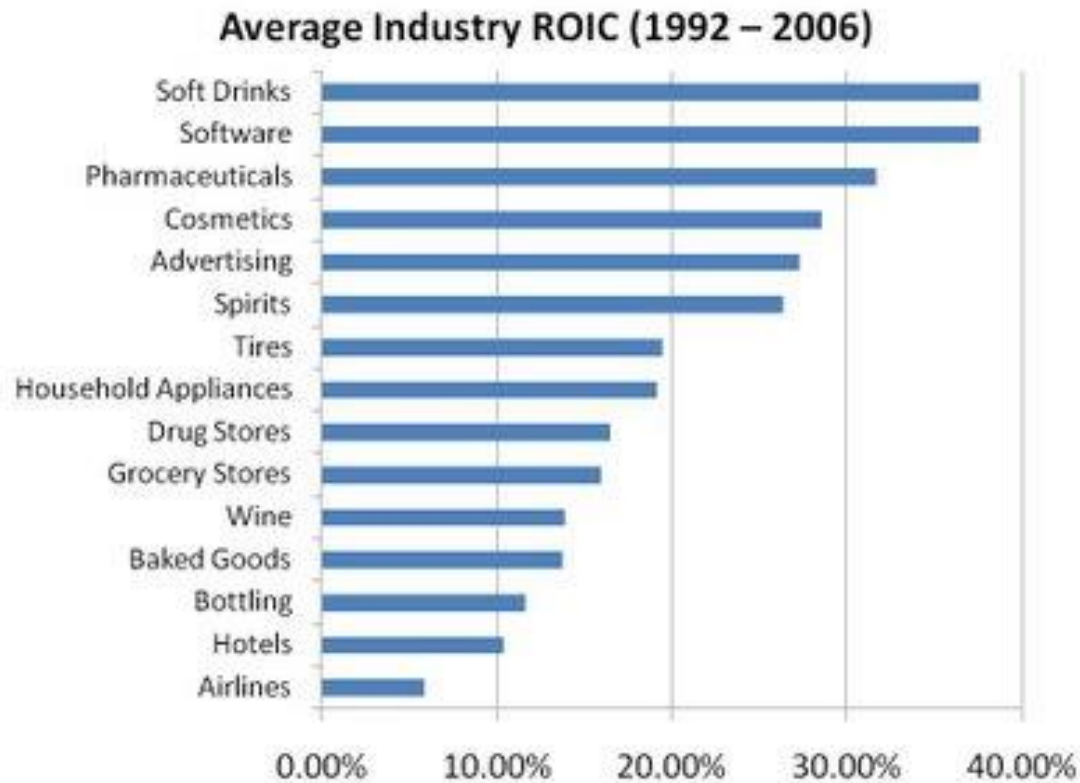


The Economics of E-commerce and Technology

Industry Analysis

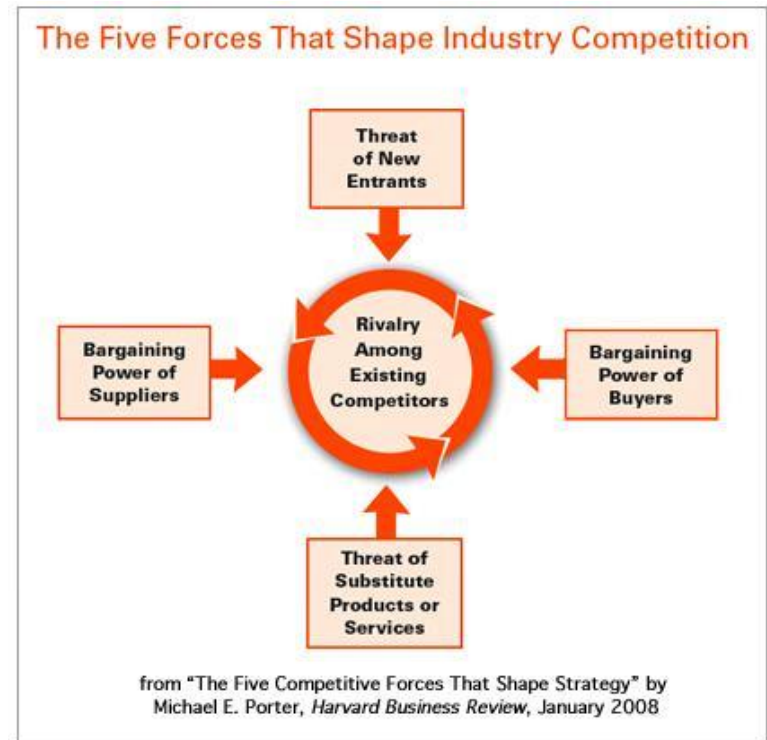
Industry Profits

- ▶ 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



Force 1: Substitutes

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

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

- ▶ Which elasticity?
 - ▶ Demand for smart phones is inelastic
 - ▶ Demand for Samsung's Galaxy G3 is elastic
- ▶ What about strategic interaction?
 - ▶ If I change my price, this may effect behavior of others
- ▶ Substitutes outside the market
 - ▶ Ignore strategic interactions
- ▶ Substitutes inside the market
 - ▶ Pay attention to strategic interaction

Force 1: Substitutes

- ▶ 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
 - ▶ Affects how our firm interacts with competitors.
 - ▶ Depends on type of product differentiation.

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 elasticity of demand?
- ▶ 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?
- ▶ Product differentiation
 - ▶ Real differences in products
 - ▶ Switching costs
 - ▶ Search costs
- ▶ Cost structure
 - ▶ Supply side returns to scale
 - ▶ Capacity constraints
- ▶ 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?
 - ▶ There needs to be incumbency advantage.

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. CD Phone Books)

▶ Strategy

- ▶ Should you preemptively block or fight entry?

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 $\pi=100(10-5)=500$.
- ▶ **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 $\pi=100(5-4)-150 = -50$.
 - ▶ B should not enter, anticipating the cut-throat competition.

Force 4/5: Buyer/Supplier Bargaining Power

▶ 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: Double Marginalisation

- ▶ **Example (the cable business)**
 - ▶ HBO sells input to TW; TW sells output to customers.
 - ▶ Market demand is $q=100-p$. Both firms have zero costs.
- ▶ **Maximal Industry Profits**
 - ▶ Charge $p=50$, sell quantity $q=50$. Profits = $50*50 = 2500$.
- ▶ **What if HBO charges transfer price t ?**
 - ▶ Then TW maximizes $\pi_{TW}=(p-t)(100-p)$
 - ▶ Chooses $p=50+t/2$ and sells $q=50-t/2$, treating 't' as input cost.
- ▶ **What input price does HBO choose?**
 - ▶ HBO maximizes $\pi_{HBO}=t(50-t/2)$, implying $t=50$, $q=25$ and $p=75$.
- ▶ **Firms charge more than monopoly price!**
 - ▶ Intuitively, each firm exerts negative externality on the other.
 - ▶ Can raise profits by merging or using two-part-tariff

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 Bungie 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.

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!"

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, bookstores, superstores.
 - ▶ Industry structure: Oligopoly with fragmented fringe.
- ▶ **Entrants:**
 - ▶ Specialty sellers, other offline stores, Yahoo.
- ▶ **Compliments:**
 - ▶ Broadband, reviews, credit cards.