The Principal-Agent Relationship

A principal wants a particular job done but has insufficient time or skills to do it herself. Thus she hires an agent to act on her behalf.

Agent may not act in best interests of principal.

1. Different objectives
   - Attitudes to risk
   - Ultimate goals
   - Time Horizons

2. Bounded Rationality

3. Imperfect and Asymmetric Information

4. Opportunism – self-interest seeking w/ guile
   i. Adverse selection – agent has private information, principal can not determine if action was optimal w/o that information
   ii. Moral hazard – Principal can not observe the agents actions only the outcome

Effort levels can not be deduced by outcomes
Example: landlord and tenant farmer

Landlord’s objective function: \( \max \Pi = PQ(e) - w \)

- \( P \) is the price of the output
- \( Q \) is the amount of output
- \( w \) is the compensation paid to the farmer
- \( e \) is effort level (1 = high, 0 = low)

Tenant’s objective function: \( \max U(w, e) = w - 1.5e \)

Production function: \( Q = \alpha + \beta e \)

- \( \alpha \) is a normally distributed random variable with mean \( \mu_\alpha \) and standard deviation \( \sigma_\alpha \).

Farmer can never infer effort from output. Low output could be due to 1) low effort or 2) bad weather.

This implies that effort is not contractible (3rd parties, e.g. courts of law, can not observe effort). Need a self-enforcing contract.
High effort socially optimal if
\[ \Pi_H + U_H > \Pi_L + U_L \quad \text{i.e.} \]
\[ [P(\alpha + \beta) - w] + (w - 1.5) > (P\alpha - w) + w \]
\[ P\beta - 1.5 > 0 \quad \text{i.e.} \]

i.e. marginal revenue product of high effort is greater than the cost of effort

Assume that high effort is socially optimal. How can a firm motivate high effort?

1) Flat wage - ineffective, worker utility is higher if effort is low

\[ U(E=0) = w \]
\[ U(E=1) = w - 1.5 \]

2) Linear wage contract: \( w = a + bQ \)

\[ U(E=0) = a + b(\alpha) \]
\[ U(E=1) = a + b(\alpha + \beta) - 1.5 \]

Supply high effort if \( b\beta - 1.5 > 0 \) or \( b > 3/2\beta \)

i.e. if the marginal return to effort is greater than the marginal cost
Examples
1. Shareholders – Managers
2. Upper Managers – Mid & lower managers
3. Managers – Non-managerial labour force

How can the agent be forced to act in the interests of the principal?

Example of Managers

1. Threat of dismissal
2. Threat of bankruptcy
3. Market for managers
4. Incentive contracts–ties payoff (wages) to outcomes
   The incentive compatibility constraint
5. Corporate governance mechanisms

Each of these requires
i. monitoring to catch underperformance
ii. punishment of underperformance
Incentive contract – contractually align interests of agent w/ those of principal

1. Piece rates – pay per unit of output

2. Performance bonuses - individual (west) or team (Japan) based

3. Stocks and options - Primarily for upper management

4. Commissions - sales, cab drivers

5. “Tournaments”

6. Deferred compensation and Pensions

7. Promotion - career ladders