

Moral hazard in teams¹

Short overview of Holmstrom (82)

1 Setting

- Two agents A and B who can undertake respective unobservable costly actions a_A and a_B . Cost is represented by $c(a)$ with $c' \geq 0$ and $c'' \geq 0$.
- Observable outcome, function of BOTH actions: $y(a_A, a_B)$
- Agents get payments $t_A(y)$ and $t_B(y)$
- Production is shared among members. Then, budget balance (BB) requires $y = t_A(y) + t_B(y)$ for all y .

Principal is benevolent planner, maximizes sum of the payoffs $t_A(y) - c(a_A) + t_B(y) - c(a_B)$.

2 Efficiency

First Best solution: satisfy budget balance with equality (no wasted resources) and $a^* = (a_A^*, a_B^*)$ such that $y_1(a_A^*, a_B^*) - c'(a_A^*) = 0$ and $y_2(a_A^*, a_B^*) - c'(a_B^*) = 0$.

3 Moral hazard

- Given announced payments, individual choices solve

$$\max_{a_A} t_A(y(a_A, a_B)) - c(a_A) \quad \max_{a_B} t_B(y(a_A, a_B)) - c(a_B)$$

and optimal actions (from perspective of agents) satisfy $t'_A y_1(a_A, a_B) - c'(a_A) = 0$ and $t'_B y_2(a_A, a_B) - c'(a_B) = 0$.

- First Best can be implemented with $t'_i = 1 \forall i$. However, BB is such that $t'_A + t'_B = 1$): NO rule implements FB with BB in all outcomes.
- FB can be implemented if we waste resources. Let $t_i(x) = t_i$ when $y > y(a_A^*, a_B^*)$ with $t_A + t_B = y(a_A^*, a_B^*)$ and $t_i = 0$ otherwise.
- The inability to observe actions in teams conflicts with budget balance requirements. If BB is required (e.g. not credible to waste resources), then we must have a second best solution.

¹This document is intended to provide only a few take-home messages. It is not a substitute for attending class and taking notes.