MICROECONOMICS II:

An introduction to game theory and general equilibrium

Winter 2006

Textbooks

- **Fudenberg and Tirole.** *Game Theory*, The MIT Press 1991.
- Osborne and Rubintein. A Course in Game Theory, The MIT Press 1994.
- **Vega-Redondo.** *Economics and the Theory of Games*, Cambridge University Press 2002.
- **Hildenbrand and Kirman.** Equilibrium Analysis. North-Holland, 1988.
- **Starr.** *General Equilibrium Theory: An Introduction*, New York: Cambridge University Press, 1997.
- Mas-Colell, Whinston and Green, Microeconomic Theory, Oxford 1995.

Aims and Scope

The objective of this course is the analysis of how individuals (optimal) decisions interact between themselves. In this sense, it is a fitting continuation of Microeconomics I, which studied individual decision-making. The first part of the course is devoted to game theory and the second to general equilibrium. The main difference is that in game theory an individual has a noticeable impact on the aggregate outcome, whereas in general equilibrium a single decision-maker cannot affect the aggregate situation.

Approximate schedule (by weeks)

1. Preliminaries.

Definitions of a game: players, strategies and payoffs.

Representing a game: the strategic form and the extensive form. Strict and weak dominance: prisoners' dilemma, the beauty contest.

2. Nash equilibrium.

Existence: fixed point theorems.

Nash equilibrium as a positive analysis tool: oligopoly.

Nash equilibrium as a normative analysis tool: implementation.

3. Subgame perfect equilibrium.

Incredible threats and small irrationalities.

Subgame perfect equilibrium as a positive analysis tool: bargaining. Subgame perfect equilibrium as a normative analysis tool: King Solomon's dilemma.

4. Incomplete information.

Bayesian-Nash equilibrium.

Bayesian-Nash equilibrium as a positive-normative analysis tool: Auctions.

5. Dynamic games.

Folk theorems: repeated games between patient players.

Dynamic games of incomplete information: signalling and Bayesian-perfection.

6. The economic environment of General Equilibrium Theory.

Agents and preferences, the budget set, demand and excess demand functions. Technological limits: production sets.

7. The concept of Walrasian price taking equilibrium.

Definition. Walsarian Equilibrium as a type of Nash equilibrium. Fixed points revisited. An equilibrium existence Theorem. The futile search for uniqueness.

8. The Welfare Properties of Walrasian Equilibrium.

Under a complete market hypothesis, a Walrasian equilibrium is Pareto optimal. Under convexity hypothesis any Pareto optimal allocation can be made Walrasian. A related result: the core equivalence theorem.

9. Market Failure.

Externalities. Market Incompleteness.

10. Beyond Walrasian Theory: back to games.

The role of non-convexities, particularly of increasing returns.