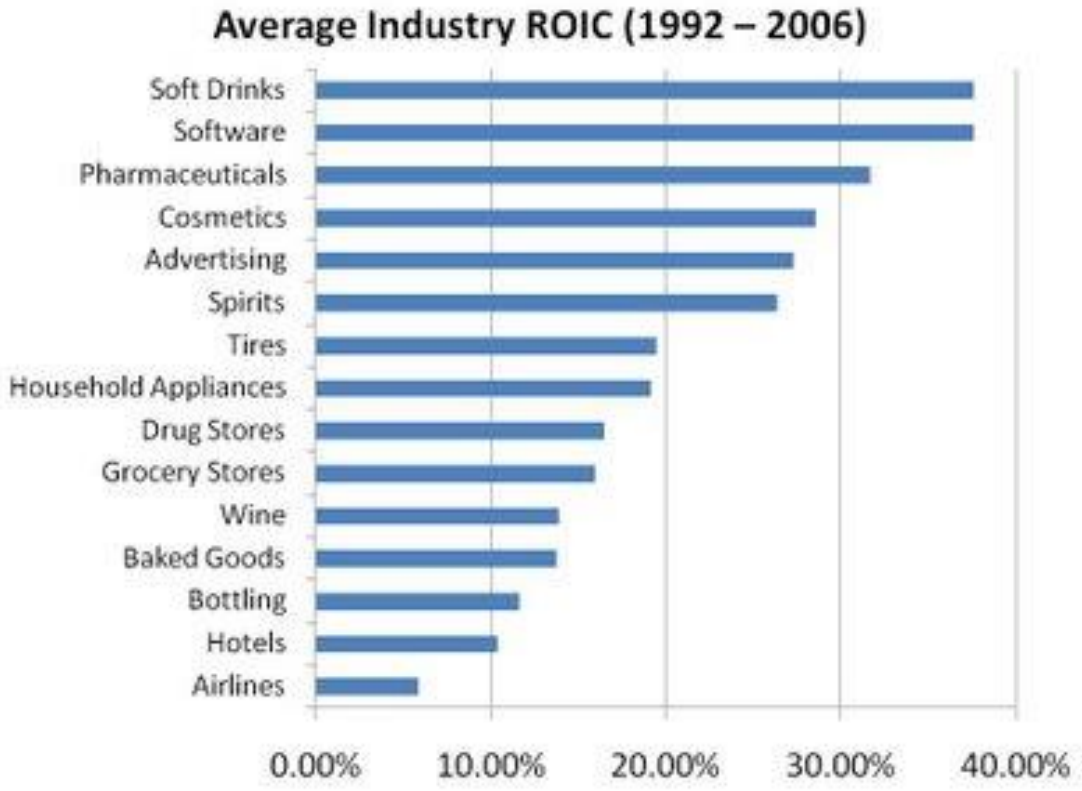
The Economics of E-commerce and Technology

