

Lesson 2

The Land-Owner Problem

- A land-owner wants to hire a farmer to manage his land. What is the optimal contract?
 - Question: define the optimal contract
- Three contract choices
 - Fixed wage
 - Sharecropping
 - Land rental
- Which one is the optimal contract?

Definition

- Principal's profit

$$\pi_P = p \times Q - C - M$$

With $M = 0$ or $M = \infty$

- Agent's profit

$$\pi_A = C - f(e)$$

- Production

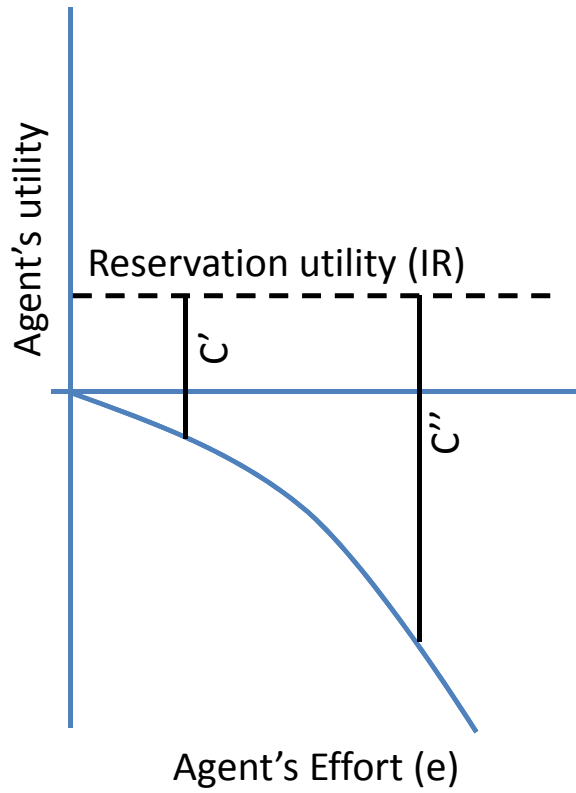
$$Q = g(e) + \varepsilon$$

Fixed wage

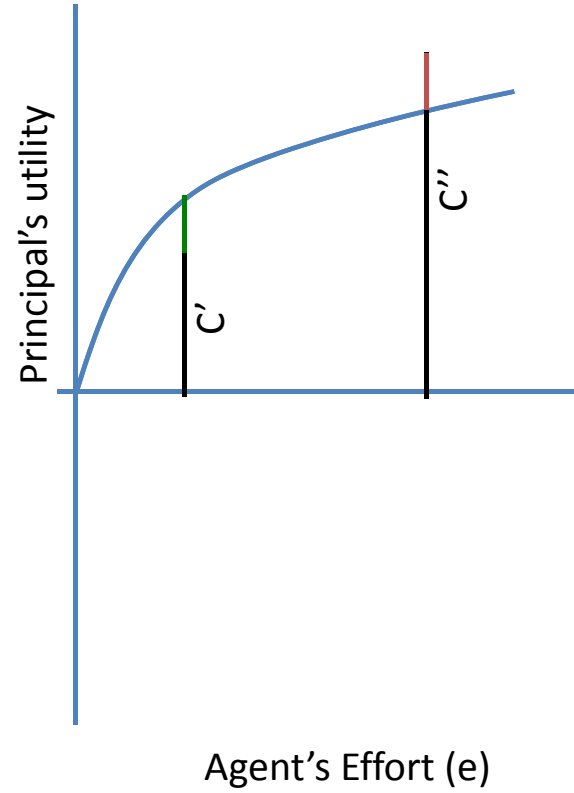
- The principal offers a compensation C that is independent of agent effort.
 - In case of shirking, the principal can fire the agent
- If the principal cannot observe effort and the state of nature:
 - The agent shirks and blames ε for the low production
- If the case of free monitoring of (e, ε)
 - Choose the optimal e and set C equal to the IR constraint

