

# Economics 211A and 271A: Contract Theory

M,W 10:30-11:45, BH 2249, Autumn 2011

<http://www.econ.ucla.edu/sboard/teaching.html>

Professor: Simon Board.

Office Hours: By appointment.

Email: [sboard@econ.ucla.edu](mailto:sboard@econ.ucla.edu)

This is a course in contract theory. It will cover many of the tools and techniques used in models of moral hazard, screening and incomplete contracting. Applications will be drawn from industrial organisation, corporate finance and personnel economics. In addition to static models of contracting, I will spend some time on recent innovations in the theory of dynamic contracting and relational contracts.

For those enrolled, there will be three problem sets (15% each) and a final (55%). The problem sets will be due on 19th October, 7th November and 30th November. I encourage you to discuss the substance of the problems, but the final version should be your own.

## Books and Manuscripts

Bolton and Dewatripont (2005), *Contract Theory*, MIT Press.

Laffont and Martimort (2002), *The Theory of Incentives*, PUP.

Mas-Colell, Whinston and Green (1995), *Microeconomic Theory*, OUP.

Salanie (1997), *The Economics of Contracts: A Primer*, MIT Press.

Segal and Tadelis (2002), *Lectures on Contract Theory*, Unpublished, Stanford University.

Stole (1993), *Lectures on Contracts and Organizations*, Unpublished, University of Chicago.

## 1. Useful Techniques

**Topics:** lattices, supermodularity, monotone comparative statics, comparing equilibria, envelope theorems, stochastic orders.

Topkis (1998), *Supermodularity and Complimentarity*, PUP.

Milgrom and Segal (2002), “Envelope Theorems for Arbitrary Choice Sets,” *Econometrica*.

Shaked and Shanthikumar (2007), *Stochastic Orders*, Springer.

Milgrom (1981), “Good News and Bad News: Representation Theorems and Applications,” *Bell Journal*.

Karlin and Rinott (1980), “Classes of Ordering of Measures and Related Correlation Inequalities I: Multivariate Totally Positive Distributions,” *Journal of Multivariate Analysis*.

Karlin and Rubin (1956), “The Theory of Decision Procedures for Distributions with Monotone Likelihood Ratio,” *Annals of Mathematical Statistics*.

## 2. Moral Hazard: One Agent

**Topics:** two action model, continuous action model, optimal linear contracts, comparative performance evaluation, multitasking, private evaluations, debt contracts.

Bolton and Dewatripont, *Chapters 4 and 6.2*.

Milgrom and Roberts (1992), *Economics, Organization and Management*, Prentice Hall.

Holmstrom (1979), “Moral Hazard and Observability,” *Bell Journal*.

Rogerson (1985), “The First-Order Approach to Principal-Agent Problems,” *Econometrica*.

Mirrlees (1999), “The Theory of Moral Hazard and Unobservable Behaviour: Part I,” *Review of Economic Studies*.

MacLeod (2003), “Optimal Contracting with Subjective Evaluation,” *American Economic Review*.

Innes (1990), “Limited Liability and Incentive Contracting with Ex-ante Action Choices,” *Journal of Economic Theory*.

Holmstrom and Milgrom (1991), “Multitask Principal-Agent Analyses: Incentive Contracts, Asset Ownership, and Job Design,” *Journal of Law, Economics, & Organization*.

### 3. Moral Hazard: Many Agents

**Topics:** tournaments, partnerships, comparative performance evaluation.

Bolton and Dewatripont, *Chapter 8*.

Lazear and Rosen (1981), “Rank-Order Tournaments as Optimum Labor Contracts,” *Journal of Political Economy*.

Holmstrom (1982), “Moral Hazard in Teams,” *Bell Journal*.

### 4. Moral Hazard: Dynamics

**Topics:** repeated moral hazard, justifying simple contracts, renegotiation, career concerns.

Bolton and Dewatripont, *Chapter 10*.

Rogerson (1985), “Repeated Moral Hazard,” *Econometrica*.

Fudenberg, Holmstrom and Milgrom (1990), “Short-term Contracts and Long-term Agency Relationships,” *Journal of Economic Theory*.

