

Applications of Game Theory in Managerial Decision Making
BIND 2035 Spring 2, 2009

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The course demonstrates how insights of game theory can be utilized by managers to address important decisions confronting the firm. The interaction of a business firm with its competitors, customers and suppliers can be formalized as a game situation. The task of the manager is to identify what are the rules that govern the game, whether he/she can modify those rules to the company's advantage, what are the optimal reactions of the company to the expected behavior of competitors, and how is the behavior of competitors, suppliers or consumers determined. The primary focus of the analysis is on understanding how other players form their strategies and expectations in order to identify one's own best response strategy.

We will utilize game theoretic reasoning to analyze issues related to entry into new markets or exit from established businesses, changing the perceptions of competitors, the extent of product differentiation and proliferation that is implied by competition, and strategies aimed at alleviating price competition among firms.

Required Readings: Harvard Business School Cases

Reference Books on Reserve in Library:

- 1) Dixit, Avinash and Susan Skeath (D&S) "Games of Strategy", W.W. Norton & Company, Second Edition, 2004.
- 2) Brandenburger, Adam and Barry Nalebuff (B&N), "Coopetition", Doubleday/Currency, 1996.

Students Evaluation: Evaluation will be based upon written assignments and class participation. Assignments to be conducted in teams of 4-5 people.

Prerequisites:

BENC 2401 - Economic Analysis and Managerial Decision - Firms and Markets

List of Topics and Assignments

Week 1 Review of Basic Concepts in Game Theory

- Teaching Notes:*
- 1) Games of Strategy: An Introduction
 - 2) Reaction Functions and Equilibrium
 - 3) The Right Game: Use Game Theory to Shape Strategy

Week 2 Review Continued (D&S Chapters 3, 4, 5)

Assignment 1: Problems 1-7

Week 3 Entry Barriers and Entry and Exit Decisions (D&S Chapters 5, 8, 10)

Assignment 2: Problems 8-11

- Cases:*
- 1) Entry Barriers (A): Deep Pockets
 - 2) Sequential Entry
 - 3) Judo and the Art of Entry

Week 4 Changing Perceptions of Competitors (D&S Chapter 9)

Assignment 3: Problems 12-14

- Cases:*
- 1) Bitter Competition: The Holland Sweetener Company vs. NutraSweet (A)
 - 2) The Fog of Business
 - 3) Signaling Costs

Week 5 Choice of Product Mix (D&S Chapter 10)

- Cases:*
- 1) Competition and Product Variety
 - 2) Product Proliferation and Preemption - The Breakfast Cereal Industry: The 1972 Antitrust Complaint
 - 3) Competition and Compatibility: Mix and Match

Week 6 Special Issues in Pricing (D&S Chapters 10, 11)

Assignment 4: Problems 15-16

- Cases:*
- 1) Spatial Pricing Rules - FTC vs. Ethyl Corporation, DuPont and others
 - 2) The Free-Rider Problem: Airline Frequent-flyer Programs