

## Syllabus, Ec717a: Contract Theory: Part 1

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Spring 2014, Boston University Department of Economics

This is the first half of a course devoted to contract theory. While it is an elective course for the micro theory field, it should be useful for students interested in applications to fields such as industrial organization, public economics, health, macro, development and labor.

This part of the course provides the basic tools of contract theory. We will start by showing how to solve for optimal incentive mechanisms in the presence of adverse selection and moral hazard with a single agent. Next we consider contexts involving multiple agents, thereby covering topics in bargaining, auctions, public goods, tournaments and relative performance. Finally, dynamic extensions of the theory are covered, with applications to durable goods monopoly, ratcheting, multiperiod incentives and relational contracts.

Most of the material for this course is covered in a single textbook:

**Contract Theory**, by Patrick Bolton and Mathias Dewatripoint (BD hereafter), MIT Press, 2005.

Key journal articles are also mentioned below.

**Class:** W 2-5, Jan 16– March 5. I will also schedule additional problem set sessions and will call on you to work out solutions on the board.

**Office Hours:** M, Th 2-330 (Room 500A, 264 Bay State Road)

**Prerequisites:** First Year PhD courses in micro (Ec701, 703) or equivalent

**Exams and Grading:** There will be a midterm exam sometime in March. The course grade will be based 50% on this midterm, and the rest on your performance in the second part of the course to be taught by Professor Newman.

**Academic Conduct:** You are expected to know and understand the provisions of the CAS Academic Conduct Code. Cases of suspected academic misconduct will be referred to the Deans Office.

### Sessions and Readings:

**1. Single-Agent Adverse Selection ( Jan 15):** Optimal contracts for a single agent with private information: two types; continuum of types [BD, Ch. 2, esp. Sections 2.3.1 and 2.3.3; D Baron and R Myerson, "Regulating a Monopolist with Unknown Cost," *Econometrica* 1982.]

**2. Single-Agent Moral Hazard (Jan 22):** Optimal contracts for a single agent with moral hazard: first-order approach; existence problems; sufficient statistic theorem; linear contracts; limited liability constraints [BD, Ch. 4 (esp. Sections 4.2,4.3, 4.4,4.5); B Holmstrom, "Moral Hazard and Unobservability," *Bell Journal*, 1979; W Rogerson, "The First-Order Approach to Principal-Agent Problems," *Econometrica* 1985.]

**3,4. Multi-Agent Adverse Selection (Jan 29; Feb 5):** Implementation concepts; mechanisms for public goods, bilateral trade and auctions [BD, Ch. 7 (esp. Sections 7.2, 7.3); Ch. 7

of Fudenberg and Tirole, *Game Theory*, MIT Press; R. Myerson and M Satterthwaite, "Efficient Mechanisms for Bilateral Trading," *Journal of Economic Theory* 1983; R Myerson, "Optimal Auction Design," *Math of Operations Research* 1981]

**5. Multi-Agent Moral Hazard (Feb 12):** Tournaments, relative performance [BD, Ch. 8 (esp. Sections 8.1, 8.2. 8.3); E Lazear and S Rosen, "Rank-Order Tournaments as Optimum Labor Contracts," *Journal of Pol. Economy*, 1981; A Ma, "Unique Implementation of Incentive Contracts with Many Agents," *Review of Economic Studies*, 1988]

**6,7. Contract Dynamics (Feb 26, Mar 5):** durable good monopoly; repeated moral hazard; relational contracts [BD, Ch. 9 (esp. Sec 9.1, 9.2), Ch. 10 (Sec 10.1, 10.2, 10.4); J Sobel and I Takahashi, "A Multistage Model of Bargaining," *Review of Economic Studies* 1983; W Rogerson, "Repeated Moral Hazard," *Econometrica* 1985; J Levin, "Relational Incentive Contracts," *American Econ Rev* 2003.]