

# Microeconomic Analysis

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## Lecturer

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## Assessment weighting

Final exam 80% + Midterm test 20%

## Course outline

- The Economic Approach and Consumer Theory (I, II week)
- Producer Theory (III, IV week)
- Imperfect competition and oligopoly (V, VI week)
- Game Theory (VII, VIII week)

- Time (IX week)
- Risk and Uncertainty (X, XI week)
- Asymmetric information: adverse selection (XII week)
- Asymmetric information: moral hazard (XIII week)
- General equilibrium and welfare: externalities and public goods (XIV, XV, XVI week)
- Network industries (XVII week)
- Public goods in networks (XVIII week)
- Revision (XIX week)

...a bit more in detail,

- **The Economic Approach and Consumer Theory.** Economics is a social science and social sciences are concerned with the study of human behaviour. Economists write on topics spanning from traditional studies of firms and consumer behaviour, interest rates, inflation, and unemployment to less traditional topics such as social choice, voting, marriage, family, and military conflicts. The feature that unites these studies is a common approach to problems based on the following general principles:
  1. Economic agents have preferences over allocations of the world's resources, which are stable over time.
  2. There are constraints placed on the allocations such as wealth, physical availability, and social/political institutions.
  3. Given (1) and (2), agents choose the allocation they prefer.

4. Changes in the allocations people choose are due to changes in the limits on available resources in (2).

During the two first weeks we apply these principles to develop a theory of consumer behaviour based on the simplest assumptions possible.

- **Producer Theory.** Here we study the producer side of the market. Our analysis will be divided into three parts; First, we will consider production from a purely technological point of view, characterizing the firm's set of feasible production plans in terms of its production set  $Y$ . Second, we will assume that the firm produces a single output using multiple inputs, and we will study its profit maximisation and cost minimisation problems using a production function to characterize its production possibilities. Finally, we will analyse the standard *perfect competition* and *monopoly* cases.
- **Imperfect competition and oligopoly.** We analyse the cases in which (i) firms produce heterogeneous (at least to some degree) products, *monopolistic competition*, and (ii) a finite number of firms produce homogeneous products, *Cournot*, *Stackelberg*, and *Bertrand oligopolies*. These models, even if they still are simplifications of the real world, are able to give insights on some of the dynamics observed empirically.
- **Game Theory.** Game Theory is a collection of tools for predicting outcomes for a group of interacting agents, where an action of a single agent directly affects the payoffs (welfare or profits) of other participating agents. The goal of game-theoretic model is to predict the outcomes (a list of actions adopted by each participant), given the assumed incentives of the participating agents. We will study *normal* and *extensive* form games with *pure strategy equilibria*.
- **Time.** In this section we will propose a simple model to explain how the consumer's behaviour evolves over time, and specifically the consumption decisions over two or more

periods. For example, will the consumer borrow or save? Will her consumption increase or decrease over time? How are these conclusions affected by changes in exogenous parameters such as prices, interest rates, or wealth?

- **Risk and Uncertainty.** We study choices under uncertainty, where the objects of choices are not certainties, but distributions over outcomes. For example, how do we choose when the outcome is uncertain? How do we compare two alternative risky prospects? Throughout the lectures we also present some experimental result challenging the expected utility axioms, such as *Framing effect*, *Ellsberg paradox*, *Allais paradox*. Finally we conclude with some example of alternative *non-expected utility* model such as *probability weighting* model, *regret* theory, and *ambiguity aversion* model.
- **Asymmetric Information: adverse selection.** In the standard Consumer Theory presented in the first lectures we assume that the consumers choose under perfect information which is clearly not representative of almost any real life situation we face. Often there is asymmetric information, or one party of a transaction knows something about the product that another party does not know. To study a simple case of *adverse selection* problem, we will present the benchmark paper Akerlof (1970) “The Market for Lemons”.
- **Asymmetric Information: moral hazard.** The term *moral hazard* originates in the insurance industry as the tendency of clients to alter their behaviour in ways that are costly to the insurance companies, after having purchased insurance. Specifically, we will analyse the simple *principal-agent* problem: agent pursues his own goal rather than the goal of the principal.
- **General equilibrium and welfare: externalities and public goods.** In the previous lectures we considered what we can also call “private goods”, or such that they could be consumed by only one person, and that each person’s consumption of the good had no effect on other people’s utility. Here we relax this assumption and analyse when this is

not the case and give a formal definition of *positive* and *negative* externalities. A specific type of good with external costs or benefits is a *public good*, which can be classified based on whether people can be excluded from using them, and whether their consumption is rivalrous or not.

- **Network Industries.** This section analyses markets which satisfy the characteristics of what we call network products. These markets include the ones for mobile phones, email, Internet, computer hardware and software, music players, music titles, movies, banking services, airline services, and many more. The main characteristics of these markets can be synthesised as follows,
  1. Complementarity, compatibility, and standards.
  2. Consumption externalities.
  3. Switching costs and lock-in.
  4. Significant economies of scale in production.
- **Public goods in networks.** In this lecture we present two benchmark papers on the recent literature on public goods (Bramoulle' and Kranton (2006) and Galeotti and Goyal (2010)). They both analyse the incentives of agents to provide goods that are non-excludable along social or geographic links.

## Readings

### Main textbooks:

- *Microeconomics*, J.M. Perloff, Prentice Hall.
- *Intermediate Microeconomics*, Hal R. Varian, W. W. Norton & Company.
- *Microeconomics*, Pindick and Rubinfeld, Prentice Hall.

+ suggested extra-readings.