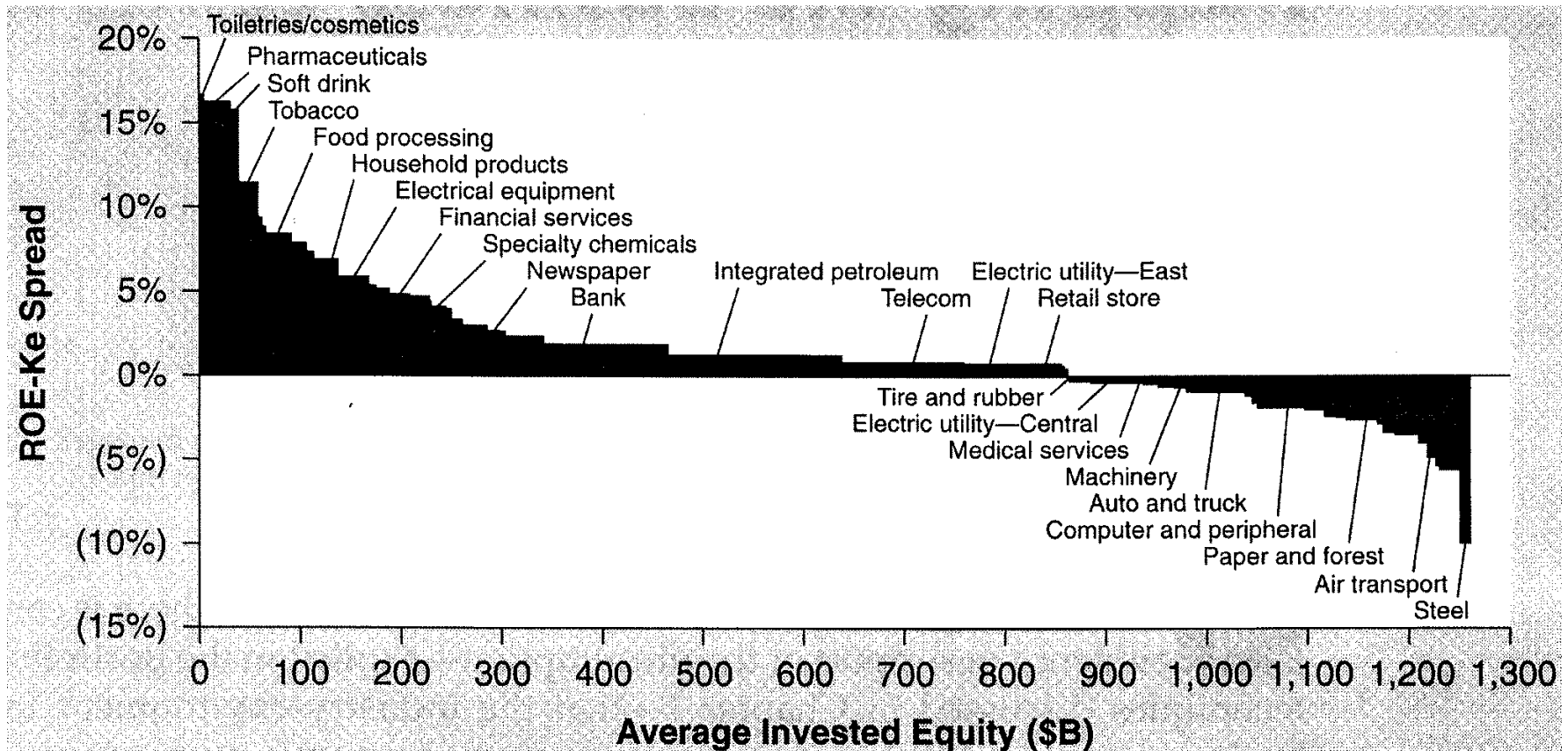


# **The Economics of E-commerce and Technology**

Industry Analysis

# Industry Profits

- ▶ In Econ 11, Economic Profits = 0
- ▶ In reality, many industries have much higher profits:



# Industry Analysis

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- ▶ Identify factors determining industry profitability.
  - ▶ Provides context for strategic analysis.
  - ▶ Analysis depends on market definition.
- ▶ Porter's "five" forces
  - ▶ Substitutes
  - ▶ Competitor Rivalry
  - ▶ New entrants
  - ▶ Buyer bargaining power
  - ▶ Supplier bargaining power
  - ▶ Compliments



# Force 1: Substitutes

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- ▶ A firm's markup is determined by its demand elasticity

$$\frac{p-c}{p} = \frac{1}{e} \quad \text{where} \quad e = -\frac{p}{q} \frac{dq}{dp}$$

- ▶ Elasticity is determined opportunity cost of money
  - ▶ WTP for book at Barnes & Noble depends on price of magazines, DVDs, food
  - ▶ Substitutes outside the market being considered
  - ▶ Strategic interactions not directly considered.
- ▶ What matters is perspective of individual firm is
  - ▶ Demand for bread as category is highly inelastic
  - ▶ Demand for one type of bread highly elastic

# Force 1: Substitutes

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- ▶ **What is a substitute?**
  1. Price of x goes up, then demand for y goes up.
  2. If x and y indivisible goods,  $V_{xy} < V_x + V_y$
  
- ▶ **Substitutes inside the market**
  - ▶ Example: Barnes & Noble and Amazon.
  - ▶ Affects how our firm interacts with competitors.
  - ▶ Depends on type of product differentiation.

# Force 2: Competitor Rivalry

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- ▶ Bertrand benchmark
- ▶ Assumptions
  - ▶ Two firms simultaneously set prices
  - ▶ Constant marginal cost,  $c$
  - ▶ Firm with lowest price serves whole market
- ▶ Example: gas stations next to each other.
- ▶ What is elasticity of demand?
- ▶ What is equilibrium price?

