Econ 100A: Intermediate Microeconomic Analysis Lectures 24 and 25

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Plan of Today's Lecture

- LTCM case: a game theoretic analysis
- Ch. 17: Agency (Principal-Agent Problem)
- "Buffett" versus Fed bailout ("Consortium"): costs and benefits
- Ch. 15: CAPM, pp. 558 – 560: application to the LTCM
- Time permits: more on Ch. 18
- Further Plan:
  - Thursday 2006.12.05: Ch. 13: Mixed strategies (Homework 7, Problem 2), Ch. 17: Information, Market for Lemons, Moral Hazard, [Ch. 18: Coase Theorem, Public Goods and Efficiency (may be we will do some today)]
  - Thursday 2006.12.07 Review & Final Exam Summary

LTCM Offers: "Buffett"

- Buffett offers **to buy the LTCM fund for $250 million**. In addition, his offer specifies:
  - In exchange for a promise of up to **$3.75** billion in cash injections, Buffet will own **95%** of profit of LTCM liquidation value
  - Buffett will have ability to control over all important decisions of the LTCM fund management

LTCM Offers: "Consortium"

- "Consortium" (Fed's bailout): Fed assembles a consortium of 14 financial institutions. The offer:
  - In exchange for a promise of up to **$3.6** billion in cash injections, consortium will own **90%** of profits of LTCM liquidation value
  - Consortium will have ability to control over all important decisions of the LTCM fund management.

Asymmetric information

- Asymmetric information is a situation in which parties possess different information about a transaction
- Parties:
  - a buyer and a seller
  - An employer and an employee (a manager and a worker)
  - a manager and an investor

The Principal – Agent Problem

- **Principal-agent problem** arises when agents pursue their own goals, rather than the goals of the principal
- Example: Owners cannot completely monitor their employees – employees are better informed than owners ➔ agency problem
- Agency problem = conflict of incentives

LTCM Bailout: Agency Problem

- From comparison of the offers, if the LTCM liquidation value in both scenarios is the same, Buffett's profit is lower than for consortium.
- From actions by Buffett (3 members) & consortium (14 members) ➔ Buffett expects profit (& return on capital) higher than Consortium
- Buffett's expected return on capital is higher than for consortium is if his expectations of LTCM liquidation value differs from consortium expectations (higher than for consortium). This may happen if Buffett and Consortium have different information (and different expectations)
- BUT: Information of consortium members and Buffett's information were identical (Goldman Sachs belongs to both entities!) ➔ expectations are the same.
- ➔ Consortium members fear agency costs. Agency conflict could make LTCM liquidation value lower (then, for consortium members, return on capital injected into LTCM would be lower than for Buffett).

LTCM Bailout as an example of Agency Problem(s)

- Let L denote the LTCM liquidation value
- Task 1. Estimate the LTCM expected liquidation value based on LTCM partner actions (they have chosen the consortium over Buffett's offer).
- From LTCM partners' actions, their gains:
  (Buffett) <(Consortium)

  (Buffett) = $0.25 billion + 5%L

(Cons) = 10% L ➔ L > $5bln

- The LTCM liquidation value expected by its partners exceeded $5bln

LTCM: How severe was the Agency Problem?

- Let liquidation value L=$5bln and cash injections Z=$3.6bln (this is max)
- Then from $(1+r^{cons})\$3.6 \geq 0.9x\$5$

➔ $r^{cons} \geq 0.9/3.6=0.25$ ➔ $r^{cons}=25\%$

- If consortium cash injection is Z, for Buffett the needed capital is Z+0.25
- Let L_C and L_B be the LTCM liquidation values for Consortium and for Buffett

LTCM: How severe was the Agency Problem?

- L_C – LTCM liquidation value for Consortium
- L_B – LTCM liquidation value for Buffett
- We assume that for Buffett expected return is at least the same return as for consortium:

$$r^B \geq r^C \geq 25\%$$

- Gross return Buffett = $0.95x\ L_B = (1+r^B)(Z+0.25)$
- Gross return Consortium = $0.9x\ L_C = (1+r^C)Z$
- Efficiency loss from Agency: $L_B - L_C$
  - Agency conflict results in at least 66 mln lower LTCM liquidation value
- How Agency conflict leads to a lower liquidation value?
  - Agency 1 = incentives Consortium members to act in OWN interests (not in the interests of Consortium)
  - Agency 2 = incentives for employees of Consortium members to act in their OWN interests (not in the interest of their employers)

