Contract Theory 1 (Teoría de Contratos 1)

Universidad del Rosario, Facultad de Economía
Semestre 2011 - I

Syllabus

Instructor: Çağatay Kayı.

Class Hours: Mondays and Wednesdays 15:00 - 17:00.

Lecture Hall: Pedro Fermin, Auditorio 1.

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Objectives:

This course deals with the Economics of Information, i.e. with the question of how people decide whenever their information is (in)complete, how they acquire new information, how they learn, and how relationships develop if the different parties have different information about their counterparts and/or the environment. Stated differently, we investigate how an economy adapts to new information, and how this information is disseminated, absorbed and used throughout the economy.

Them "Bank of Sweden Award in Economic Sciences in Memory of Alfred Nobel" has been awarded to George A. Akerlof, A. Michael Spence, and Joseph E. Stiglitz in 2001 for their contributions to the Economics of Information. The fathers of Information Economics are mainly responsible for three contributions that will also serve as a guideline for this course.[1]

- Information Economics questions standard paradigms of economics. Information is not just a commodity like many others. If information is distributed unequally over an economy (or a relationship) a lot of paradigms do no longer hold. Market equilibria may not exist, and if they exist, they are not necessarily Pareto optimal. Moreover, the distribution of income matters, and markets are not necessarily clearing.

[1] A comprehensive review of the impact of Information Economics on economic thinking can be found in Stiglitz (2000).

- Information Economics explains empirical puzzles of standard economics. Taking asymmetric distributions of information as a starting point, many empirical puzzles can be explained. For instance, unobservable management efforts can explain wage differentials that do not reflect different productivity levels (the efficiency wage discussion). The financial structure of a firm can signal the quality of a project (the capital structure puzzle). Or auction may lead to efficient resource allocations while bilateral bargaining does not (a violation of Coase Theorem). In general: Information Economics helps to explain why market (or institutional) designs matter.

- Information Economics provides an applicable toolkit to analyze relevant economic settings. This course will discuss several applications of Information Economics beyond their main scope. We will use the toolbox to discuss recent developments in the design of health insurance contracts, electronic marketplaces, or agreements for technology transfers.

In this course we study the role of information in three dimensions.

- *How is information transmitted in (economic) relations?*

  We investigate different (contractual) relationships with asymmetrically distributed information and analyze the respective (private) benefits and (social) losses. Moreover, we discuss how information is (or can or should be) transmitted in these relationships.

- *How is information processed?*

  If we know how economic relations (or markets) transmit information, an obviously related question is how this information is processed by the respective receiver. This leads to theories of learning and up-dating (and their empirical qualifications from cognitive psychology). Finally, we will discuss how the strategic (abuse) of information influences processing (and transmission).

- *How does market design influence information transmission?*

  If different economic relations (or different institutional arrangements) influence information transmission in the market, it is important to analyze various market designs and their efficiency properties.

The course aims at the provision of a working knowledge in all three dimensions that enables students to identify and analyze problems of information transmission in economic relationships, to evaluate their welfare consequences, and to recommend institutional improvements.

The core reference for this course is the comprehensive:

- Macho-Stadler, I. and D. Perez-Castrillo, An Introduction to the Economics of Information, 2nd edition, Oxford University Press 2001.

In addition to Macho-Stadler and Perez-Castrillo (2001), you could also use the following textbooks on Information Economics:

- Bolton, P. and M. Dewatripont, Contract Theory, MIT Press 2005.
- Salanié, B., The Economics of Contracts, A Primer, 2nd Edition, MIT Press 2005.

We will also provide required research articles mentioned in the schedule below.

Grading Policies:

Your evaluation will be based on four parts: your participation in the lectures (10%), the submitted problem sets (30%), your final assignment: research question and related literature review (30%), and the final exam (30%).

For the final assignment, every student has to select a topic that deals with the Economics of Information. Experience shows that it pays off to think about the final assignment throughout the course - to discuss the topic with your fellow students and/or the tutor, to conduct a literature research and to organize the paper. Do not postpone everything to the end of the course! You loose plenty of opportunities for discussions, and also the opportunity to let the problem mature.

