

Eco2102: Topics in Micro Theory I

Contract Theory

LA 340, Friday 2–4, Autumn 2006

<http://www.economics.utoronto.ca/board/teaching.html>

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This is a course in contract theory. We consider the main tools and applications used in models of moral hazard, screening and incomplete contracting.

For those enrolled, there will be three problem sets (15% each) and a final (55%). The problem sets will be due on 13th October (week 5), 10th November (week 9) and 8th December (week 13). Later in the term, there will also be opportunities for students to present specific papers.

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Segal and Tadelis (2002), *Lecture on Contract Theory*, Unpublished, Stanford University.

Stole (1993), *Lectures on Contracts and Organizations*, Unpublished, University of Chicago.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 Shannon (1994), “Monotone Comparative Statics,” *Econometrica*.

Milgrom and Roberts (1994), “Comparing Equilibria,” *American Economic Review*.

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

Shaked and Shanthikumar (1993), *Stochastic Orders and their Applications*, Academic Press.

Muller and Stoyan (2002), *Comparison Methods for Stochastic Models and Risks*, Wiley.

Edlin and Shannon (1998), “Strict Monotonicity in Comparative Statics,” *Journal of Economic Theory*.

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*.

Athey (2002), “Monotone Comparative Statics Under Uncertainty,” *Quarterly Journal of Economics*.

2. Moral Hazard: One Agent

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

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

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.

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. Contracting with Externalities

Bolton and Dewatripont, *Chapter 13.3*.

Segal and Whinston (2003), “Robust Predictions for Bilateral Contracting with Externalities,” *Econometrica*.

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*.

5. Moral Hazard: Dynamics

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

Bolton and Dewatripont, *Chapter 10*.

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

Spear and Srinivasta (1987), “On Repeated Moral Hazard with Discounting,” *Review of Economic Studies*.

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 (2004), “A Continuous-Time Version of the Principal-Agent Problem,” Unpublished, UC Berkeley.

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*.

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

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

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

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

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

Ligon, Thomas and Worrall (2002), “Informal Insurance Arrangements with Limited Commitment: Theory and Evidence from Village Economies,” *Review of Economic Studies*.

Lazear (1979), “Why Is There Mandatory Retirement?,” *Journal of Political Economy*.

Shapiro (1983), “Premiums for High Quality Products as Returns to Reputations,” *Quarterly Journal of Economics*.

6. 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*.

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

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

7. Mechanism Design: Many Agents

Topics: dominant strategy implementation, gibbard–satterthwaite, VCG mechanisms, bayesian implementation, 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.

Klemperer (2004), *Auctions: Theory and Practice*, PUP.

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

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

Cremer and McLean (1985), “Full Extraction of the Surplus in Bayesian and Dominant Strategy Auctions,” *Econometrica*.

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

8. Mechanism Design: Dynamics

Topics: commitment solutions, no commitment, renegotiation, entry of new agents, durable goods monopoly, consumption smoothing, soft budget constraints.

Bolton and Dewatripont, *Chapter 9*.

Laffont and Martimort, *Chapter 8*.

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*.

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*.

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

Board (2005), “Durable Goods Monopoly with Varying Demand,” Unpublished, University of Toronto.

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

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

Segal (2003), “Optimal Pricing Mechanisms with Unknown Demand,” *American Economic Review*.

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

9. Mechanism Design: Multidimensional Types

Topics: incentive compatibility, 2×2 example, separable environments, efficiency in auctions.

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*.

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

10. Mixed Models

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

Bolton and Dewatripont, *Chapter 6.3*.

Laffont and Martimort, *Chapter 7*.

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*.

11. Incomplete Contracts

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

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*.

Che and Sakovics (2004), "A Dynamic Theory of Holdup," *Econometrica*.

Bernheim and Whinston (1998), "Incomplete Contracts and Strategic Ambiguity," *American Economic Review*.

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*.

Maskin and Tirole (1999), "Unforeseen Contingencies and Incomplete Contracts," *Review of Economic Studies*.

Maskin and Moore (1999), "Implementation and Renegotiation," *Review of Economic Studies*.

Segal and Whinston (2002), "The Mirrlees Approach to Mechanism Design with Renegotiation (with Applications to Hold-up and Risk Sharing)," *Econometrica*.

Spier (1992), "Incomplete Contracts and Signalling," *RAND Journal of Economics*.