

## Economics 211A and 271A: Contract Theory

M, 9:00-11:30, BH 9294, Autumn 2016

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

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Office Hours: By appointment.

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This course studies trading relationships between small numbers of agents. It will cover many of the tools and techniques used in models of moral hazard, adverse selection and incomplete contracting. We start with static models of moral hazard and mechanism design, and develop their dynamic counterparts. We then consider environments where agents cannot use formal contracts, studying relational contracts and trading relationships with no contracts. While the aim is to develop a toolset, we motivate the analysis with a wide variety of applications drawn from Industrial Organization, Corporate Finance, Personnel Economics, and Public Economics. The class builds on 201B and 201C. I also recommend “211C: Game Theory and Economic Applications”

For those enrolled, grades are as follows:

- Three problems sets (15% each). You can discuss the substance of the problems, but the final version should be your own. The problem sets will be due on Weds 21st October, Mon 9th November and Wed 2nd December (these dates may change).
- Write your own model (10%). Find a newspaper article that discusses a contracting problem, write a model to capture the economics and discuss what theorems you would like to prove. Maximum 4 pages plus the original article. Due date: last day of class.
- Final (45%). Date to be determined.

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Segal and Tadelis (2002), *Lectures on Contract Theory*, Unpublished, Stanford University.

Stole (1993), *Lectures on Contracts and Organizations*, Unpublished, University of Chicago.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. Moral Hazard: One Agent

Bolton and Dewatripont, *Chapters 4 and 6.2*.

Milgrom and Roberts (1992), *Economics, Organization and Management*, Chapter 7.

\*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*.

## 2. Moral Hazard: Many Agents

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*.

Winter (2004), “Incentives and Discrimination,” *American Economics Review*.

Winter (2006), “Optimal Incentives for Sequential Production Processes,” *Rand Journal of Economics*.

### 3. Moral Hazard: Dynamics

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*.

\*Sannikov (2008), “A Continuous-Time Version of the Principal-Agent Problem,” *Review of Economic Studies*.

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

DeMarzo and Sannikov (2006), “A Continuous-Time Agency Model of Optimal Contracting and Dynamic Capital Structure,” *Journal of Finance*.

Biais, Mariotti, Rochet and Villeneuve (2010), “Large Risks, Limited Liability, and Dynamic Moral Hazard,” *Econometrica*.

## 4. Reputation

\*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 (2013), “Reputation for Quality”, *Econometrica*.

## 5. Relational Contracts

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*.

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

Che and Yoo (2001), “Optimal Incentives for Teams,” *American Economic Review*.

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*.

\*Harris and Holmstrom (1982), “A Theory of Wage Dynamics,” *Review of Economic Studies*.

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

Board (2011), “Relational Contracts and the Value of Loyalty,” *American Economic Review*.

## 6. Mechanism Design: One Agent

Bolton and Dewatripont, *Chapter 2*.

Laffont and Martimort, *Chapters 2 and 3*.

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

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

## 7. Mechanism Design: Many Agents

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

Bolton and Dewatripont, *Chapter 7*.

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

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

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

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

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

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*.

## 8. Mechanism Design: Without Transfers

\*Melumad and Shibano (1991), “Communication in Settings with No Transfers,” *RAND*.

Armstrong and Vickers (2010), “A Model of Delegated Project Choice”, *Econometrica*.

Hopenhayn, Llobet and Mitchell (2006), “Rewarding Sequential Innovators: Patents, Prizes, and Buyouts” *Journal of Political Economy*.

\*Ben-Porath, Dekel and Lippman (2014), “Optimal Allocation with Costly Verification”, *American Economic Review*.

Carrasco and Fuchs (2009), “Dividing and Discarding: A Procedure for Taking Decisions with Non-transferable Utility”, WP, UC Berkeley.

Goltsman, Horner, Pavlov and Squintani (2009), “Arbitration, Mediation and Cheap Talk,” *Journal of Economic Theory*.

## 9. Mechanism Design: Dynamics with Commitment

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), “Revenue Management with Forward Looking Buyers”, Working Paper, UCLA and Stanford.

## 10. Mechanism Design: Dynamics without Commitment

\*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. Mechanism Design: Competition

Rothschild and Stiglitz (1976), “Equilibrium in Competitive Insurance Markets: An Essay on the Economics of Imperfect Information,” *Quarterly Journal of Economics*.

Stole (2007), “Price Discrimination in Competitive Environments,” *Handbook of Industrial Organization, Vol. 3*.

Calzolari and Denicolo (2013), “Competition with Exclusive Contracts and market-Share Discounts”, *American Economic Review*.

## 12. Incomplete Contracts

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*.

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*.

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

## 13. Contracting with Externalities

Bolton and Dewatripont, *Chapter 13.3*.

Segal (1999), “Contracting with Externalities,” *Quarterly Journal of Economics*.

Bernheim and Whinston (1986), “Common Agency,” *Econometrica*.

Bernheim and Whinston (1986), “Menu Auctions, Resource Allocation, and Economic Influence,” *Quarterly Journal of Economics*.

## 14. Signalling: Dynamics

Admati and Perry (1987), “Strategic delay in bargaining,” *Review of Economic Studies*.

Noldeke and van Damme (1990), “Signaling in a dynamic labor market,” *Review of Economic Studies*.

Swinkels (1999), “Education signaling with preemptive offers,” *Review of Economic Studies*.



Daley and Green (2012), “Waiting for News in the Market for Lemons”, *Econometrica*.

Horner and Vieille (2009), “Public vs. Private Offers in the Market for Lemons”, *Econometrica*.

## 15. Mechanism Design: Multidimensional Types

Bolton and Dewatripont, *Chapter 6.1*.

Rochet and Stole (2003), “The Economics of Multidimensional Screening,” in *Advances in Economics and Econometrics: Theory and Applications, Eighth World Congress*, CUP.

Armstrong and Rochet (1999), “Multi-Dimensional Screening: A User’s Guide,” *European Economic Review*.