Holmstrom and Milgrom (1987), “Aggregation and Linearity in the Provision of Intertemporal Incentives,” *Econometrica*.

Radner (1985), “Repeated Principal-Agent Games with Discounting,” *Econometrica*.

Hermalin and Katz (1991), “Moral Hazard and Verifiability: The Effects of Renegotiation in Agency,” *Econometrica*.

Fudenberg and Tirole (1990), “Moral Hazard and Renegotiation in Agency Contracts,” *Econometrica*.

## 5. Relational Contracts

**Topics:** Bilateral contracts, multilateral contracts, embedding relational contracts in markets.

Abreu, Pearce and Stacchetti (1986), “Optimal Cartel Equilibria with Imperfect Monitoring,” *Journal of Economic Theory*.

Shapiro and Stiglitz (1984), “Equilibrium Unemployment as a Worker Discipline Device,” *American Economic Review*.

Macleod and Malcomson (1989), “Implicit Contracts, Incentive Compatibility, and Involuntary Unemployment,” *Econometrica*.

Macleod and Malcomson (1998), “Motivation and Markets,” *American Economic Review*.

Levin (2003), “Relational Incentive Contracts,” *American Economic Review*.

Levin (2002), “Multilateral Contracting and the Employment Relationship,” *Quarterly Journal of Economics*.

Fuchs (2007), “Contracting with Repeated Moral Hazard and Private Evaluations”, *American Economic Review*.

Thomas and Worrall (1988), “Self-Enforcing Wage Contracts,” *Review of Economic Studies*.

Thomas and Worrall (1994), “Foreign Direct Investment and the Risk of Expropriation,” *Review of Economic Studies*.

## 6. Reputation

**Topics:** reputation, exit, Endogenous and exogenous types.

Holmstrom (1999), “Managerial Incentive Problems: A Dynamic Perspective,” *Review of Economic Studies*.

Mailath and Samuelson, (2001) “Who Wants a Good Reputation?,” *Review of Economic Studies*.

Bar-Isaac (2003), “Reputation and Survival: Learning in a Dynamic Signalling Model,” *Review of Economic Studies*.

Board and Meyer-ter-Vehn (2011), “Reputation for Quality”, Working paper.

## 7. Mechanism Design: One Agent

**Topics:** revelation principle, discrete type problems, continuous type problems, ironing, credit rationing, implicit labour contracts, regulation, insurance, labour contracts, contracts as barriers to entry, costly state verification.

Bolton and Dewatripont, *Chapter 2*.

Laffont and Martimort, *Chapters 2 and 3*.

Myerson (1982), “Optimal Coordination Mechanisms in Generalized PrincipalAgent Problems,” *Journal of Mathematical Economics*.

Maskin and Riley (1984), “Monopoly with Incomplete Information,” *RAND Journal of Economics*.

Mussa and Rosen (1978), “Monopoly and Product Quality,” *Journal of Economic Theory*.

Baron and Myerson (1982), “Regulating a Monopolist with Unknown Costs,” *Econometrica*.

Philippon and Skreta (2012), “Optimal Interventions in Markets with Adverse Selection”, *American Economic Review*.

## 8. Mechanism Design: Many Agents

**Topics:** optimal auctions, bilateral trading.

Mas-Collel, Whinston and Green, *Chapter 23*.

Bolton and Dewatripont, *Chapter 7*.

Myerson (1981), “Optimal Auction Design,” *Mathematics of Operations Research*.

Krishna (2002), *Auction Theory*, Academic Press.

Milgrom (2004), *Putting Auction Theory to Work*, CUP.

Myerson and Satterthwaite (1983), “Efficient Mechanisms for Bilateral Trading,” *Journal of Economic Theory*.

Cremer and McLean (1988), “Optimal Selling Strategies under Uncertainty for a Discriminating Monopolist when Demands are Interdependent,” *Econometrica*.

Neeman (2004), “The Relevance of Private Information in Mechanism Design”, *Journal of Economic Theory*.