Fixed Wage

AGENT



PRINCIPAL



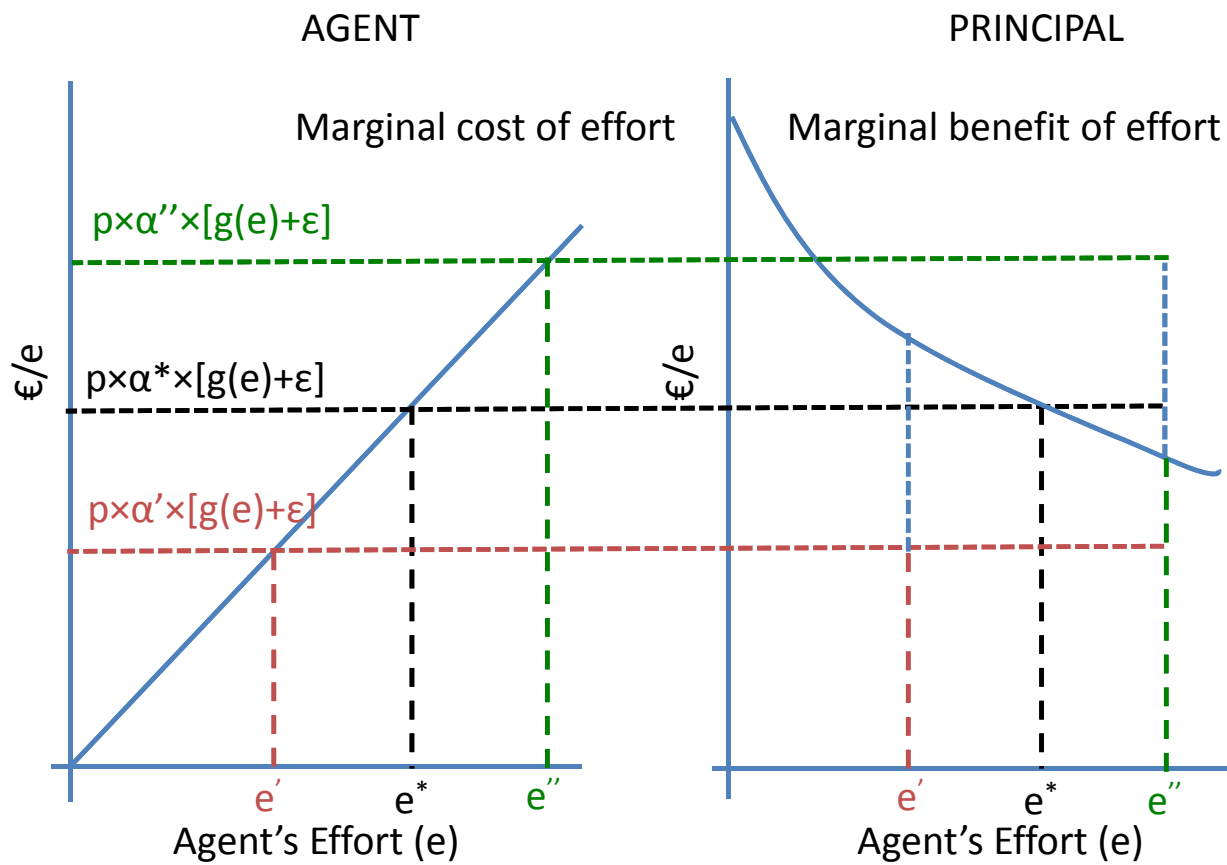
Fixed Wage

- It is NOT a self-enforcing contract
 - Tight monitoring is required
 - It is feasible only if the cost of observing e is low
- If e is freely observable, the agent gains the reservation utility only
 - No rents
- The principal does NOT maximize agent's effort
 - Too costly

