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Intensive Course
The Economics of Information:
Incentive Problems, Contracts and Auctions

October 2005

Time: 9/10/2005 - 14/10/2005
Location: Schloss Neuburg am Inn
(Ph: 0049 8507 911 000 www.schlossneuburg.de)

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Description: This course will cover the basic elements of the economics of information. Economics of information examines the role of information in economic relationship. It is therefore an investigation into the role of *imperfect* and *incomplete* information. The nature of information economics as a field is perhaps best understood when contrasted with the standard general equilibrium theory. Information economics consists of a set of tools rather than a single methodology. Furthermore, the choice of tools is very issue driven. Frequently we will make use of the following tools:

- small number of participants;
- institutions may be represented by constraints;
- noncooperative (Bayesian) game theory;
- simple assumptions on bargaining: Principal-Agent paradigm.

The course will begin with a review of the classic problems of adverse selection, insurance and search. Then we will progress to more recent advances in information economics and emphasize contracts and, in particular, auction problems.

Organization. The course will consist of two lectures in the morning of every day in which new material will be introduced. In addition, there will be daily problem sets and assigned readings for the afternoon. The day will end with a review session which will review the assigned problems and discussion the assigned readings. The review session will be lead by a group of students. All students are asked to complete the required reading before the sessions so that we can move swiftly to the important contributions of the material presented.

SCHEDULE. The daily schedule will be:
9.00 - 10.15: 1st Lecture
10.15 - 10.45: Break
10.45 - 12.00: 2nd Lecture
14.00 - 18.00: Problem Set and Reading
20.00 - 21.00: Review

LITERATURE. There are a number of recent textbooks on information economics. Every student of microeconomic theory should have acess to:

- A. Mas-Collel, M. Whinston and J. Green. 1995. Microeconomic Theory. Oxford University Press

The lectures will be partially based on the following two books which are strongly recommended for this course jointly with the above.

- B. Salanie. The Economics of Contracts. 1998. MIT Press **(S)**
- V. Krishna. Auction Theory. 2002. Academic Press. **(K)**

Additionally, the following recent books address some of material covered in the lectures:

- P. Bolton and M. Dewatripont. Contract Theory. 2005. MIT Press
- P. Milgrom. Putting Auction Theory to Work. 2004. Cambridge University Press.

PROGRAM. The following program is a preliminary schedule for the ten lectures. The topics are separately listed for each lecture. They are followed by one, two, or three classic articles on the topic, the relevant textbook treatment and an applied/empirical paper using the theoretical insights.

1. Private Information, Adverse Selection, Market Inefficiency, Pooling Equilibrium, Separating Equilibrium, Insurance
   (a) Akerlof, G. (1970): "The Market for Lemons: Qualitative Uncertainty and the Market Mechanism," *Quarterly Journal of Economics*, 84, 488-500.
   (b) Rothchild, M. and J. Stiglitz (1976): "Equilibrium in a Competitive Insurance Market," *Quarterly Journal of Economics*, 90, 629-49.
   (c) **S**: Chapters 1 and 2.
   (d) P.-A. Chiappori and B. Salanie (2000): "Testing for Asymmetric Information in Insurance Markets," *Journal of Political Economy*, 108, ,56-78.
2. Signalling, Limit Pricing
   (a) Spence, M. (1973): "Job Market Signalling," *Quarterly Journal of Economics*, 87, 355-74.
   (b) P. Milgrom and J. Roberts (1982): "Limit Pricing and Entry under Incomplete Information: An Equilibrium Analysis," *Econometrica*, 50, 443-460.
   (c) P. Milgrom and J. Roberts (1986): "Price and Advertising Signals of Product Quality," *Journal of Political Economy*, 94, 796-821.
   (d) **S**: Chapter 4.

(e) J. Milyo and J. Waldfogel (1999): "The Effect of Price Advertising on Prices: Evidence in the Wake of 44 Liquormart," *The American Economic Review*, 89, 1081-1096.