# Force 2: Rivalry

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- ▶ **Industry structure depends on**
  - ▶ Cost structure and entry barriers
  - ▶ Scope of differentiation and preferences for variety
  - ▶ Network effects
- ▶ **Dominant firm (e.g. eBay)**
  - ▶ Biggest danger comes from new entrants.
- ▶ **Oligopoly (e.g. Dating sites – match, eharmony, jdate)**
  - ▶ Competition and cooperation issues become interesting!
- ▶ **Fragmented (e.g. dry cleaners)**
  - ▶ Little strategy for fragmented industry.
  - ▶ But hard to think of relevant market with only small firms. Many have mix (e.g. booksellers, blogs).

# Force 2: Competitor Rivalry

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- ▶ What determines how intense competition is?
- ▶ Product differentiation
  - ▶ Real differences in products
  - ▶ Switching costs
  - ▶ Search costs
- ▶ Capacity constraints
- ▶ Collusion
  - ▶ Explicit or tacit



# Force 3: New Entrants

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- ▶ Incumbents often blind-sided by new products.
  - ▶ IBM and Microsoft/Intel
  - ▶ Microsoft and the internet.
- ▶ Are fixed costs an entry barrier?
  - ▶ Intuition: High fixed costs reduce entry, lower elasticity of demand and increase profits.
- ▶ Flaw in argument?
  - ▶ Profits are positive after paid fixed cost.
  - ▶ But what about ex-ante?
  - ▶ There needs to be incumbent advantage.

# Force 3: Entry Barriers

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## ▶ Demand side

- ▶ Switching costs (e.g. TurboTax)
- ▶ Demand-side returns to scale (network effects, e.g. MS Word)
- ▶ Reputation (e.g. Apple)

## ▶ Supply side

- ▶ Proprietary technology (e.g. patents)
- ▶ Access to raw materials (e.g. Google and engineers)
- ▶ Learning curve (e.g. NY Times)

## ▶ Equilibrium

- ▶ The threat of post-entry price war. (e.g. CD Phone Books)

## ▶ Strategy

- ▶ Should you pre-emptively block or fight entry?

# Force 4/5: Buyer/Supplier Bargaining Power

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## ▶ How big is the pie?

- ▶ Potential pie = value of relationship.
- ▶ Ex-post costs of negotiation: market power (e.g. double marginalization), delay (e.g. strikes), bargaining costs (e.g. lawyers)
- ▶ Ex-ante costs of negotiation: underinvestment in relationship, cultivation of outside options. Called “holdup problem”.

## ▶ How is the pie split?

- ▶ Long side vs. short side of market
- ▶ Concentration on each side of the market
- ▶ Power to commit to one stance
- ▶ Information

# Example: Nintendo

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- ▶ **Nintendo invented NES in 1983**
  - ▶ Cheap hardware: 8-bit processor dated to 1970s.
- ▶ **Limited power of software firm**
  - ▶ Limited to 5 titles a year.
  - ▶ Exclusivity condition: games only for Nintendo.
- ▶ **Limited power of buyers**
  - ▶ In 1988 retailers requested 110m units.
  - ▶ Supplied 33m units.
  - ▶ Idea: Classic monopoly!
- ▶ **Nintendo gets large slice of pie**
- ▶ **Danger: strategies reduce pie and invite entry**

# Force 6: Complementors

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- ▶ What is a compliment?
  1. Price of x goes up, then demand for y goes down.
  2. If x and y indivisible goods,  $V_{xy} > V_x + V_y$
- ▶ Complementors make the pie bigger.
- ▶ Xbox and games
  - ▶ When launched in 2001, not many games for Xbox
  - ▶ It bought Bunjie and used “Halo” as launch title.
  - ▶ Provide tools to encourage third party developers.
- ▶ Relation to platform market
  - ▶ We can view the Xbox as a platform where users interact with software.
  - ▶ Not all platforms are for complementors: Google searchers may dislike ads.

# Market Definition

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- ▶ **How define the market for Dell Desktop?**
  - ▶ Other desktops? Laptops? Netbooks? iPads?
  - ▶ It depends what question you are asking!
- ▶ **You should think about**
  - ▶ Demand interactions: elasticity of substitution
  - ▶ Strategic interactions: whether firm A reacts to firm B's decisions.
- ▶ **Epson**
  - ▶ Epson dominated low-end dot-matrix printers.
  - ▶ HP dominated the Inkjet and high-end laser printer market.
  - ▶ Epson in “wrong market”, so launched cheap laser printer in 1989.
  - ▶ Price war: Laser prices fell, Inkjet prices fell, and dot-matrix market..?
  - ▶ Lesson: There's always a bigger market.

There's always a bigger market...

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"Ha! We got him now!"



# Example: Amazon's Book Business

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- ▶ **Substitutes:**
  - ▶ Inside market: other booksellers (online, offline), eBooks
  - ▶ Outside market: libraries, magazines, TV etc.
- ▶ **Buyers:**
  - ▶ Individuals. Buyer bargaining power: Little.
- ▶ **Suppliers:**
  - ▶ Publishers, USPS. Supplier bargaining power: Varying.
- ▶ **Rivals:**
  - ▶ Online/offline sellers. Small sellers, bookstores, superstores.
  - ▶ Industry structure: Oligopoly with fragmented fringe.
- ▶ **Entrants:**
  - ▶ Specialty sellers, other offline stores, Yahoo.
- ▶ **Compliments:**
  - ▶ Broadband, reviews, credit cards.