Game Theory with Applications to Finance and Marketing, II

The Course Syllabus, Spring of 2009

Instructor: Chyi-Mei Chen, R1102
(TEL) 3366-1086
(email) cchen@ccms.ntu.edu.tw

This course is a sequel to the course *Game Theory with Applications to Finance and Marketing, I*, and it will review the major ingredients of *contract theory*. The intended audiences are graduate students who have taken *Game Theory with Applications to Finance and Marketing, I* or some graduate-level game-theory course, and who are interested in applying game theory to contract and institution design in finance and marketing. Our textbook is

Bolton, Patrick, and Mathias Dewatripont, 2005, *Contract Theroy*, Cambridge: MIT Press.

The course will follow closely the agenda laid out in the book. We shall be able to finish sections 1-5 below, and if time allows, we shall selectively cover materials in sections 6-8.

1. We shall start with the static adverse selection and moral hazard problems with one principal and one agent and with either one-dimensional private information or one single task. We shall give applications to corporate finance and managerial contracts.

2. Then we will discuss the agent's incentive to disclose private information and the economic effects of mandatory disclosure.

3. The screening problem with multi-dimensional private information and the moral hazard problem with multiple tasks will then be examined. An example where the agency relationship involves both adverse selection and moral hazard problems will be studied.

4. Then we will consider multilateral contracting. Regarding adverse selection, we shall look at bilateral trading and auction problems; and regarding moral hazard, we shall go over the moral-hazard-in-teams

problem, where we shall consider the possibility that agents may collude and investigate the values of tournaments and supervision.

5. Then we shall consider dynamic contracts. Regarding adverse selection, we shall distinguish the case where agents' private information is long-lived and never changed from the case where agents' keep receiving new private information over time. Regarding moral hazard, we shall consider repeated moral hazard problems, and the opportunity of renegotiating an ex-post suboptimal contract when the contracting parties do not have full commitment power in writing the initial contract. Then we shall consider two dynamic contracting problems, the relational contracts for both adverse selection and moral hazard problems, and the implicit contracts for moral hazard problems when agents have career concerns.

6. Then we shall consider contract incompleteness with applications to the theory of the firm and to the design of optimal ownership structure.

7. Then we shall review the theory of Nash and subgame-perfect Nash implementation, and examine a Williamson's holdup problem and the role of option contracts in resolving that problem.

8. Finally, we shall consider the relationships between contracting and product market competition. At first, managerial contracts may be so designed that the manager is induced to pursue a goal differing from profit maximization, which alters the rival firms' responses and may therefore be beneficial. Such a view assumes that the firm has commitment power; without it a contract inducing managerial non-profit-maximizing behavior is not robust against renegotiation. Second, enhanced competition may change teh second-best moral hazard contract within each firm in an ambiguous manner.

Students will be responsible for solving problem sets and completing a term paper. This together with an in-class examination determines a stu- dent's grade. A detailed schedule will be passed out in class during the first meeting.