Industry Analysis

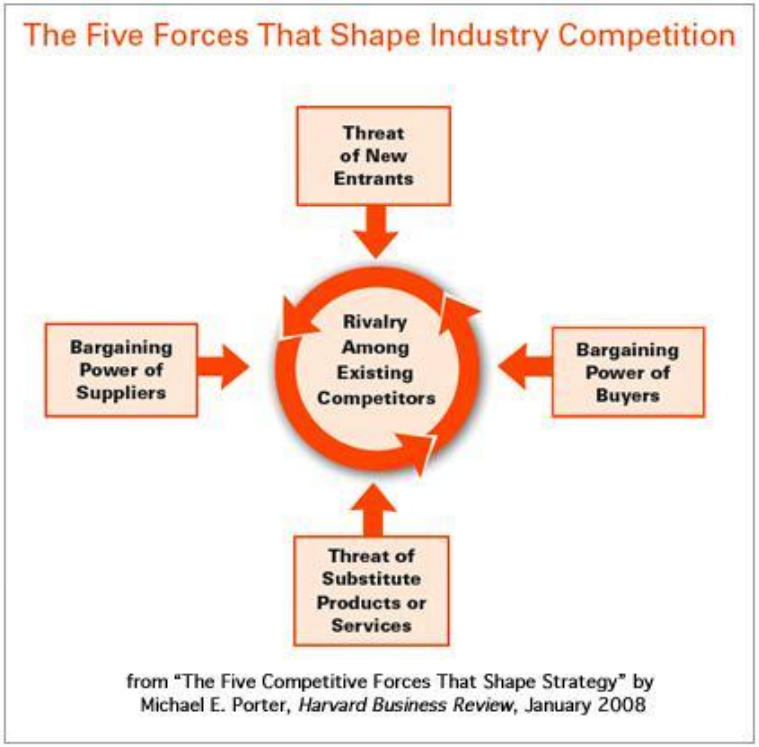
Industry Profits

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



Industry Analysis

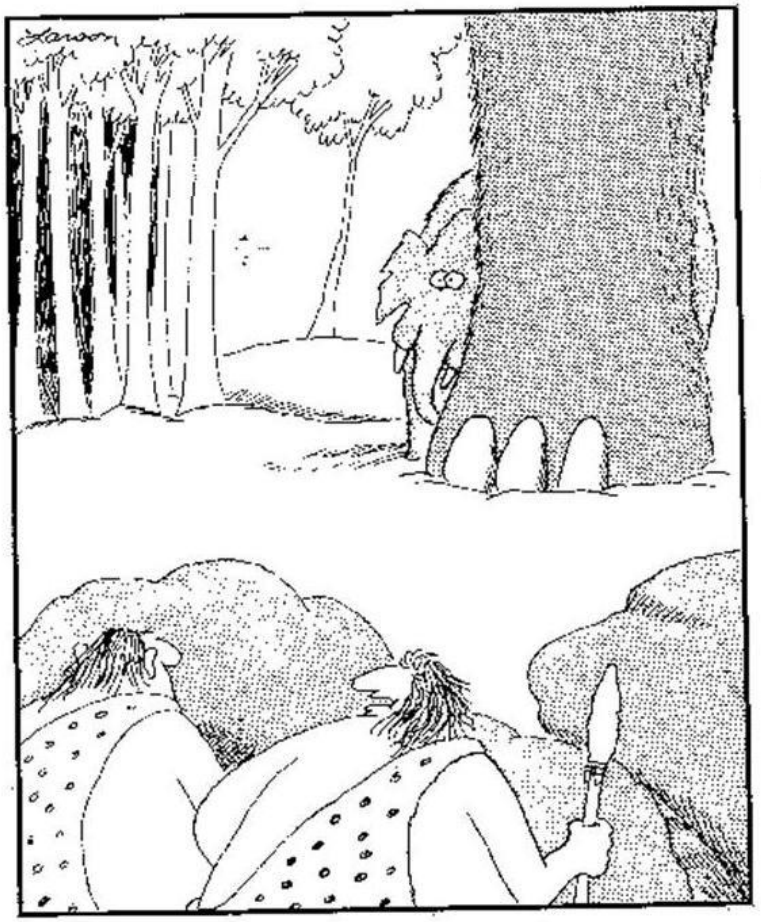
- Identify factors determining industry profitability.
  - Provides context for strategic analysis.
  - Analysis depends on market definition.
- Porter's "five" forces
  - Substitutes
  - Competitor Rivalry
  - New entrants
  - Buyer bargaining power
  - Supplier bargaining power
  - Complements



Market Definition

- 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.
- Case Study: 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…



"Ha! We got him now!"

Force 1: Outside Substitutes

- Substitutes outside the market
  - Factors that determine willingness to pay.
  - Ignore strategic interaction

- Fixing others' prices, markup determined by demand elasticity

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

- With multi-good firms, elasticity is less clear
  - Demand for iPhones is inelastic
  - Demand for iPhone 7 with 128GB memory

Force 1: Inside Substitutes

- Substitutes inside the market
  - Pay attention to strategic interaction
- Consider two products: What is a substitute?
  1. Price of x goes up, then demand for y goes up.
  2. If x and y indivisible goods, $V_{xy} < V_x + V_y$
- Degree of substitutability matters
  - Depends on amount of product differentiation.
  - Depends on decreasing marginal utility
- Affects how our firm interacts with competitors.

Force 2: Competitor Rivalry

- 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 equilibrium price?

Force 2: Rivalry

- 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. blogs)
  - Little strategy for fragmented industry.

Force 2: Competitor Rivalry

- What determines how intense competition is?
- Cost structure
  - Supply side returns to scale
  - Capacity constraints
- Product differentiation
  - Real differences in products
  - Switching costs
  - Search costs
- Network effects (demand side returns to scale)
- Collusion
  - Explicit or tacit

Force 3: New Entrants

- 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?
- Need asymmetric entry barrier
  - Generates incumbency advantage.

First Mover Advantage via Competition

- Suppose firm A is in industry.
  - Has marginal cost 5.
  - 100 customers with value 10.
  - A is currently charging p=10 and making π=100(10-5)=500.
- Firm B is considering entering
  - Has marginal cost 4 and fixed cost 150.
  - Good is homogenous.
- Should firm B enter?
  - If it enters, Bertrand competition implies price falls to p=5.
  - B's profits are π=100(5-4)-150 = -50.
  - B should not enter, anticipating the cut-throat competition.

Force 3: Entry Barriers

- 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. Apple and flash memory)
  - Learning curve (e.g. NY Times)
- Equilibrium
  - The threat of post-entry price war (e.g. airlines)
  - Can you do things ex-ante to win ex-post competition (e.g. build capacity)?

