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

Market Competition
Competition viewed as beneficial

- Benefits consumers
  - Results in higher quality products, lower prices
- Provides opportunities for entrepreneurs
  - Results in greater economic efficiency
- Makes it hard for established firms to engage in abusive behavior (if none is too dominant)
- Benefits were recognized throughout history
  - Roman empire
Competition is protected/promoted

- Countries have laws that protect and promote fair competition in their national markets
- Different names, but similar purpose
  - Antitrust law (U.S.)
  - Competition law (E.U.)
  - Anti-monopoly law (China, Russia)
  - Trade practices law (U.K., Australia)
- International agreements for cross-border
Evolution of competition protection

• 1970s and earlier: Focus on market structure
  – Protect the competitive process itself
  – E.g., the case of Brown Shoe (1962)
• Currently: Focus on price and output effects
  – As a result, huge (quasi-monopolistic) market power can be accumulated, as long as it does not cause deleterious price and output effects
  – An online platform can acquire arbitrary market power as long as it refrains from misusing it
Economics of platform dominance

• Positive feedback: Dominance feeds on itself
  – E.g., Alice goes to eBay because that’s where the best buyers and sellers are, and her use of eBay makes it even more so

• Investors (rationally) reward companies that pursue market share rather than profits
  – Belief that profits will come later, after dominance has been established

• Economic control can increase political control
Intellectual property and competition

• Intellectual property (IP) can help or hurt market competition
  – Patents, trade secrets, copyrights, ...
• Help by protecting the rights of small firms and entrepreneurs from established giants
• Hurt if IP rights of an established firm are so extensive that they impede competitors
  – IP rights act as “barriers to entry” against others
IP and competition (cont’d)

• What to do when IP rights conflict with competition laws? Which gets priority?
  – Deny patent application?
  – Revoke existing patent?
  – What if the IP is developed by many firms?

• What to do when the existing IP of a firm becomes an industry standard?
  – How to mitigate anticompetitive consequences?
Competition and IP cross-licensing

• Suppose the IP in the widget-manufacturing industry is split among a number of firms
  – No firm is dominant, and none can make widgets without licensing some IP from the other firms
  – If X denies licensing to Y, and Y retaliates in kind, then neither can make widgets (lose-lose, doesn’t happen, instead there is massive cross-licensing)
• Such cross-licensing agreements can be huge barriers to entry for entrepreneurs, new firms
Competition and bundling

• Bundling that includes IP can give rise to anticompetitive effects

• Example:
  – A firm X has IP whose remaining life is t years
  – X makes that IP a part of a bundle of agreements and transactions with another firm Y
  – In effect for the next T years (where T >> t)

• A special case of tying (which can be illegal)
Tying

• Horizontal: Requiring consumer to purchase another unrelated product or service in addition to the one the consumer desires
  – Different from “free sample” marketing

• Vertical: Requiring consumer to purchase related products or services together, from the same company
  – Example: Car manufacturer requiring that car servicing be done only at its dealerships
Examples of tying: Apple

- Use of locking to tie iPhones to specific networks, and restrict which applications can run on them
- Attempt to use of the legal system against jail-breaking as a form of copyright infringement
- Apple argued that a jail-broken iPhone is “derivative work” that is protected by copyright law (license forbids modification of the OS)
- Apple lost: Jail-breaking was ruled to be lawful
Examples of tying: Microsoft

• U.S. vs Microsoft
  – Bundling of Internet Explorer to sales of Windows, and unpleasant Windows behavior with the competing browser Netscape Navigator
  – Microsoft argued (unsuccessfully) that browser is a part of the OS, “like a radio is part of a car even though it used to be separate from the car”

• Novell vs Microsoft
  – Lower price for Windows if bundled with Office
Competition and product lifespans

• Planned obsolescence (PO) = deliberately lowering useful life of a product
  – Goal is to increase sales volume by lowering the time between consecutive purchases
  – Can work if market is oligopoly (e.g., the U.S. automobile market of the 1960s)
  – A very risky strategy in a competitive market (consumers can switch to competitors whose products do not have built-in obsolescence)
Examples of PO

• Light bulbs starting in 1924
  – Long lives of light bulb were hurting sales
  – Light bulb producers met in Switzerland in 1924, ostensibly to cooperate towards producing “brighter” and “more energy-efficient” light bulbs (in reality to conspire towards lower life for bulbs)
  – Lifetimes of light bulbs dropped sharply thereafter

• Lack of forward compatibility in software
  – Inability to process inputs for later versions of self
Examples of PO (cont’d)

• Ink cartridges that stop even when full of ink
  – “Smart” chips make them stop after X pages have been printed, or after D days have passed, or ...
  – Class action lawsuit against HP because cartridges stopped working at a set expiration date that was unknown to the consumer (HP paid)

• Printers that are programmed to stop working even though they’re still perfectly fine
  – Samsung printers
Examples of PO techniques

• Prevention of repairs
  – Making the product impossible to service
  – Factory seals that prevent access to product’s interior without destroying it
  – Use of “tamper-resistant” screws (Apple)
  – Devices with batteries that are not user-replaceable (Apple)

• Dropping support for older product
  – Force users to buy new, even if happy with old
The PO of PO: France

• 2015 French law makes PO punishable by a heavy fine and a jail term
• Applies to all “manufacturers planning the death of their products in advance”
• Law’s language is broad, explicitly mentions:
  – “deliberate introduction of a flaw, a weakness, a scheduled stop, a technical limitation, incompatibility or other obstacles for repair”
The PO of PO: European Union

• EU is studying “a total ban of planned obsolescence”

• They cite it as being
  – A waste of energy
  – A waste of resources
  – A source of pollution

• At the very least, they’ll require a labeling system that informs the customer