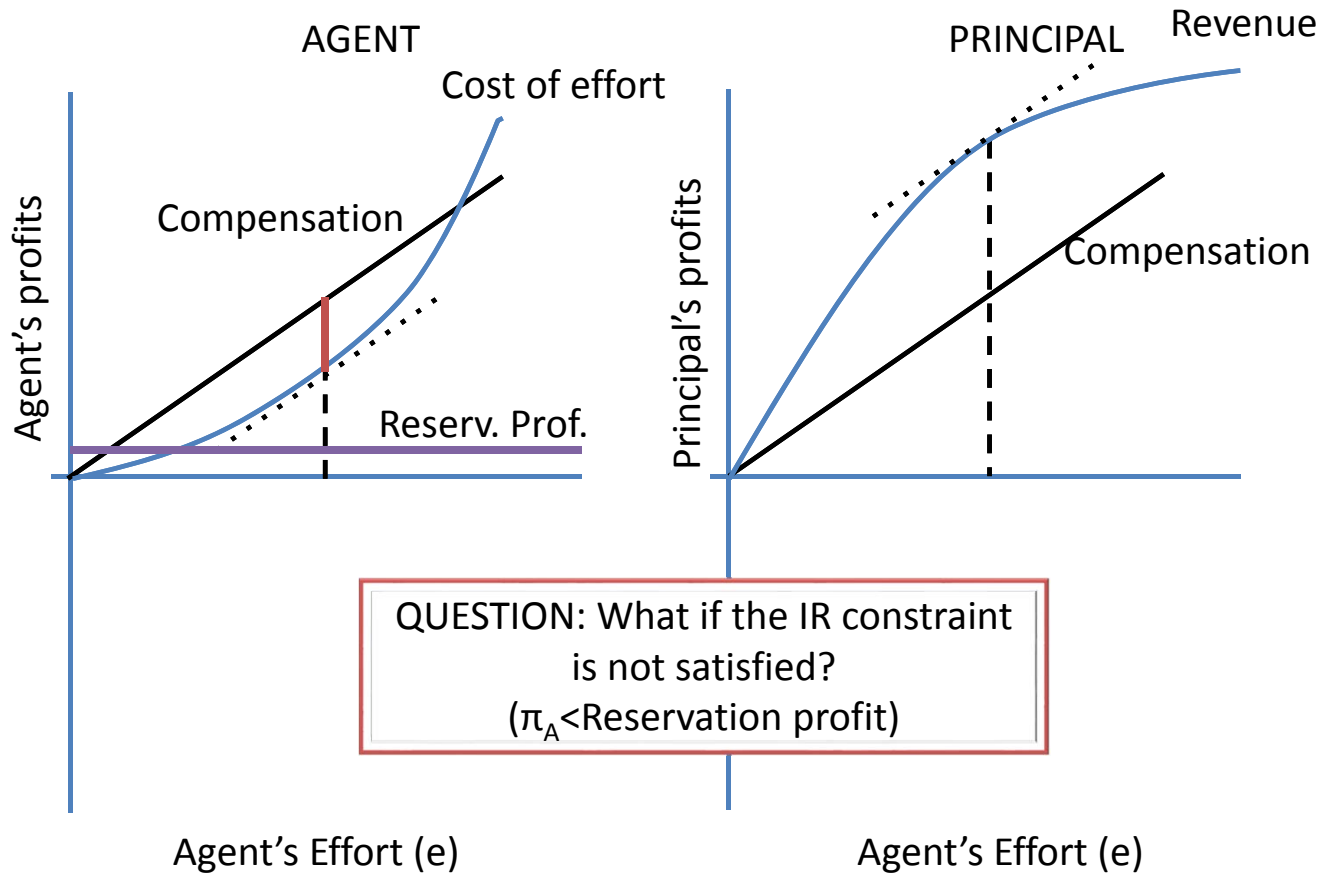
Sharecropping

- What if e and ε are not observable?
- In sharecropping, the agent's compensation is a share of the production $C = p \times \alpha \times Q$
- Now C is proportional to Q and the agent has incentive to produce effort

Sharecropping (IC)



Sharecropping (IR)



Sharecropping

- What if the principal cannot observe Q ?
- What if ε is 'large'?

Sharecropping

- If Q is not observable, the agent could steal part of the production and blame ε for the low production
$$C = p \times \beta \times Q + p \times (1 - \beta) \times \alpha \times Q$$
- If ε is ‘large’, the correlation between compensation and effort is low.
 - The agent could shirk and hope for ‘good weather conditions’ (if weather is bad, he won’t be paid anyway)
- Is sharecropping a self-enforcing contract?

Land Rental

- What if e , ε and Q are not observable?
 - The landowner lives far away
- The landowner does not have the information to organize the transaction (design attributes)
- Maybe the farmer should organize production (decide effort)

Land Rental

- The farmer pays a fixed rent (R) to the landowner and organize production as he/she wish.
 - Who is the principal now? Why?
- Being R independent of e , the optimal effort level is independent of the rent
- R affects the IR constraints only.
 - If R is too low, landowner does not accept the contract
 - If R is too high, the farmer may obtain negative profits

Land Rental

- What if the farmer does not know land 'quality' (expected yield)?
 - Adverse selection problem
- What if ε is large?
 - The role of risk aversion

The Land-Owner Problem: Conclusions

- The optimal contract depends on information
 - What anyone can or cannot observe
- Maximizing agent's effort is not necessarily the most profitable option
 - Effort is costly, monitoring is costly
- Self-enforcing mechanisms are conditional on information too.

Contract Check-List

- When designing a contract, keep in mind:
 - Who are the parties?
 - What are their objectives?
 - What constraints are they facing?
 - Who knows/observe what
 - Who is bearing the risk of the transaction?
 - What is the cost of failure?

Separation Theorem

- Unlike IOF, the Separation Theorem does not hold
 - The production decision affects the distribution of the benefits
 - Making ‘the biggest pie’ is not always compatible with individual incentives.

Conclusions

- Collective action is an opportunity for farmers.
- Private incentives might be misaligned with the collective goal
- The design of the agreement must consider the potential for opportunism.

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