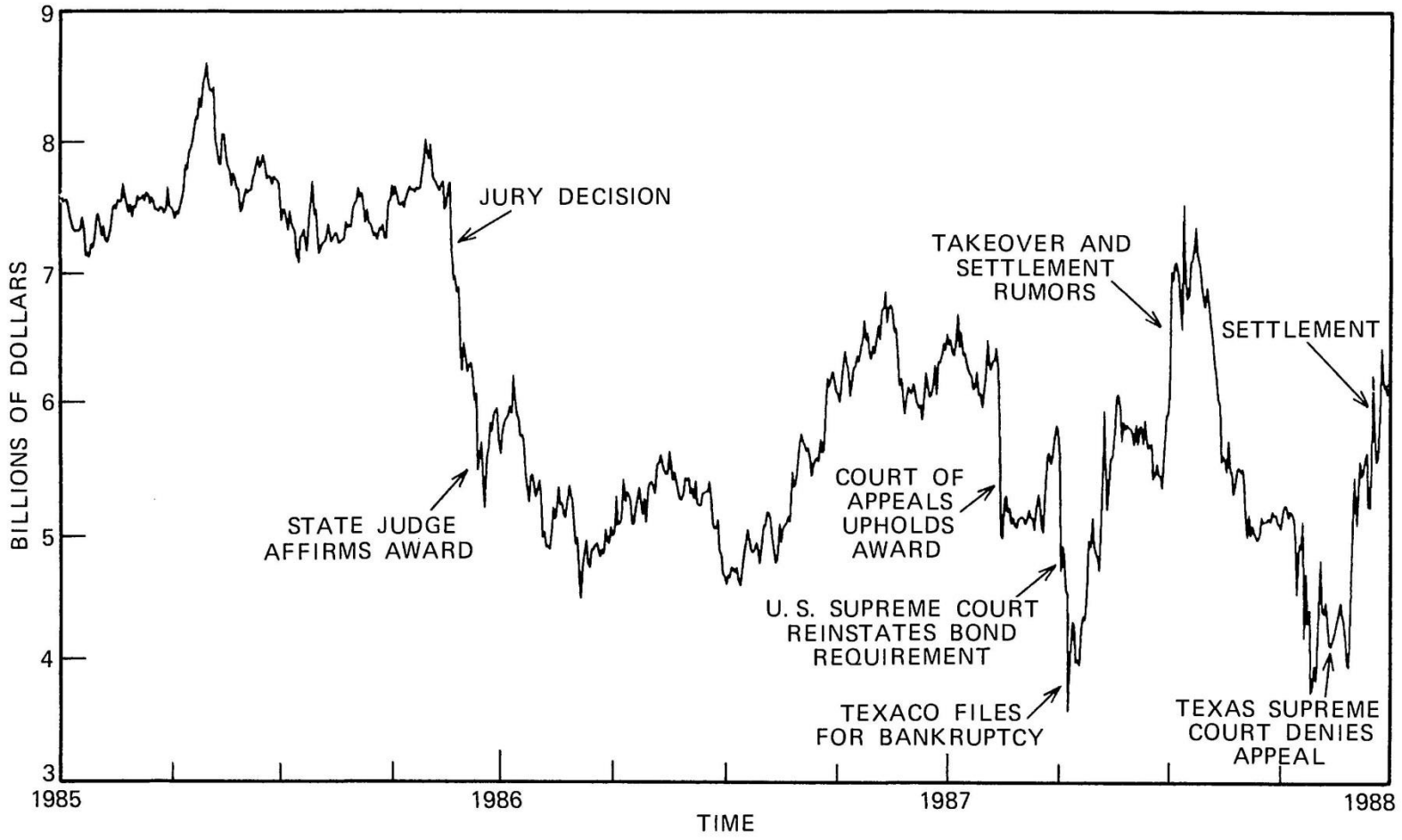
Force 4/5: Buyer/Supplier Bargaining Power

- How big is the pie?
  - Potential pie = value of relationship.
- How is pie split?
  - How much do you get vs. suppliers/buyers?
- There may be a tradeoff between these…
- Ex-ante costs of negotiation
  - Inefficient investment because of holdup (wk 5)
- Ex-post costs of negotiation
  - Market power (e.g. monopoly loss, double marginalization (wk 4))
  - Delay in production (e.g. strikes)
  - Bargaining costs (e.g. lawyers)

The Cost of Litigation

FIGURE 1

COMBINED VALUE OF TEXACO AND PENNZOIL



What determines bargaining power?

- Suppose selling cars
  - 10 sellers with cost $0, 10 buyers with value $100.
- Long vs Short side of market
  - What if there were only 9 sellers?
- Concentration on each side of market
  - What if 1 seller with 10 cars?
- Commitment power
  - What if seller could make TIOLI offer and walk away?
- Information
  - What if seller doesn't know if value is $100 or $150?

Case Study: Nintendo

- 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 retailers (e.g. Walmart, ToysRUS)
  - In 1988 retailers requested 110m units.
  - Supplied 33m units.
  - Threaten to cut off, if carry competitors products?
- Nintendo gets large slice of pie
- Danger: strategies reduce pie and invite entry

Force 6: Complementors

- What is a complement?
  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
  - Xbox is platform where users interact with software.
  - Not all platforms are for complementors: Google searchers may dislike ads.

Example: Amazon's Book Business

- 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, B&N, Walmart, Apple etc.
  - Industry structure: Oligopoly with fragmented fringe.
- Entrants:
  - Specialty sellers, other offline stores. Apple?
- Compliments:
  - Broadband, reviews, credit cards.