



**Course:** **Contracts, Incentives, and Behavior**

**Faculty:** Inés Macho Stadler and Pau Olivella Cunill

**Term:** First

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**DESCRIPTION AND OBJECTIVES:**

Moral hazard (also called hidden action) and adverse selection (also called hidden information) have been a long-time concern for insurance. These situations refer to informational asymmetries related to the agent's behavior during the relationship or to the agent's characteristic when signing the contract.

Models on moral hazard and adverse selection and their applications have increasingly been recognized as key elements to understand sharecropping contracts, corporate governance, licensing agreements, health economics, price discrimination strategies, and regulatory policies, to cite just a few examples.

This course provides an overview of the main topics in contract theory. We will start from the baseline models and then look at various modifications including more general structure of outcomes or types, simple models that allow building set-ups to analyze particular questions, behavioral elements, etc. We will also present some applications where economics of information has been extensively and fruitfully used.

## **OUTLINE**

INTRODUCTION AND HIDDEN BEHAVIOR: MORAL HAZARD / AGENCY PROBLEM. Inés Macho-Stadler (first half of the course)

### **1. INTRODUCTION**

1.1. Presentation of asymmetric information, contracts, and the meaning of Moral Hazard, Adverse Selection and Signaling.

Macho-Stadler and Pérez-Castrillo, Ch. 1.

1.2. Symmetric information set-up (first-best)

Macho-Stadler and Pérez-Castrillo, Ch. 2.

### **2. HIDDEN INFORMATION (MORAL HAZARD)**

2.1. Moral hazard basic (two effort and FOA - Likelihood Ratio - Sufficient statistic argument)

Macho-Stadler and Pérez-Castrillo, Ch. 3.

Bolton and Dewatripont, Ch. 4.

2.2. Simple models (CARA; risk neutrality + limited liability)

Innes, R. (1990). "Limited Liability and Incentive Contracting with Ex-ante Action Choices," *Journal of Economic Theory* 52(1), 45-67.

2.3. Extensions (several tasks; double moral hazard; moral hazard with several agents)

Holmström B. (1982). "Moral Hazard in Teams," *Bell Journal of Economics* 13, 324-340.

Holmstrom, B. and P. Milgrom (1991), "Multitask Principal-Agent Analyses: Incentive Contracts, Asset Ownership, and Job Design," *Journal of Law, Economics, & Organization* 7, 24-52.

Mookherjee, D. (1984). "Optimal Incentive Schemes with Many Agents," *Review of Economic Studies* 51, 433-446.

2.4. Behavioral approach (intrinsic vs extrinsic motivation, unawareness...)

De la Rosa, L.E. (2011). "Overconfidence and Moral Hazard," *Games and Economic Behavior* 73, 429-451.

Itoh, H. (2004). "Moral Hazard and Other-Regarding Preferences," *Japanese Economic Review* 55 (1), 18-45.

Köszegi, B. (2014). "Behavioral Contract Theory," *Journal of Economic Literature* 52 (4), 1075-1118.

Macho-Stadler, I. and D. Pérez-Castrillo (2018). "Moral Hazard: Base Models and Two Extensions," chapter 16, in the Handbook of Game Theory and Industrial Organization (eds. L.C. Corchón and M.A. Marini), Edward Elgar.

von Thadden, E.L. and X. Zhao (2014). "Multi-task agency with unawareness," Theory and Decision 77 (2), 197-222.

2.5. Applications: Insurance contracts. Health economics (copayments, and behavioral behavior. Fee-for-service vs fixed payment for Physicians. GPs as gate-keepers). Team work. Tenancy contracts. Organizational Economics (collusion).

Arrow, K. (1963). "Uncertainty and the welfare economics of medical care", The American Economic Review LIII (5), 941-973.

Baicker, K., S. Mullainathan, and J. Schwartzstein (2015). "Behavioral hazard in health Insurance". The Quarterly Journal of Economics 130(4), 1623-1667.

Eswaran, M. and A. Kotwal (1985). "A theory of contractual structure in agriculture." American Economic Review 75(1), 162-177.

Ghatak, M. and A.Karaivanov (2014). "Contractual structure in agriculture with endogenous matching." Journal of Development Economics 110, 239-249.

McGuire, T. G. (2000). "Physician agency." Handbook of Health Economics Volume 1A, Anthony J. Culyer and Joseph P. Newhouse (eds.) (Amsterdam, Elsevier Science B.V.), 461-536.

González, P. (2004). "Should physicians' dual practice be limited? An incentive approach". Health economics, 13(6), 505-524.

Ma, C.T.A. (1994). "Health care payment systems: cost and quality incentives". Journal of Economics & Management Strategy, 3(1), 93-112.