Unwinding LTCM positions: short

- Rumor: Gold: LTCM needs to cover short position of 100 tonnes of gold
- LTCM will need gold ➔ Markets believe that LTCM need for gold will push demand up ➔ markets expect that gold equilibrium price ↑ ➔ if someone planned to buy gold, he wants to buy it ASAP, and if another person planned to sell gold, he wants to wait till the price rises ➔ demand shifts out, and supply shifts in ➔ equilibrium price ↑
  - Gold: market price ↑
  - LTCM liquidation value ↓
- Agency Conflict(s): The players:
  - 1. Goldman Sachs as consortium member differs from Goldman Sachs as a financial intermediary (a firm)
  - 2. Individual Goldman Sachs trades can be different from Goldman Sachs interests (employees versus employer)

Unwinding LTCM positions: long I

- Assume LTCM is long $10 bln French Government bonds
  - A. The head of Goldman Sachs John Corzine instructs his traders to sell the bonds short (anticipating drop in their prices) (agency 1)
  - B. Since the Corzone's instruction is a bet on market panic, Goldman trader will leak the news to reporters (after he sells the bonds short) (agency 2) ➔ demand shifts in and supply shifts out (if market participants fear of price

Unwinding LTCM positions (short & long) and CAPM beta

- examples in article (part h) demonstrate that with Consortium, the prices for assets, on which LTCM liquidation value depends will tend to move in the direction unfavorable for the LTCM liquidation value. ➔
- As a result, one expects that the LTCM liquidation value is more correlated with market return with Consortium than with Buffett. ➔
- Then, beta should be higher with Consortium than with Buffett.

Unwinding LTCM positions: Agency and CAPM beta

- When positions are huge (and their liquidation can move markets) unwinding is difficult. ➔ Secrecy is essential & justifiable
- Information is costly, and secrecy can be seen as the price to secure information

- LTCM unwinding & Rumors: Dutch mortgages rumors exaggerated LTCM holdings 10 times, and in other assets 2-3 times. ➔ Sometimes, being huge (and thus, being able to move Markets) is a <u>disadvantage</u>

The Actual Return of Consortium

- Pure actual return on investment (ex post data):
- Let L=5 and Z about 1bln (the actual cash injection) then

$$r^{cons} > 350\% \text{ (in about year)}$$

- BUT: Need to account for losses due to consortium member banks decline in stock prices (driven by public / market opinion)
- Question: Were investors rational when they were selling stocks of consortium members?
- Answer: Yes and No: Yes (investors signal their concerns) & No (no actual reasons for worrying about unsafe Wall Street practices, but … who knows?)

Externalities and Property Rights

- Property Rights
  - Legal rules describing what people or firms may do with their property
- Coase Theorem
  - When parties can bargain without cost and to their mutual advantage, the resulting outcome will be efficient, regardless of how the property rights are specified
- Bargaining and Economic Efficiency
  - Economic efficiency can be achieved without government intervention when the externality affects relatively few parties and when property rights are well specified

Common Property Resources

- Characteristics
  - Everyone has free access
  - Likely to be overutilized
  - Examples
    - Air and water
    - Fish and animal populations
    - Minerals

