Econ 200C

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Screening

Essentially the signaling problem with a different solution concept. Following a leading example, we call the informed players workers and uninformed players firms.

1. Unknown type t.
2. Action (wage) a.
3. Signal s (the interpretation of s varies with the application).
4. (Two) firms select contracts (a, s).
5. Workers pick among available contracts.

Simplifying assumptions:
Worker utility: $a - c(s, t)$
Firm utility: $t - a$.

Applications

1. Insurance: type is probability of accident; signal is the amount of risk worker accepts. Formally: t is probability of no accident.
   With accident, agent's wealth without insurance is 0; W with no accident.
   Insurance exchanges payment x for payoff I in bad state.
   Agent gets $tu(W - x) + (1 - t)u(I)$. Firm gets $tx - (1 - t)I$.
   Note: agent does not control the probability of being in accident (no moral hazard).
2. Guarantee: t is the probability that product does not fail.

Observable Types

- No signaling ($s^*(t) = 0$ all t).
- Zero profits.
- Efficiency

Zero profits come from competition. Plainly profits are non-negative on each type's contract. If they are strictly positive, one firm earns no more than half and can do better by raising its wage.
No signaling comes from competition too because a firm can do better by cutting both wages and requested signal.

Equilibrium

Assume (for simplicity) two types.

- Zero profits.
- No pooling.
- In separating contract, earn zero profits on each type (no cross subsidization).
- No distortion of low types.
- High type separates with minimum cost. $(\underline{t} - c(0, \underline{t}) = \bar{t} - c(\bar{s}, \underline{t})\ )$
- Potential failure of existence.

Details - 1

Zero profit: Let the less profitable firm offer contracts that pay slightly higher wages than the competition. This increases the number of (profitable) workers at arbitrarily low cost.
No pooling: If one firm offers a (zero profit) pooling contract, the other firm can make a profitable deviation that attracts only good workers at a slightly higher wage with a higher signal required.
No cross subsidization: If lows are profitable, then a firm would earn positive profits by offering a contract designed for lows at a slightly higher wage. This will earn positive profits (even if it attracts highs). If highs are profitable, then a firm can design a contract that pays higher wage, requests higher signal, and attracts only highs (making positive profits on them).

Details- 2

No distortion: Otherwise a firm gains by lowering wage and required signal.
High Contract: Must separate. Must earn zero profit. Hence if not minimal separating contract, then firm can make positive profits by lowering both wage and signal in a way that attracts only high types.
Nonexistence: If there are a lot of high types, a pooling contract can be profitable.

Lessons

1. Inefficiency from incomplete information.
2. Constrained Efficiency.
3. Distortion of high types.
4. Signaling: many equilibria; Screening: no equilibria.