

Moral hazard in Principal-Agent relationships

PRINCIPAL	AGENT	AGENT'S ACTION NOT OBSERVED BY THE PRINCIPAL
Owner of firm	Manager	Amount of time/effort spent running the firm
Client	Lawyer	Amount of time/care devoted to case
Client	Doctor	Amount of time/care devoted to study of patient's symptoms
Land owner	Farmer	Farming effort
Landlord	Renter	Upkeep of building

The outcome is uncertain and is affected by the level of effort exerted by the Agent.

Two possible outcomes:

Two possible levels of effort for the Agent:

probability of $X_1 =$

- the Principal is risk neutral:
- the Agent is risk averse and dislikes effort:

The analysis of optimal risk-sharing taught us that when the Principal is risk neutral and the Agent is risk averse, Pareto efficiency requires that the Agent be paid a fixed wage. Every fixed-wage contract is Pareto efficient.

EXAMPLE

$$X_1 = 3,000 \quad \text{and} \quad X_2 = 6,000 \quad e_L = 1 \quad \text{and} \quad e_H = 1.1$$

$$\text{probability of } X_1 = \begin{cases} \frac{1}{2} & \text{if } e = 1 \\ \frac{1}{40} & \text{if } e = 1.1 \end{cases} \quad U_P(\$m) = m \quad U_A(m, e) = \frac{1}{e} \ln(m)$$

A contract is a pair (w_1, w_2)

- w_1 is the payment to the Agent if the outcome is X_1
- w_2 is the payment to the Agent if the outcome is X_2

Fixed-wage contract: $C = (920, 920)$

Agent's expected utility:

The Agent will choose

The Principal's expected utility is

Variable-wage contract: $D = (200, 2,000)$

Agent's expected utility:

The Agent chooses

The Principal's expected utility is

Expected utility of Agent if she chooses $e = 1$	Expected utility of Agent if she chooses $e = 1.1$	Thus the agent will choose $e =$	Thus the Principal's expected utility is
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CONTRACT C
(fixed wage of \$920)

CONTRACT D
($w_1 = 200$,
 $w_2 = 2,000$)

Contract *D* Pareto dominates contract *C* even though it does not guarantee a fixed income to the risk-averse person (the Agent).