

Game Theory with Applications to Economics

Organization of the course

12 x 2 hours lectures/theory

6 x 2 hours exercises, second half of semester

exercises prepared at home before class

slides and exercises downloadable at my homepage via
www.ecares.org

These slides are not a substitute for manuscript: Without regular attendance of the lectures the subject matter cannot be understood properly

Literature:

G: Gibbons 1992, *A Primer in Game Theory*, Prentice Hall; ISBN: 0-7450-1160-8 (PB: 0-7450-1159-4)

Case Studies: D/N: Dixit and Nalebuff 1991, *Thinking Strategically*, W.W. Norton and Company; ISBN: 0-393-31035-3

Structure of the Lectures

1. Introduction
2. Static Games of Complete Information (G 1.1)
3. Applications of Static Games of Complete Information (G 1.2)
4. Mixed Strategies and Existence of the Nash Equilibrium (G. 1.3)
5. Static Games of Incomplete Information (G 3.1)
6. Applications of Static Games of Incomplete Information (G 3.2)

7. Simple Dynamic Games (G 2.1+G 2.2)
8. Repeated Games (G 2.3)
9. General Dynamic Games of Complete Information (G 2.4)
10. Dynamic Games of Incomplete Information (G 4.1)
11. Sequential Rationality in Games with Imperfect and Incomplete Information (G 4.2)
12. Application of Bayesian Equilibrium (G 4.3) and Sequential Equilibrium

1. Introduction

Strategic situation: Outcome depends on the actions of several agents (firms, consumers, political parties, trade unions, etc.)

Examples:

Success of pricing policy of VW depends also on pricing policy of Renault.

Success of a strike depends also on actions of employers.

Success of a boycott depends on the behavior of all consumers.

Success of an election campaign depends also on campaigns of other parties.

Analysis of strategic situations: Game Theory

What are the actions chosen by *rational* agents ("players")?

Rationality: Optimality with respect to certain goals (described by the "payoff function").

Goals are neither rational nor irrational - Rationality \neq Selfishness

Actions for all possible contingencies: Strategy

Examples:

- 1) Strategic voting
- 2) Auction with incomplete information
- 3) Choosing a political platform