3. Search

(a) Sequential search: lecture notes.

(b) Diamond, P. (1971): "A Model of Price Adjustment," *Journal of Economic Theory*, 158-168.

(c) F. Postel-Vinay and J.-M. Robin (2002): "Equilibrium Wage Dispersion with Worker and Employer Heterogeneity," *Econometrica*, 70, 2295-2350.

4. Principal Agent Model, Moral Hazard

(a) B. Holmstrom: "Moral Hazard and Observability," *Bell Journal of Economics*, 1979, 10, 74-91.

(b) B. Holmstrom and P. Milgrom (1987): "Aggregation and Linearity in the Provision of Intertemporal Incentives," *Econometrica*, 55, 303-328.

(c) **S**: Chapter 5.

5. Private Value Auctions, First and Second Price Auctions, Efficiency

(a) Vickrey, W. (1961): "Counterspeculation, Auctions, and Competitive Sealed Tenders," *Journal of Finance*, 93, 675-689.

(b) P. McAfee and J. McMillan (1987): "Auctions and Bidding," *Journal of Economic Literature*, 25, 699-738.

(c) **K:** Chapters 2 and 3.

6. Common Value Auctions, Winner's Curse, Oil Auctions, Interdependent Valuations

(a) R. Wilson (1977): "A Bidding Model of Perfect Competition," *Review of Economic Studies*, 44, 511-518.

(b) P. Milgrom (1989): "Auctions and Bidding: A Primer," *Journal of Economic Perspectives*, 3, 3-22.

(c) **K:** Chapter 6.

(d) R. Porter (1995): "The Role of Information in U.S. Offshore Oil and Gas Lease Auction," *Econometrica*, 63, ,1-27.

7. Market Design, Identification Problem, Inference of Private Information

(a) E. Guerre, I. Perrigne and Q. Vuong (2000): "Optimal Nonparametric Estimation of First-Price Auctions," *Econometrica*, 68, 525-574.

(b) J.-J. Laffont, H. Ossard and Q. Vuong (1995): "Econometrics of First-Price Auctions," *Econometrica*, 63, 953-980.

(c) B. Elyakime, J.-J. Laffont, P. Loisel and Q. Vuong (1994): "First-Price Sealed-Bid Auctions with Secret Reservation Prices," *Annales d'Economie et de Statistiques*, 34, 115-141.

8. Optimal Auctions, Mechanism Design, Revenue Equivalence

(a) Bulow, J. and J. Roberts: "The Simple Economics of Optimal Auctions," *Journal of Political Economy*, 1989, 97, 1060-1090.

(b) **K**: Chapter 5.

(c) S. Athey and J. Levin (2004): "Comparing Open and Sealed Bid Auctions: Theory and Evidence from Timber Auctions," technical report, Stanford University, (http://www.stanford.edu/˜athey/compar

9. Double Auctions, Bilateral Trading, Market Inefficiency

(a) W. Leininger and P. Linhart and R. Radner (1989): "Equilibria of the Sealed-Bid Mechanism for Bargaining with Incomplete Information," *Journal of Economic Theory*, 48, 47-62.

(b) R. Myerson and M. Satterthwaite (1983): "Efficient Mechanisms for Bilateral Trading," *Journal of Economic Theory*, 29, 265-281.

(c) P. Cramton, R. Gibbons and P. Klemperer (1987): "Dissolving a Partnership Efficiently," *Econometrica*, 55, 615-632.

10. Sequential Auctions, Multi-unit Auctions

(a) O. Ashenfelter (1989): "How Auctions Work for Wine and Art," *Journal of Economic Perspectives*, 3, 23-36.

(b) **K**: Chapters 12 and 15.

(c) J. Bonet and M. Pesendorfer (2003): "Estimation of a Dynamic Auction Game," *Econometrica*, 71, 1443-1489.