Advanced Microeconomics: Lecture Notes 1

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1. General equilibrium theory/the theory of value:
   - It attempts to explain the exchange value or price of goods and services.
   - Key questions include why goods and services are priced as they are, how the value of goods and services comes about, and how to calculate the correct price of goods and services (if such a value exists).
   - Walras, 1874, *Elements of Pure Economics*.

     Arrow, Debreu, McKenzie, 1950–1960.

     Aumann, Hildenbrand, 1960–1970.
2. Problems:
   - Strategic interactions between agents are heavily constrained.
     - Agents only interact through the price system. The pure competition assumption means that each individual cannot influence the price.
   - The organization of many institutions that govern economic relationships is entirely absent.
     - General equilibrium theory treats the firm as a black box $\Longrightarrow$ the theory remains silent on how the owners of firms succeed in aligning the objectives of its various members (such as workers, supervisors, and managers) with profit maximization.
   - Only consider the situations with symmetric information (complete information, incomplete information).
3. Problem of incentives:
   - The theory of teams recognizes the decentralized nature of information but postulates identical objective functions for all team members.
     - Informational asymmetry + Identical objectives $\Longrightarrow$ Incentive issues do not appear.
   - If the agent had a different objective function but no private information, the principal could propose a contract that perfectly controls the agent and induces the latter's actions to be what he would like to do himself in a world without delegation.
     - Informational symmetry + Different objectives $\Longrightarrow$ Incentive issues do not appear.
   - Delegation of a task to an agent who has different objectives than the principal who delegates this task is problematic when information about the agent is imperfect.
     - A *homo œconomicus* who possesses private information can be expected to try to manipulate that information $\Longrightarrow$ Possible market failure.
     - Lemon market (Akerlof, 1970), Job signaling (Spence, 1974), Insurance (Rothchild and Stiglitz, 1976).

4. Two basic ingredients of incentive theory/contract theory:

$$\text{Conflicting objectives} + \text{Decentralized/Asymmetric information} \Longrightarrow \text{Incentive issues.}$$

5. We should forsake general equilibrium models and resort to game-theoretic tools.

   We focus on models that take into account the full complexity of strategic interactions between privately informed agents in well-defined institutional settings.

6. The principal-agent problem (or agency problem) occurs when one party (the "agent" 代理人) makes decisions on behalf of (and takes actions that affect) another party (the "principal" 委托人).

   The bargaining process between two parties calls for a simplistic device known as the principal-agent model, where the principal delegates an action to a single agent through the take-it-or-leave-it offer of a contract.

   We will see that one can apply these principal-agent models in many economic activities including:

   - monopoly pricing, financial contracts, public-good procurements, auctions, sharecropping contracts, insurance contracts, wage contracts etc.

7. The most of models are partial equilibrium models. They isolate the markets for one good or two goods from the rest of the economy.

   The models describe the intersections of a small number of agents.

   The models make an intensive use of noncooperative game theory with asymmetric information.

8. The models sum up the constraints imposed by the prevailing institutional setting through a contract.

   The contract may be

   - explicit and in the form of a written agreement,
     - an explicit contract will be guaranteed by a third party or by the desire agents to maintain a reputation.
   - implicit and depend on a system of behavioral norms.
     - an implicit contract is sustained by an equilibrium tacitly observed in the interactions between the agreeing parties.

9. Types of principal-agent problems.

   The asymmetric information can be of two types:

   - either the agent can take an action unobserved by the principal, the case of moral hazard or hidden action;
   - or the agent has some private knowledge about his cost or valuation that is ignored by the principal, the case of adverse selection or hidden knowledge/characteristic.

   Objective: when this private information is a problem for the principal, what is the optimal way for the principal to cope with it.

   Another type of problem is the case of nonverifiability, which occurs when the principal and the agent share ex post the same information but no third party and, in particular, no court of law can observe this information.

   Objective: One can study to what extent the nonverifiability of information is also problematic for contractual design.

