

ECON0029: Economics of Information

University College London
Department of Economics

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Time: Term 1, Monday 4pm-6pm

Aims:

In many economic transactions, involved parties have different information about important characteristics that affect the value of trade. In this course, we will study how agents deal with this **information asymmetry** by designing incentives and embedding them in contracts. We will also study the effects of information asymmetry on the prevailing market equilibrium. We will discuss applications from labour markets (in particular compensations schemes of managers and CEOs), corporate finance (in particular rationing in credit markets) and the provision of health insurance.

The course analyses **incentive schemes** that are used in situations of **Moral Hazard** (e.g. non-verifiable effort of an employee or customer of an insurance company), as well as **menus of contracts** and **product lines** that are used in the presence of **Adverse Selection** (e.g. when different customers select different contracts or products based on their preferences).

A central theme of the course is that asymmetric information can lead to **inefficiencies and market failure**. We analyse how agents can overcome these inefficiencies and discuss the consequences of government interventions that aim to improve on the market outcome.

The core content of the course is theoretical. The theoretical observations will be applied to specific settings and compared to empirical data on incentive schemes and menus of contracts used in practice.

Finally empirical tests are discussed that can be used to identify Moral Hazard and Adverse Selection in insurance markets.

Suitable for:

3rd year Economics (L100), Phil/Econ (VL51), Math/Econ (G1L1/G1LC) and Econ/Stats (LG13) students.

Please contact the lecturer if you are unsure if this course is suitable for you.

Prerequisites:

ECON0013 (formerly ECON2001): Microeconomics, ECON0019 (formerly: ECON2007): Quantitative Economics and Econometrics.

Assessment:

The material covered in the lectures will be evaluated in a 100% Online remote exam in Term 3. The exam is mainly problem based. A sample exam will be posted in the course webpage.

Lectures, Course Work and Tutorial:

There will be 2h of lectures each week. The lecture will be split in a synchronous and asynchronous part. Recordings of both parts will be available.

In addition there are eight 1h tutorials throughout the term (in weeks 8-10 and 12-16). For each tutorial session there will be a problem set. Coursework is mandatory and will be marked to provide feedback, but will not be relevant for the overall grade of the course. I encourage you to work in groups of two or three students and submit your coursework jointly. Worked solutions will be provided for all coursework.

There will also be a weekly office hour.

Textbooks

Main Textbook for the Course:

- **(MSPC)** Macho-Stadler, I. and Pérez-Castrillo, J.D. "An Introduction to the Economics of Information. Incentives and Contracts". Oxford University Press. 2001. Second edition

Students in previous years found this textbook very helpful. Except for topics 5 and 9, the theoretical material in the lectures follows this textbook quite closely.

Additional Texts:

- Tirole, J., "The Theory of Corporate Finance," Princeton University Press, 2006

Chapter 3 of this book is the basis for Topic 5. The rest of the book is not relevant for the course and often much more advanced. Chapter 3 will be made available electronically (freely accessible) through the UCL online reading-lists.

- Salanie, B. "The Economics of Contracts" MIT Press, 2005, Second edition

An introduction to many of the topics covered in this course on a higher technical level.

Further readings will be announced during the term.

Course Outline

Topic 1: Introduction to the Course, Introduction to Decisions under Uncertainty

I review the basic concept of expected utility and apply it to demand for insurance and to efficient risk-sharing. These are central tools for the first half of the course.

Reading: Chapter 8 in Frank Cowell, "Microeconomics: Principles and Analysis", Oxford University Press, 2006.

Topic 2: The Basic Principal Agent Model

I introduce the basic Principal-Agent Model and analyse equilibrium outcomes in a monopoly and competitive markets when information is symmetric.

Reading: MSPC, Chapter 2

Topic 3: Moral Hazard I: Trade-off between Optimal Risk-Sharing and Incentives with an Application to Executive Compensation

I introduce asymmetric information in the basic Principal Agent Model and use this to derive properties of optimal incentive scheme when the actions of an employee are not verifiable. In an application I discuss features of executive compensation in light of the theoretical insights.

Reading: MSPC Chapter 3

- Background reading: Murphy, Kevin J., (1987), Executive Compensation: Where we are, and How we got there, Handbook of the Economics of Finance, Vol. 2, Chapter 4, pp. 221–356.

Topic 4: Moral Hazard II: The Value of Information with an Application to Relative Performance Evaluation

I use the theoretical model to discuss the optimal use of information in employment contracts. The theoretical insights are then compared to empirical observations about executive compensation and retention decisions.

Reading: MSPC Chapter 3

- Bertrand, M. and Mullainathan, S., (2001), Are CEOs Rewarded for Luck? The Ones Without Principals Are, The Quarterly Journal of Economics, vol. 116(3), pp. 901–932.

Topic 5: Moral Hazard III: Providing Incentives for Agents with Limited Liability with an Application to Credit Rationing

I develop a theoretical model that explains why the financing capacity of firms is limited when the actions of an entrepreneur are not fully observable to the investor.

Reading: MSPC Chapter 3, Tirole, Chapter 3.

Topic 6: Adverse Selection I: Monopolistic and Competitive Screening

I analyse optimal contracts when there is asymmetric information about the preferences of customers or employees. The leading application is the design of differentiated product lines. We analyse both monopolistic firms and competitive markets.

Reading: MPSC Chapter 4

Topic 7: Adverse Selection II: Lemons Markets

We study market outcomes in situations where one party has preferences over the characteristics of the counterparty in a transaction. Examples are, the quality of sold goods, the default probability of a financial assets, and the risk of a customer in insurance markets.

For such markets, we need a model of market equilibrium in which agents form rational expectations about the quality (or default probability, or risk of a customer) that they can expect in a transaction.

We use this model to show market outcomes under Adverse Selection are generally inefficient and discuss the possible responses (by market participants and government) to this type of market failure.

Reading: MPSC Chapter 4

Topic 8 (time permitting): Signalling

In some contractual relationships it can be beneficial for one party to signal hidden characteristics to her counterparty. We study situations where one party can credibly signal their characteristic via certain actions before the contractual relationship begins.

Reading: MPSC Chapter 5

Topic 9 (time permitting): Empirical Analysis of Insurance Markets, Distinguishing Moral Hazard and Adverse Selection

We review the implications of Adverse Selection and Moral Hazard for insurance markets and discuss empirical tests that can be used to identify these forms of asymmetric information in the data.

Reading:

- Gardiol, L., Geoffard, P-Y, and Grandchamp C.. Separating selection and incentive effects in health insurance. PSE Working Papers n2005-38. 2005
- Manning, W.G., Newhouse, J. P., Duan, N., Keeler, E.B. and Leibowitz, A. (1987). Health insurance and the demand for medical care: evidence from a randomized experiment, *The American Economic Review*, vol.77, pp. 251–77.
- Olivella, Pau, and Marcos Vera-Hernández. 2013. “Testing for Asymmetric Information in Private Health Insurance” *The Economic Journal* 123 (567).