CS 523: Social, Economic, and Legal Aspects of Security

Antitrust Enforcement
Monopolies

• Monopoly: 1 seller, no competition
  – Seller can set the price

• Oligopoly
  – Few sellers, limited competition
  – If sellers collude, they can set price
  – Cartel = colluding sellers
  – Examples: Airline “alliances”, OPEC

• Socially undesirable market failure
Government regulation

• Tolerate but regulate the quasi-monopolies
• Government commissions to determine
  – Pricing
  – Quality
  – Access
• Drawbacks
  – Inefficiencies (less incentive to control costs)
  – Higher prices
  – Possibility of “regulatory capture”
Antitrust laws

• Prevent the formation of cartels through laws
  – Limit conduct and organization of corporations
• Goal is to promote fair competition for the benefit of consumers
• Prohibit anti-competitive behaviors
  – Collusion
  – Price-fixing
  – Exchange of pricing information
Avoiding competition: Transparency

• Transparency
  – Universally viewed as good, but it has a dark side
  – Competitors know all about each others without communicating (e.g., their prices show up on their respective web sites, or on Amazon)

• Example: App that compares local gas prices
  – Consider competitors without relative geographic advantage (so customers compare them by price)
  – If one lowers price, all will: No incentive to lower!
Avoiding competition: Confusopoly

- **Confusion + oligopoly**
- A group of sellers, with nearly identical product or services, want to avoid competing on price (they’d all have lower profits)
- Illegal to engage in collusive price-fixing
- Deliberately confuse customers with difficult-to-compare offerings
  - Customers make emotional rather than price-based buying decisions (a dream for marketing)
Confusopoly (cont’d)

• Example
  – Mobile phone plans for same device (dollars, minutes, texts, bandwidths, family, roaming, … )

• Difficult to engage in confusopoly in commoditized products and services
  – Commoditization = when consumers perceive little difference between brands or versions
  – Examples: Bushels of wheat, copper, standardized insurance policies, vitamin supplements, …
Avoiding competition: Software agents

• Through the use of software
  – Automated selling agents gather info, set price
  – No illegal phone calls or conspiratorial meetings
• The algorithms produce the effects of collusion in a manner that is hard to prosecute
  – Collusion is not programmed in, what is programmed is learning algorithms that discover the strategies that resulted in the higher prices
  – Programmer could not predict, cannot be prosecuted
Preventing harm by algorithms

• Possibility of massive mischief
  – Much of which is hard to detect

• Examples
  – Collusive (anti-competitive) outcomes
  – Inaccurate decisions (like denial of loan)
  – Illegal discrimination (biased decisions)

• Algorithmic harm is a hotly debated issue
  – ACM has issued recommendations
ACM recommendations for algorithms

- Awareness
  - All stakeholders should be aware of possible harm
- Mechanisms for access and redress
- Accountability
  - Responsible for harm even when inexplicable
- Explanation (of procedures, decisions)
- Data provenance (collection, maintenance)
- Auditability (should be built-in)
- Rigorous validation and testing