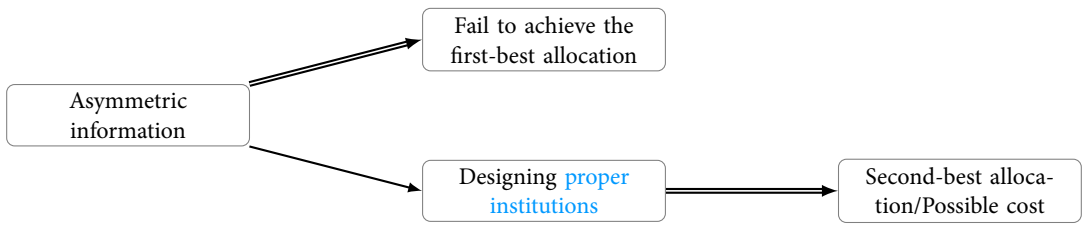
10. The study of bargaining under asymmetric information is very complex. The principal-agent model is a simplifying device that avoids these difficulties by allocating all bargaining power to one of the parties (putting aside the bargaining issues).

    Principal will propose a take-it-or-leave-it contract and therefore request yes-or-no answer; Agent is not free to propose another contract.

    We also assume the availability of a benevolent court of law that is able to enforce the contract and impose penalties if one of the contractual partners adopts a behavior that deviates from the one specified in the contract.

11. In general, these informational problems prevent society from achieving the first-best allocation of resources that could be possible in a world where all information would be common knowledge.

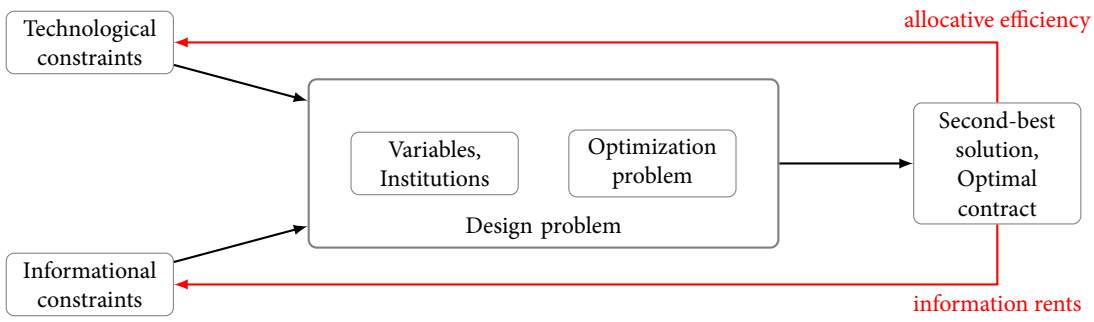
    The additional costs that must be incurred because of the strategic behavior of privately informed economic agents can be viewed as one category of the transaction costs. They do not exhaust all possible transaction costs, but economists have been rather successful during the last thirty years in modeling and analyzing these types of costs and providing a good understanding of the limits set by these on the allocation of resources. This work shows that the design of proper institutions for successful economic activity is more complex than one could have thought a priori.



12. Mechanisms: Three types of information problems will be considered—adverse selection, moral hazard, and non-verifiability. Each of those informational problems leads to a different paradigm and, possibly, to a different kind of agency cost.

    On top of the usual technological constraints of neoclassical economics, these agency costs incorporate the informational constraints faced by the principal at the time of designing the contract.

    The design of the principal's optimal contract reduces to a simple optimization problem. This simple focus will turn out to be enough to highlight the various trade-offs between allocative efficiency and the distribution of information rents arising under asymmetric information. The mere existence of informational constraints may generally prevent the principal from achieving allocative efficiency. The main objective of the analysis is therefore the characterization of the allocative distortions that the principal finds desirable to implement in order to mitigate the impact of informational constraints.



13. The principal-agent model discussed in this module will be cast in terms of a manager-worker relationship. Examples of such agency relationships abound both in terms of their scope and their economic significance.

Task

- Reading: Introduction in [LM] (required), Chapter 1 in [S] (required).
- Understanding: Principal-agent framework.