- The paper should deal with a clearly identified research question that can be answered with tools learned in this course.
- The paper should also contain a literature review about the topic.
- The paper should identify the informational problems of the respective research question and should relate it to the models discussed in the course.
- The paper should address how to approach to the problem.
- The paper must not exceed 6 pages (without front-matter and reference and double-spaced, script 12).

The final exam is on Wednesday, March 23^{rd} 2011. The final assignment has to be sent as an email until Monday, March 28^{th}, 2011, at noon.

Schedule

- Week 1: Overview and Technicalities
  - Throughout this session we will review the essence of the theory of choice under uncertainty which is the basic tool kit for Information Economics. It will be impossible to follow this course without mastery of the calculus of constrained optimization.
- Week 2: Incentives, Contracts and Risk-Sharing
  - First, we focus on an example how workers respond to incentives (Lazear, 2000). Then, as a benchmark, we deal with the simplest contractual relationship - an agreement on risk-sharing under complete information. We will analyze optimal risk-sharing and apply our findings to some real-life settings.
  - Reader: Lazear, E. (2000), Macho-Stadler and Perez-Castrillo (2001) (henceforth, MSPC) ch. 1. and ch. 2.
- Week 3: Moral Hazard
  - This session introduces the standard model for contracts with hidden actions (moral hazard). We analyze optimal contract structures and welfare implications if actions are not observable and apply our findings to performance dependent wage agreements.
  - Reader: MSPC ch. 3.1-3.3.
- Week 4: Adverse Selection
  - This session introduces the standard model for contracts with hidden characteristics (adverse selection). We analyze optimal contracts and welfare implications if characteristics are not observable and apply our findings to monopolistic price discrimination.
  - Reader: MSPC ch. 4.1 and 4.2.
- Week 5: Information and Insurance Markets
  - This session provides a detailed discussion of one of the first papers in Information Economics: The insurance market model by Rothschild and Stiglitz (1976). We will use this model to identify conditions for market failures due to asymmetric information.
  - Reader: Rothschild and Stiglitz (1976).
- Week 6: Strategic Information Transmission (Signalling)

  - Endowed with a theory about learning, we are ready to address the strategic (ab)use of information in signalling games. As a key example, we consider Spence job market model with education as a signal.
  - Reader: MSPC ch. 5.1-5.4.

- Week 7: Empirical Tests of Contract Theory and Experiments on Contract Theory
  - In this session, we deal with the recent literature on empirical tests of contract theory. Hereby, we will focus on the detection and relevance of asymmetric information effects in insurance, labor, and technology transfer markets. We also discuss additional insights into incentive and signaling theory provided by laboratory experiments. In a recent paper Fehr, Klein, and Schmidt (2007) show how principals design contracts in laboratory experiments and thereby anticipate social preference structures.
  - Reader: Chiappori and Salanié (2002) p.1-43 (except sections 3.2 - 3.4). and Fehr, Klein, and Schmidt (2007).

- Week 8: Auctions
  - We conclude with an analysis of auctions, one of the most popular trade institutions in our days - and one of the most ideal playgrounds for economists.
  - Reader: Milgrom (1989), Bulow and Roberts (1989).

Literature List:

Bulow, J. and J. Roberts (1989), The Simple Economics of Optimal Auctions, *Journal of Political Economy* 97(5), 1060-1090.

Chiappori, P.A. and B. Salanié (2000), Testing for Asymmetric Information in Insurance Markets, *Journal of Political Economy* 108(1), 56-78.

Chiappori, P.A. and B. Salanié (2002), Testing Contract Theory: A Survey of Some Recent Work, CESifo Working Paper No. 738.

Fehr, E., A. Klein, and K. Schmidt (2007), Fairness and Contract Design, *Econometrica* 75(1), 121-154.

Lazear, E. (2000), Performance Pay and Productivity, *American Economic Review* 90, 1346-61.

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

Rothschild, M. and J. Stiglitz (1976), Equilibrium in Competitive Insurance Markets: An Essay on the Economics of Imperfect Information, *Quarterly Journal of Economics* 40, 629-649.

Stiglitz, J. (2000), The Contribution of the Economics of Information to Twentieth Century Economics, *Quarterly Journal of Economics* 115(4), 1441-1478.