Abstract

This dissertation consists of three studies on optimal contracts in environments where agents can collude with each other. In particular, we derive optimal collusion-proof contracts in several contexts in which the principal cannot receive verifiable signals about the quality of the agents' work. The dissertation has four chapters, and Chapter 1 is an introduction.

Chapter 2 analyzes situations where a principal can use her subjective measures of an agent's performance, and hire a monitor who can observe the agent's action perfectly. We assume there is a possibility of collusion between the agent and the monitor, i.e., the agent can promise the monitor a monetary payment and get the monitor to make a false report. The analysis shows that the optimal collusion-proof contracts with the monitor can reduce the agent's rent and burnt money that occurs in the optimal contract without the monitor to zero. Furthermore, we also find that, under the optimal collusion-proof contracts, the amount paid to the monitor is never greater than the above payment reductions. Thus, hiring a monitor benefits the principal despite the possibility of collusion, which implies that monitors play vital roles in contracts with subjective evaluations.

Chapter 3 studies a model where a principal receives messages with unverifiable accuracy from two experts. Azrieli (2021) derives an optimal contract under these situations. However, we point out the issue of the optimal contract, which is the condition that is imposed on the implementability of a contract is weak. The issue makes it uncertain that a targeted strategy profile can be realized. To solve this problem, we introduce a new concept of implementability which we refer to as strong implementability, and derive the optimal contract under this. Strong implementability is defined as follows: In a game defined by a contract x, if a strategy profile y is an equilibrium and there is no other equilibrium in the game that strongly Pareto dominates y, then y is said to be strongly implementable in x. This optimal contract under this implementability has the property where the messages that two experts want to agree on are different. Especially, compensation in the contract to each expert varies based on the content of the matched messages, and both experts may be paid even if they send different messages in this contract.

Chapter 4 extends the model of Chapter 3. In particular, the number of the elements in the effort level set changes from 2 to n. In this model, the optimal contract differs from the one in the model of Chapter 3. First, when parameters satisfy a condition, the reward when the experts send different messages is always zero. Second, under these parameters, some contracts derived in the condition that a strategy profile is an equilibrium strongly implements the strategy profile.