

**14.20 – Spring 2003**  
**Post-midterm Review Topics**

**This is a rough guide, with varying levels of detail across topics. You should use your lecture notes to guide your studying. Note: All discussion topics are fair game.**

Empirical Evidence on Price Discrimination

1. Borenstein and Rose: Airline pricing
  - Dispersion appears to be affected by cost variation and price discrimination
  - Prices seem to discriminate across customers based on their “brand/airline loyalty”
    - i. Evidence for this: dispersion increases with competition in a market higher for duopoly than monopoly, etc.
2. Shepard: Gasoline pricing
  - Gasoline stations appear to discriminate across customers based on willingness to pump own gasoline.
    - Evidence: Differential between full and self-serve is higher at stations with both service than across stations that provide only one type of service
    - Argument is that multi-type stations can increase differential, as customers who don’t want to pay higher full-serve price might stay at station and pump own gas. At single-serve station, customers who don’t want to pay higher full-serve price all leave to rival station.

Product choice & quality

1. Spatial models of product differentiation (Hotelling line, Salop circle)
  - 1.1 Fixed prices, choose location:
    - equilibrium (with 2, 3(?), 4 firms)
    - “principle of minimum differentiation”
  - 1.2 Fixed location, choose prices
    - equilibrium (differentiated Bertrand)
    - mark-ups, profits a function of differentiation
    - “Maximal differentiation”
  - 1.3 Free entry equilibrium: (Salop circle model)
    - Know how to solve for market demand for firm, as function of distance between firms, transport costs
    - Compare free entry, monopoly, social optimum equilibrium
    - What accounts for differences across these outcomes?
    - Welfare trade-offs
  - 1.4 RTE Cereal discussion (Nevo paper):
    - What are the stylized facts about cereal entry, competition, profits?
    - What model of competition accounts for these best?
2. Product quality  
First, observable quality:
  - 2.1 How do firms choose product quality?
    - Know how to derive optimal choice given demand  $P(q,s)$ :  $s$  = quality
    - Monopoly may over- or underprovide quality relative to social optimum

- Depends on difference between marginal consumer's marginal valuation of quality (monopolist's focus) and average marginal valuation of quality across all consumers (social optimum's focus).

## 2.2 Durability

- Why does durability of product distort production choices over time?
  - Think commitment!
- How does leasing/renting solve the durable goods problem for monopolist?
- If leasing isn't available, how might this distort durability decisions by the firm?

Second, unobservable quality

## 2.3 Adverse selection and moral hazard

- What problems arise if firms have better information about product quality than do consumers?  
"Lemons" problems: selling used cars, health insurance, free agency
- How can signaling be used to mitigate these problems?  
When can signaling work? (what makes a credible signal?)  
What types of signals do firms use?
- Moral hazard: when does this arise, what problems does it create?

## Entry

### 1. What are major barriers to entry

Structural/exogenous  
Strategic/endogenous

### 2 Strategic investment behavior in the face of potential entry

#### 2.1 Accommodation v. deterrence of entry

- Examples: Strategic technology choice, capacity choice, etc.
- Strategic investment games: know how to set up and solve for optimal investment, given objectives (deterrence or accommodation)
  - Deterrence: want rivals profits to be negative
  - Accommodation: increase your profits on assumption that rival enters
  - What influences choice between objectives?
- The role of commitment
- Taxonomy:
  - What are strategic complements and strategic substitutes?
  - What does it mean that an investment makes a firm "tough" or "soft"?
  - How does the optimal action depend on the goal (accommodation or deterrence)?
  - What is the importance of "fat cat" and "top dog", etc. strategies?

#### 2.2 Price wars

- Post-entry price declines: how should we evaluate whether pricing is "too aggressive"? (predatory pricing)
- Static v. dynamic marginal costs
  - Learning-by-doing
  - Network effects

- Switching costs
- Predation
  - Models of predatory behavior:
    - The role of information and rationality
    - Reputation models: Ordover-Saloner
    - Perfect Bayesian Equilibria:
      - What are the basic ideas behind this (set up, randomized strategies, consistent beliefs, updating)
      - What characterizes the equilibrium in this game?

### 2.3 Applications:

- DuPont in titanium dioxide: preemptive capacity expansion
  - What conditions might make this a desirable move from DuPont's perspective?
  - What are the potential costs/risks?
- Scott Morton: UK shipping cartels:
  - more likely to prey upon entrants who are smaller outsiders with limited financial resources
- American Airlines case:
  - What behavior concerned the government (specifics, please)?
  - What are positive (pro-competitive) and negative (predatory) interpretations of this behavior?
  - What difficulties arise in deciding an appropriate policy response?

