q_1) \geq 0$

$$q_1^*: \pi'(q_1^*) = \theta_1 c'(q_1^*) \quad k_1^* = \theta_1 c(q_1^*)$$

$$q_2^*: \pi'(q_2^*) = \theta_2 c'(q_2^*) \quad k_2^* = \theta_2 c(q_2^*)$$

$$Q2: \max_{k_1, k_2} P(\pi(q_1) - k_1) + (1-P)(\pi(q_2) - k_2)$$

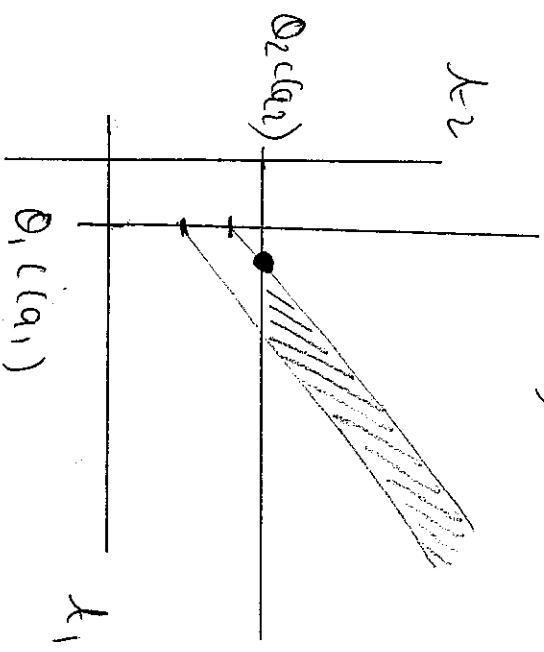
$$\text{s.t.} \quad k_1 - \theta_1 c(q_1) \geq 0$$

$$k_2 - \theta_2 c(q_2) \geq 0$$

$$k_1 - \theta_1 c(q_1) \geq k_2 - \theta_1 c(q_2)$$

$$k_2 - \theta_2 c(q_2) \geq k_1 - \theta_2 c(q_1)$$

k_2



Step 1

$$k_1 \geq \theta_1 c(q_1)$$

$$k_2 \geq \theta_2 c(q_2)$$

$$k_2 \leq \theta_1 (c(q_2) - c(q_1)) + k_1$$

$$k_2 \geq \theta_2 (c(q_2) - c(q_1)) + k_1$$

$$k_2^{*x} = \theta_2 c(q_2)$$

$$k_1^{*x} = \theta_1 c(q_1) + \frac{(\theta_2 - \theta_1) c(q_2)}{= \Delta \theta}$$

step 2

$$\max p(\pi(q_1) - \theta_1 c(q_1) - \Delta \theta c(q_2)) + (1-p)(\pi(q_1) - \theta_2 c(q_2))$$

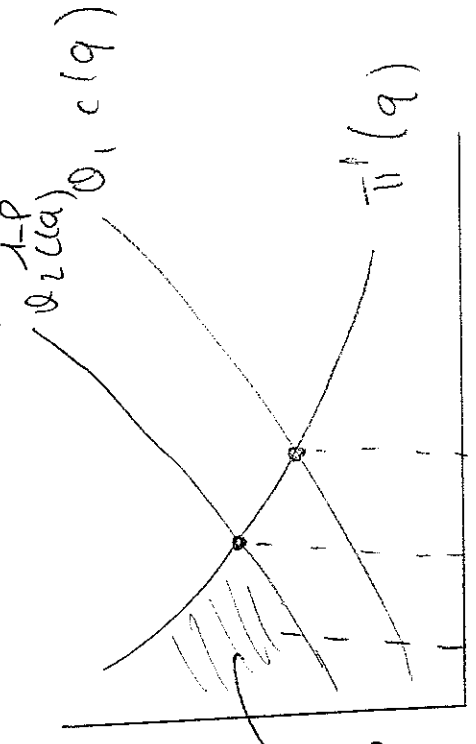
$$q_2 \leq q_1$$

FOC q_1

$$\pi'(q_1) - \theta_1 c'(q_1) = 0 \quad q_1^{**} = q_1^*$$

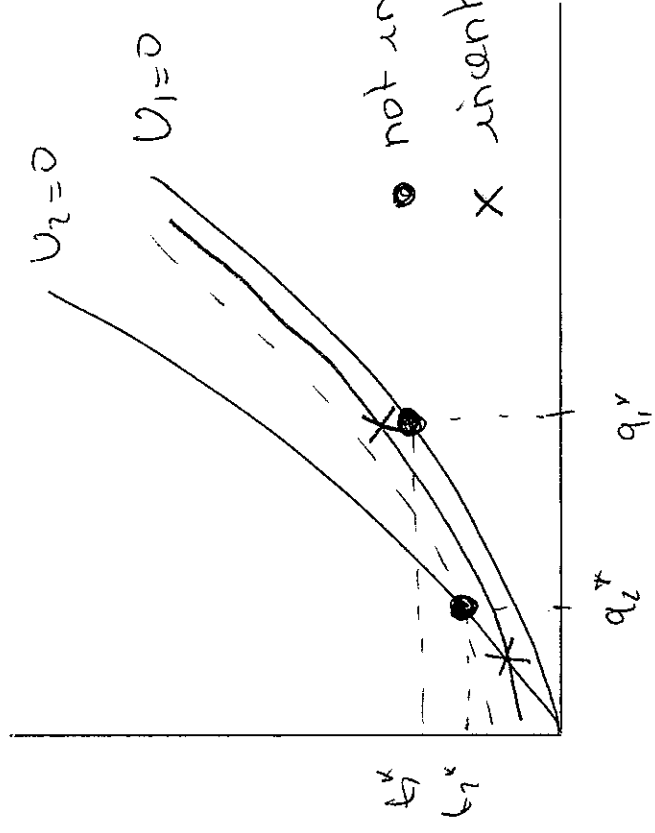
FOC q_2

$$\pi'(q_2) - \theta_2 c'(q_2) = \frac{p}{1-p} \Delta \theta c'(q_2) \quad q_2^{**} < q_2^*$$



in this area $\pi'_1 - \theta_1 c'_1 > 0$ as required

$$q_2^{**} < q_1^* \quad q_1^* = q_1^{**}$$



● not incentive compatible
x incentive compatible