## 9. Mechanism Design: Dynamics with Commitment

**Topics:** changing types, entry of new agents, revenue management, consumption smoothing.

Bolton and Dewatripont, *Chapter 9*.

Laffont and Martimort, *Chapter 8*.

Bergemann and Valimaki (2010), “The Dynamic Pivot Mechanism”, *Econometrica*.

Stokey (1979), “Intertemporal Price Discrimination,” *Quarterly Journal of Economics*.

Baron and Besanko (1984), “Regulation and Information in a Continuing Relationship,” *Information Economics and Policy*.

Courty and Li (2000), “Sequential Screening,” *Review of Economic Studies*.

Board (2008), “Durable–Goods Monopoly with Varying Demand,” *Review of Economic Studies*.

Pavan, Segal and Toikka (2008), “Dynamic Mechanism Design: Revenue Equivalence, Profit Maximization, and Information Disclosure”, Working Paper, Stanford University.

Thomas and Worrall (1990), “Income Fluctuation and Asymmetric Information: An Example of a Repeated Principal-Agent Problem,” *Journal of Economic Theory*.

Bolton and Scharfstein (1990) “A Theory of Predation Based on Agency Problems in Financial Contracting”, *American Economics Review*.

Board and Skrzypacz (2010), “Optimal Dynamic Auctions for Durable Goods: Posted Prices and Fire-sales”, Working Paper, UCLA and Stanford.

## 10. Mechanism Design: Dynamics without Commitment

**Topics:** durable goods monopoly, behavioural pricing, renegotiation.

Bulow (1982), “Durable-Goods Monopolists,” *Journal of Political Economy*.

Gul, Sonnenschein and Wilson (1986), “Foundations of Dynamic Monopoly and the Coase Conjecture,” *Journal of Economic Theory*.

Ausubel and Deneckere (1989), “Reputation in Bargaining and Durable Goods Monopoly,” *Econometrica*.

Fuchs and Skrzypacz (2010), “Bargaining with Arrival of New Traders or New Information,” *American Economic Review*.

Hart and Tirole (1988), “Contract Renegotiation and Coasian Dynamics,” *Review of Economic Studies*.

Laffont and Tirole (1988), “The Dynamics of Incentive Contracts,” *Econometrica*.

## 11. Mixed Models

**Topics:** false moral hazard (optimal taxation), adverse selection and moral hazard.

Bolton and Dewatripont, *Chapter 6.3*.

Laffont and Martimort, *Chapter 7*.

Mirrlees (1971), “An Exploration in the Theory of Optimum Income Taxation ”, *Review of Economic Studies*.

Laffont and Tirole (1986), “Using Cost Observation to Regulate Firms,” *Journal of Political Economy*.

McAfee and McMillan (1987), “Competition for Agency Contracts,” *RAND Journal of Economics*.

## 12. Incomplete Contracts

**Topics:** holdup problem, ownership, message games, specific performance contracts, option contracts, strategic ambiguity, complexity, descriptibility.

Bolton and Dewatripont, *Chapter 11 and 12*.

Hart (1995), *Firms, Contracts and Financial Structure*, OUP.

Grossman and Hart (1986), “The Costs and Benefits of Ownership: A Theory of Vertical and Lateral Integration,” *Journal of Political Economy*.

Hart and Moore (1990), “Property Rights and the Nature of the Firm,” *Journal of Political Economy*.

Edlin and Reichelstein (1996), “Holdups, Standard Breach Remedies, and Optimal Investment,” *American Economic Review*.

Che and Hausch (1999), “Cooperative Investments and the Value of Contracting,” *American Economic Review*.

Rogerson (1992), “Contractual Solutions to the Hold-Up Problem,” *Review of Economic Studies*.

Noldeke and Schmidt (1995), “Option Contracts and Renegotiation: A Solution to the Hold-up Problem,” *RAND Journal of Economics*.

Segal (1999), “Complexity and Renegotiation: A Foundation for Incomplete Contracts,” *Review of Economic Studies*.



Hart and Moore (1999), "Foundations of Incomplete Contracts," *Review of Economic Studies*.