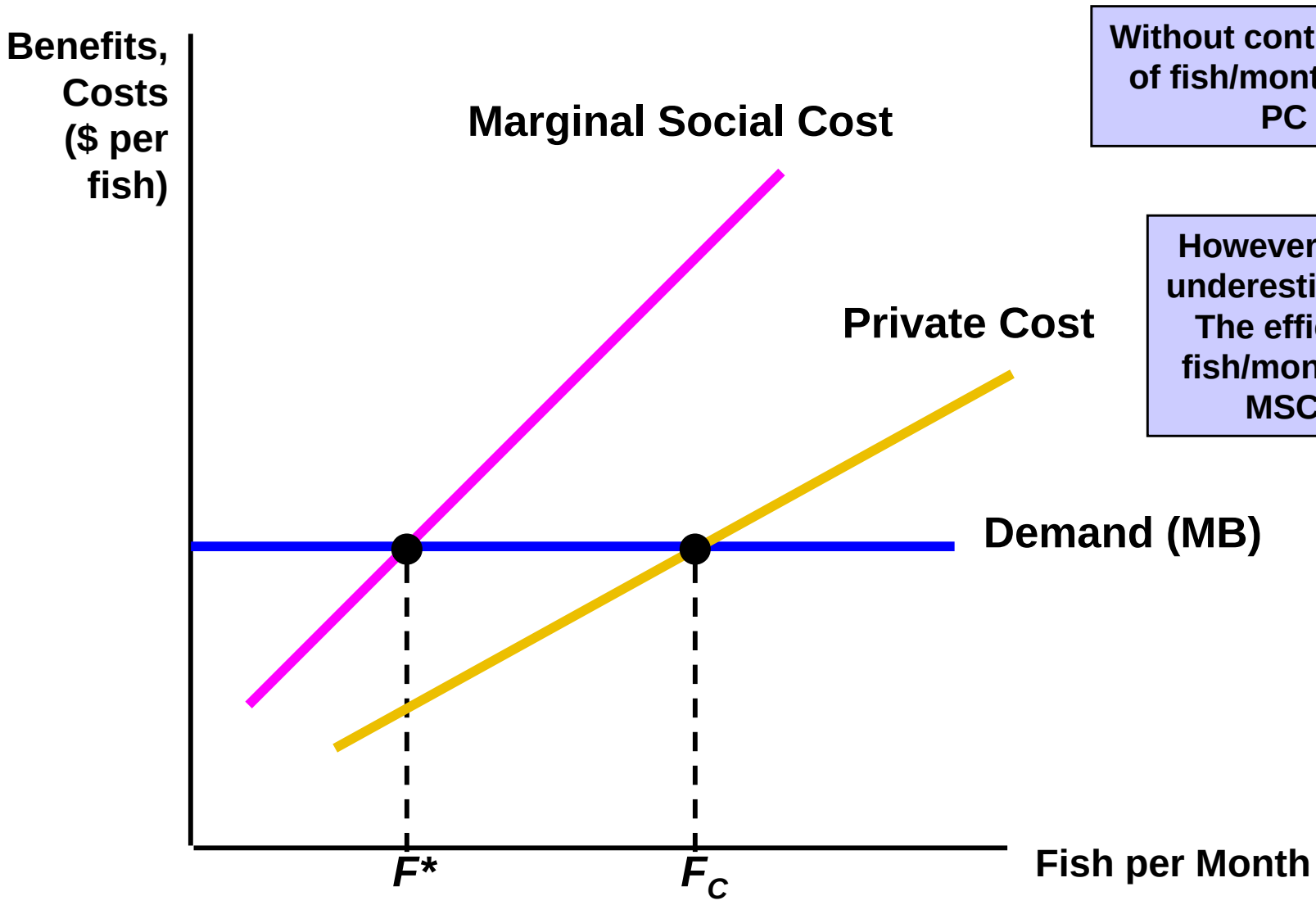
Common Property Resources

- Consider a lake where people fish
- Each fisherperson takes fish up to the point where the marginal benefit to him equals the marginal cost
- There is no reason that any one fisherperson takes into account how his taking of fish affects others

Common Property Resources

- Private cost underestimates the true cost to society
  - More fishing reduces the stock of fish
  - Less is available to others and too low of a stock will completely deplete the fish
  - Too many fish are caught

Common Property Resources



Without control, the number of fish/month is F_C where PC = MB.

However, private costs underestimate true cost. The efficient level of fish/month is *F where MSC = MB (D).**

Common Property Resources

- Solution
  - Private ownership
  - Owner will set fee for use of resource equal to the marginal cost of depleting the stock
  - Fishermen will no longer find it profitable to catch more than the efficient amount of fish
  - It is often the case that when private ownership is not possible, the government steps in

Public Goods

- Characteristics
  - Nonrival
    - For any given level of production, the marginal cost of providing it to an additional consumer is zero
  - Nonexclusive
    - People cannot be excluded from consuming the good
  - Example – use of lighthouse by a ship

Public Goods

- Nonexclusive goods
  - Goods that people cannot be excluded from consuming, so that it is difficult or impossible to charge for their use
  - Example: fireworks, national defense, in many cases information is nonexclusive

Efficiency and Public Goods

- Efficient level of private good is where marginal benefit equals marginal cost
- For a public good, the value of each person must be considered
  - Can add demand of all those who value good
- Must equate the sum of these marginal benefits to the marginal cost of production

Public Goods and Market Failure

- Free Riders
  - There is no way to provide some goods and services without benefiting everyone
  - Households do not have the incentive to pay what the item is worth to them
  - Free riders understate the value of a good or service so that they can enjoy its benefit without paying for it

Summary of Today & Plan of Next Lecture

- Asymmetric Information
- Agency Problem:
  - Conflict of incentives
- LTCM as an Agency Problem; Agency problem and CAPM beta
  - Ch. 18: Coase Theorem, Public Goods and Efficiency (information as an example of public good)
- Further Plan:
  - Tuesday 2006.12.05 Ch. 17: More about Information Ch. 13: Mixed strategies (Homework 7, Problem 2)
  - Thursday 2006.12.07 Review & Final Exam Summary