

**Extra problem to prepare for
First in-class examination
ECON 537**

Hiring under asymmetric information

The employer wants to offer a contract to a potential employee. The contract specifies the quantity q of the output to produce as well as the salary t the agent gets to achieve this task. To produce a quantity of output q , the agent incurs a cost $\theta c(q)$ where $c(q)$ is increasing and convex. The parameter θ reflects the ability of the worker: efficient workers (low θ) need to work less other things equal. However, the employer does not observe the ability of the worker and knows only that (i) there are two types of workers θ_1 and θ_2 with $\theta_1 < \theta_2$ and (ii) the proportion of efficient workers (that is of type θ_1) in the population is p . The utility of an employee of type θ is $t - \theta c(q)$ if he accepts the contract, produces q and receives a payment t . Assume that the employee does not have any outside option and his reservation utility is 0. If the employee produces the quantity q , the payoff of the employer is $\Pi(q) - t$ where $\Pi(\cdot)$ is increasing and concave.

Question 1 – Complete information

Assume first the employer observes the ability of the worker. Characterize the optimal contract

Question 2 – Asymmetric information

Assume now that the employer does not observe the ability of the worker.

- 1- What is the optimization problem of the employer (explain)
- 2- Characterize the optimal contract
- 3- Explain (using a graph might be helpful) why the contract specified in question 1 cannot be offered in question 2.
- 4- Compare your solution to the one you obtained in Question 1 and explain.

Solution: distributed in class, available online.