## R&D

1. The importance of R&D to the economy (especially dynamic cost reduction and product innovation)
2. The role of appropriability & innovation incentives
  - Divergence between private and social incentives for R&D
  - The role of government in intellectual property protection (patents, copyrights, etc).
3. Who innovates?
  - The role of market structure
    - Static market structure: monopoly v. competitive incentives for cost-reducing innovation ("Replacement" effects)
    - Dynamic market structure: incumbent v. entrant incentive to innovate (non-drastic innovation; what does this mean?): "Efficiency" effects
  - Strategic investment incentives:
    - innovation as a competitive tool
      - Understand problem set 3 question on this (how does the nature of innovation interact with the nature of competition across firms: return of the strategic investment taxonomy)
    - Patent races: how can competition for the market increase investment in R&D? Can this lead to socially excessive investment?
    - The role of imitative (business stealing) investment in R&D (see WSJ article on drug company innovation)

## Advertising

1. The role of advertising in markets

- Advertising in the economy
  - The impact of advertising (demand expansion v. rotation)
2. Advertising choice
- Types of goods and advertising intensity (search v. experience)
  - Advertising/sales optimization:
    - know how to solve one of these problems
    - Rule of thumb for optimal advertising intensity ( $A/\text{Sales} = -\text{elasticity}_A/\text{elasticity}_P$ )
3. Advertising strategy
- Oligopoly advertising choices
4. Application: Cigarette industry
- Role of advertising in competition
  - Policy change: what effect might advertising limits have on firm profits?
    - How does impact likely vary with incumbent v. entrants, branded v. generic products? Existing smokers v. new smokers?
  - If reduction in advertising means existing smokers are more of market (fewer new smokers), and these are more brand loyal smokers, what effect would you expect this to have on price dynamics?

### Theory of the firm:

1. What determines firm/market boundaries?
- Changes in firm boundaries over time (rise of larger, multidivisional firms)
  - Alternative theories of firm boundaries
    - Transactions costs, monitoring, asset specificity, incomplete contracting, etc.
    - -contracting applications (sales force, coal contracts applications)
2. What do firms maximize?
- Principal-agent problems
    - Competing objectives
    - Alternatives to profit maximization
  - Constraints on managerial behavior
    - Market constraints: competition, market for corporate control, managerial labor market
    - Internal constraints: incentives inside firms,
      - Executive pay and incentive contracts
        - Problems with incentive pay (and manipulation)
      - Reducing discretion
      - Tournaments, efficiency wages
- constraints on managerial behavior  
-internal incentives (e.g., executive pay)

### Vertical organization

1. Vertical structure: boundaries along the vertical chain of production

2. Vertical integration: Motives and consequences
  - Market power (e.g., Alcoa)
  - Efficiency
    - Double marginalization]
      - What is it, when does it occur, what problems does it create?
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3. Alternative vertical restraints and antitrust policy
  - Solutions to double marginalization
    - Resale price maintenance/ quantity forcing
    - Tying
    - Two-part tariffs
  - Solutions to investment/monitoring
    - Exclusive territory/exclusive dealing
    - Franchising
  - Dentsply example: arguments for and against exclusive dealing restrictions imposed by Dentsply. Efficiency v. foreclosure of competition.
    - What is the role of downstream market structure and supply relationships?

GUEST LECTURE: Michael Levine on airlines:

- The role of service v. price competition in the early airline industry
  - How did this interact with innovation?
- Deregulation:
  - Network airlines: sources of competitive advantage
    - Loyalty programs (switching cost effects; links to principal – agent problems: who pays for ticket, who chooses the airline?)
    - Convenience
    - The role of labor in relative costs and competition
      - Mutual Aid Pact: How does this change incentives to bargain with union? Recall this pact involves a revenue sharing agreement: Airlines with labor strike will receive a substantial share of the increased revenue at other airlines that results from passenger diversion to other airlines.
  - Low cost carriers (Southwest, etc.)
    - What accounts for their continuing increase?
- Bankruptcy: financial reorganization, not necessarily economic reorganization
  - accounting v. economic losses (e.g., contracted aircraft lease payments v. opportunity costs of aircraft leases)