Marinosa, B. G., and I. Jelovac (2003), "GPs' payment contracts and their referral practice." Journal of Health Economics, 22(4), 617-635.

Pauly, M. V. (1968). "The economics of moral hazard: comment", American Economic Review 58(3), 531-537.

Tirole, J., (1986). "Hierarchies and Bureaucracies: On the Role of Collusion in Organizations," Journal of Law, Economics and Organization 2, 2.

## **HIDDEN INFORMATION: ADVERSE SELECTION AND SIGNALING. Pau Olivella (second half of the course)**

### **3. HIDDEN INFORMATION**

3.1. Introductory examples and definitions. The consequences of asymmetric information in the absence of screening tools: adverse vs. propitious selection. Uninformed party moves first: Screening. Informed party moves first: signaling.

3.2. Adverse selection with a continuous set of types. Firms competing for workers in a deterministic setting and increasing reservation utility. The lemons model. The spiral of death in the insurance market. Propitious selection in an insurance market

Mas-Colell et al., Ch. 13.

Akerloff, G. (1970). "The Market for Lemons: Qualitative Uncertainty and the Market Mechanism," *Quarterly Journal of Economics* 84: 488-500.

Buchmueller, T. and J. DiNardo (2002). "Did Community Rating Induce an Adverse Selection Death Spiral? Evidence from New York, Pennsylvania, and Connecticut," *The American Economic Review* 92(1), 280-294.

de Meza, D. and D.C. Webb (2001). "Advantageous selection in insurance markets," *RAND Journal of Economics* 32(2), 249-262.

3.3. Monopolistic screening, the two-types case. Screening through effort requirements and wages. The symmetric information benchmark. The second-best contract under asymmetric information.

Macho-Stadler and Pérez-Castrillo, Ch. 4.

3.4. Monopolistic Screening, the continuous-types case. The Revelation Principle. The characterization of incentive compatible contracts. First order, monotonicity, and marginal rate of substitution conditions. Economic interpretation. Malpractice litigation when plaintiff makes settlement offers.

Laffont, Ch. 10.

Musa M. and S. Rosen (1978). "Monopoly and Product Quality," *Journal of Economic Theory* 18: 301-317.

3.5. Competitive Screening, the two-types/two-states model with principals competing for agents. The solution under symmetric information. The solution under asymmetric information. Existence issues. Second-best efficiency. Other solution concepts. The insurance market; the market of pre-paid healthcare plans.

Macho-Stadler and Perez-Castrillo, Ch. 4.

Rothschild, M. and J. Stiglitz, (1976) "Equilibrium in Competitive Insurance Markets: An Essay on the Economics of Imperfect Information," *Quarterly Journal of Economics* 90: 629-649.

Smart, M. (2000). "Competitive Insurance Markets with Two Unobservables," *International Economic Review* 41: 153-69.

Olivella, P. (2018). "Healthcare and health insurance markets," Chapter 15, (Introduction and section 4 only), in the *Handbook of Game Theory and Industrial Organization*, Vol. II (eds. L.C. Corchón and M.A. Marini), Edward Elgar.

3.6. Signaling with a discrete set of types. Separating versus pooling equilibria. Equilibrium refinements. Altruism and reputational concerns.

Mas-Colell et al., Ch. 13.

Macho-Stadler and Pérez-Castrillo, Ch. 5.

3.7. Signaling with a continuous set of types. The Spence signaling model. The Spence Condition. Malpractice litigation: when defendant makes settlement offers.

Spence, M. (1973). "Job Market Signaling," *Quarterly Journal of Economics* 87: 355-379.

Milgrom, P. and J. Roberts (1986). "Prices and Advertising Signals of Quality," *Journal of Political Economy* 94:796-821.

Bagwell, K. and M. H. Riordan (1991). "High and Declining Prices Signal Product Quality," *American Economic Review* 81(1): 224-39.

Cartwright, E. and A. Patel (2013). "How category reporting can improve fundraising," *Journal of Economic Behavior & Organization* 87: 73-90.

## **TEXTBOOKS**

Several textbooks cover most relevant material. Applications and some recent extensions use additional references.

Bolton, P. and M. Dewatripont (2005). *Contract theory*. MIT press.

Macho-Stadler, I. and D. Pérez-Castrillo (2001). *An Introduction to the Economics of Information*, 2nd Edition. Oxford University Press.

Mas-Colell, A, M. Whinston and J. Green (1995). *Microeconomic Theory*. Oxford University Press.

Salanié, B. (2005). *The Economics of Contracts: A Primer*. MIT Press Books.

Laffont, J.-J. (1989). *The Economics of Uncertainty and Information*. The MIT Press, Cambridge, Massachusetts.

## **GRADING**

Each professor will give to 10% the problem sets and 40% to the grade of his/her part of final exam (hence, each part will count the 50% in the final grade).