What would a social planner do in the principal-agent environment with a privately informed agent?

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Principal-agent model with privately-informed agent

P's objective is to maximize expected profit. In the absence of hidden information, P's optimal contract would both

1. achieve the allocatively efficient output level x_s^* from each type s of A: $R'(x_s^*) = C_x(x_s^*, s)$.
2. give each type of A utility equal to his reservation utility, i.e. avoid leaving rents to A.

When A is privately informed before signing the contract, P faces a tradeoff between efficient production and rent extraction.

What would a social planner do in this environment?

- Suppose the planner cares about allocative efficiency but does not have explicit distributional objectives.
- So planner cares about payments from P to A only because of their effect on participation and self-selection decisions by A types.

What would a social planner do?

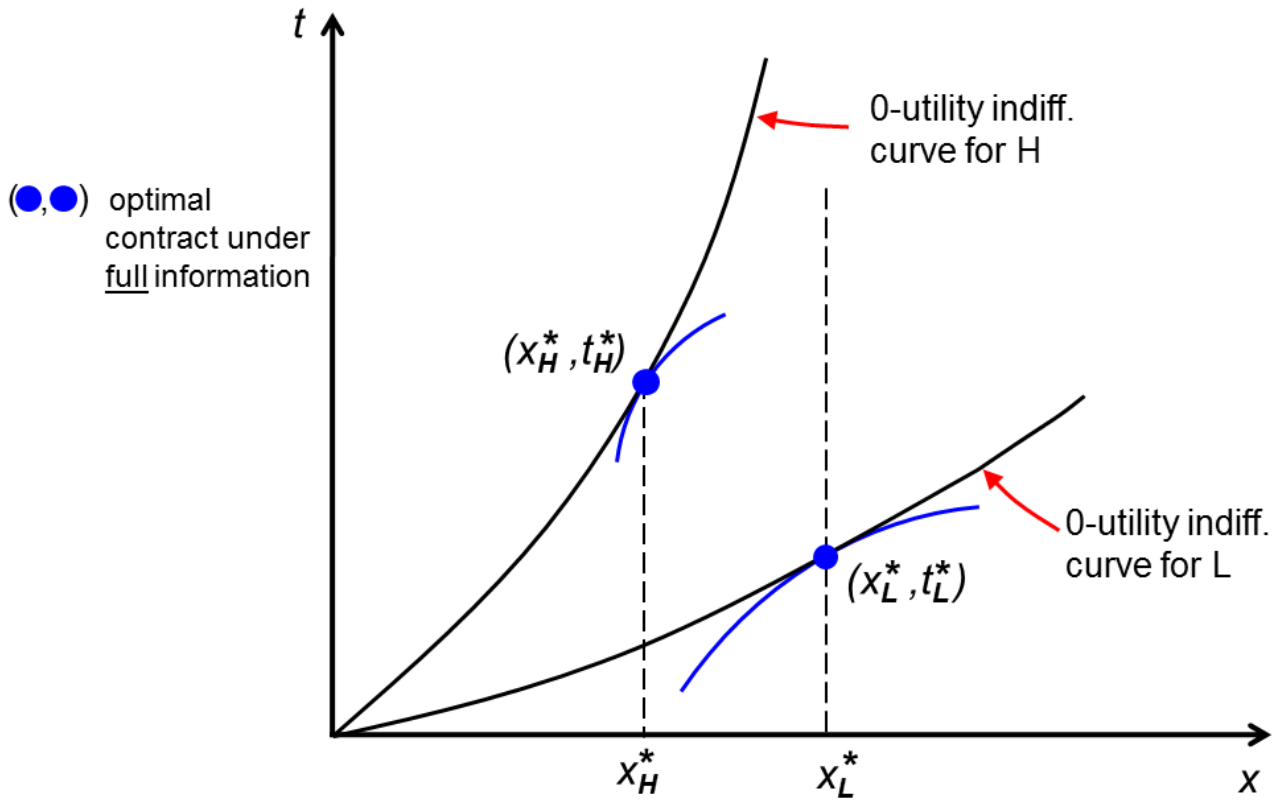
Planner would solve

$$\max_{(x_H,t_H),(x_L,t_L)} q(R(x_H) - C(x_H, H)) + (1-q)(R(x_L) - C(x_L, L))$$

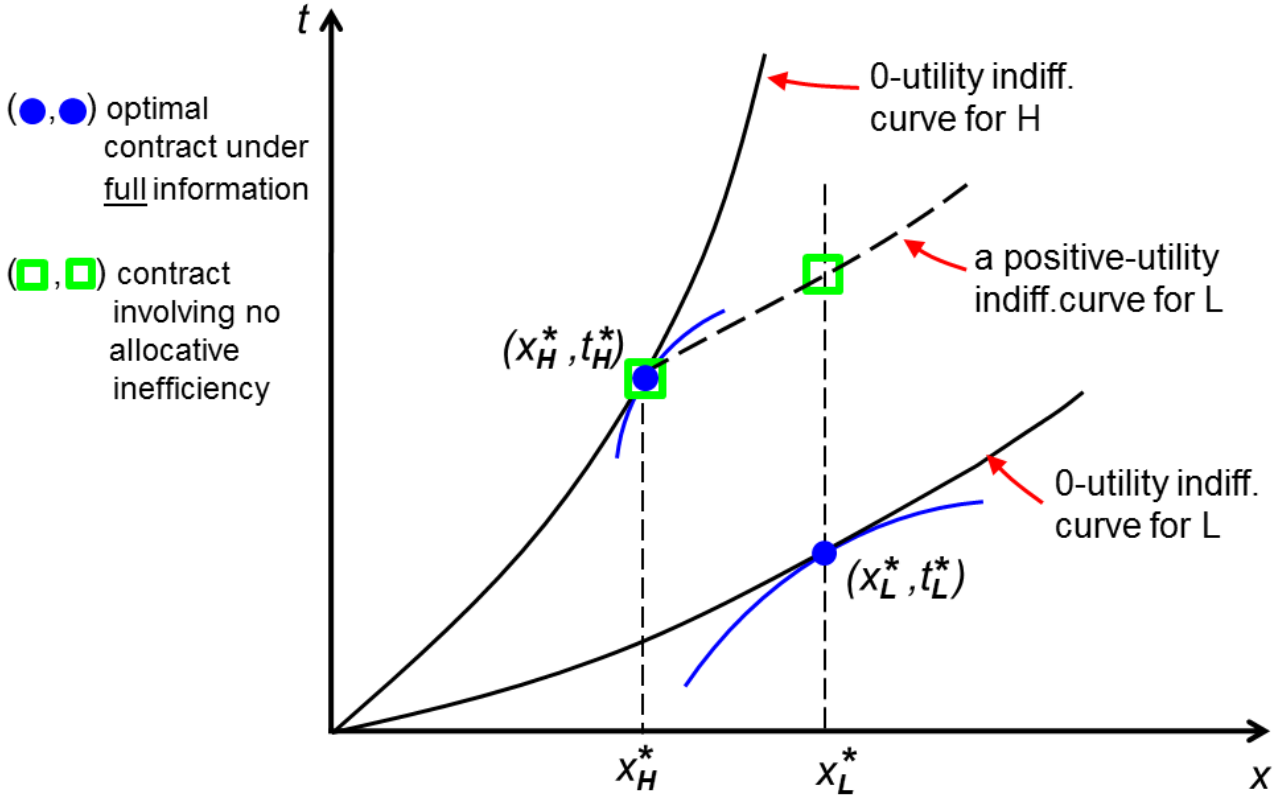
$$\begin{aligned}
\text{s.t.} \quad & t_H - C(x_H, H) \geq 0 && (IR_H) \\
& t_L - C(x_L, L) \geq 0 && (IR_L) \\
& t_H - C(x_H, H) \geq t_L - C(x_L, H) && (IC_H) \\
& t_L - C(x_L, L) \geq t_H - C(x_H, L) && (IC_L)
\end{aligned}$$

- Planner wants to achieve the allocatively efficient output level x_s^* from each type s of A: $R'(x_s^*) = C_x(x_s^*, s)$.
- Planner will use transfers to satisfy the (IR) and (IC) constraints.

What would a social planner do?



What would a social planner do?



- The green squares are an optimal contract for the planner: H-type produces x_H^* and L-type produces x_L^*.
- The planner's optimum is not unique here: keeping x_L at x_L^*, t_L could be raised somewhat while still satisfying all constraints.