MANAGERIAL INCENTIVES PROBLEMS
A DYNAMIC PERSPECTIVE

Holmström (1982) – (1999)

1. General presentation

Motivation of the analysis

EXPLICIT INCENTIVES (bonus, stock options, etc.) are a direct way to encourage and reward performance in firms. This is beneficial because it increases market efficiency. However, explicit incentives are often restricted (by law, pb of observability---)

Employer can then provide IMPLICIT INCENTIVES in the form of "career concern": it is an indirect way to promote efficiency.

Examples = Promotions in firms
can be extended to politics (reelection concerns), academia (tenure)

Framework used to study the problem:

→ competitive labor market
→ moral hazard problem: effort not observable
→ performance as a function of ability and current effort
→ imperfect informat°: ability not observable
→ Explicit contracts not possible: salary is not contingent on current performance.

Question : Will the dynamics of career concerns solve the moral hazard problem + no explicit contract problem?

2. The Model

- Performance : it is a stochastic function of ability and effort at each date t

output

$$z_t = \theta + e_t + \eta_t$$

- θ : unknown ability : imperfect but symmetric info
- e_t : unobservable effort
- η_t : noise in the observation of performance with 0-mean

- Competitive Labor Market =
  Wage = Expected performance (to simplify and isolate main effect)
- Wage paid before observing performance : captures the fact that there are no possibility to have explicit incentives -

$$w_t = E[z_t | z_{t-1}, \dots, z_1]$$

- Agent's preferences
  Risk neutrality, effort is costly : $c(e)$ with $c' > 0$, $c'' > 0$

  Utility at each date : $w_t - c(e_t)$

  Intertemporal utility at date t

$$U_t = E\left[\sum_{\tau=1}^{T} \delta^{\tau-1}\left(w_{t+\tau-1} - c(e_{t+\tau-1})\right)\right]$$

(T : last period)

because wage is stochastic given performance is stochastic

3. Results

- BENCHMARK CASE: if an explicit incentive scheme is possible, i.e. the current wage is contingent on current effort, the agent chooses e_t such that

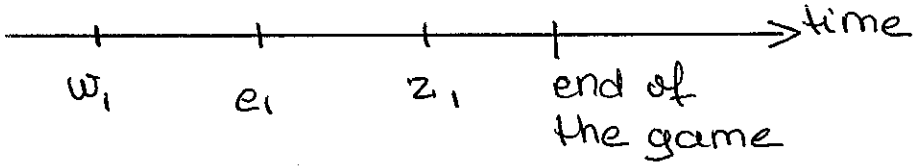
$$\max_{e_t} \quad \theta + e_t + \eta_t - c(e_t) \qquad \text{(salary paid at the end)}$$

$$\Rightarrow \quad 1 = c'(e_t)$$

In that case, we have that the agent selects the same e^* at each date with $c'(e^*) = 1$

marginal cost of effort ↵ ; ↳ marginal return of effort

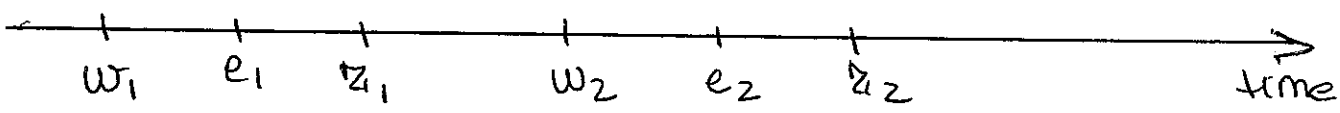
- IMPLICIT INCENTIVES in the ONE-period problem.



When the agent chooses e_1, w_1 is sunk and there is no future $\Rightarrow e_1 = 0$

Of course, this is anticipated so $w_1 = E[z_1 | e_1 = 0] = E[\theta]$

- IMPLICIT INCENTIVES in the TWO-period problem.



this is a sequential game: solve Backwards

At date 2: there is no future, w_2 is sunk when agent takes the decision, so $e_2 = 0$

$$w_2 = E[z_2 | z_1 ; e_2 = 0] = E[\theta + e_2 + \eta_t | z_1 ; e_2 = 0]$$
$$= E[\theta | z_1]$$

In other words, e_1 is not observed but it affects z_1 and therefore $w_2 \mid z_1$ is a function of e_1

When the agent chooses e_1, he maximizes

$$-c(e_1) + S\Big[E[\theta \mid z_1(e_1)]\Big]$$

$\Rightarrow$ puts effort at $t=1$ to affect z_1 and "bias" the perception of θ at $t=2$ and set a higher wage: agent tries to fool the market

In equilibrium, the effort is perfectly anticipated, so there is no bias!

4. Conclusion

We should not worry about the absence of explicit incentives. Dynamics of career concerns $\Rightarrow$ agent has incentives to put effort at each date (which translates in high performance) in order to get higher payoffs in the future.