Business Models and the Standard Setting Process

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Pros & Cons of Standard Setting
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The Patent Troll - NPE Controversy

- Non-practicing entities:
  - Patent holders that license but do not practice their patents
- Non-competing entities:
  - Patent holders that license and may practice their patents but do not compete directly with licensees
- NPEs and NCEs have been blamed for a number of competition problems in standard setting
  - Patent holdup, Patent ambush, Royalty stacking…

Why?

- What is the link between practicing a patent or competing with licensees and practicing hold up?
  - One claim is that NPEs are not constrained by the need for cross licenses
- But is cross licensing the only barrier preventing all patent holders from opportunistic licensing?
  - What about other constraints?

IPR in the Previous Century

- The “traditional” model of invention
  - A large firm with a research department invests in R&D
  - Inventions emerging from R&D are developed inhouse
  - The firm may or may not patent inventions
    - Depends on comparative advantage of patenting with other forms of IPR, such as trade secret, first mover, etc.
    - Academic surveys from the ‘80s and ‘90s indicate that patents are “least” used IPR in manufacturing industries
  - The firm then sells goods and services embodying the fruits of its R&D
    - The firm earns a return on its R&D investment through the sale of goods in the downstream market

Standard Setting in the Prior Century

- In this environment, most participants in cooperative SSOs were “vertically integrated”; did not actively license IPR
  - “Gentleman’s agreement” to ignore IPR
  - Or, cross licensing of relevant portfolios, with net payment
- Competition focused on the downstream market
  - Still beneficial for a firm to get its technology into a standard, to gain first mover advantage

The Growth of Specialization

- The status quo was upset
- Institutional changes led to growth in specialization
  - Deregulation
  - IPR law changes in the U.S.
  - Langlois (2003): “vertical disintegration and specialization is perhaps the most significant organizational development of the 1990s.”
- Relatively large, vertically integrated firms are no longer the norm in many industries

Telecom

- State-owned or regulated companies
  - Used to provide all network services and equipment
- Deregulation and technology shifts led to splits
  - Example: in ‘90s, AT&T spun off Bell Labs, and most of its equipment-manufacturing business, created Lucent Technologies
- With growth in cellular/mobile, a slew of separate companies
  - Landline networks, wireless networks, infrastructure equipment, consumer equipment, R&D

Pharma & Biotech

- Discovery of recombinant DNA technology in 1973 spurred industry shift
  - Only a handful of specialist biotech firms in 1975
  - 4414 specialists worldwide by 2007
- Even big integrated pharma often outsource
  - Specialized R&D
  - Marketing and distribution of approved drugs

Semiconductors

- Changes in IP protection spurred dis-integration
  - Semiconductor Protection Act of 1984 in US
- Explosion in “fabless” production
  - In 1997 ~ 500 members worldwide in the Fabless Semiconductor Association; by 2007, 1300
- Today, generally three separate phases to chip production
  - Design – mostly in Western countries
  - Fabrication – mostly in Asian countries
  - Assembly & testing – mostly in Asian countries

Diversity in Today's Standard Setting

- Standards have not been isolated from these forces
  - As diversification increased in industry, it has increased in SSOs
- Example: Mobile telecom standards
  - Earliest generation was "dominated" by mostly VI firms: "…five players (Ericsson, Nokia, Siemens, Motorola and Alcatel) that dominate the GSM market" (Bekkers et al., 2002)
  - Latest generation (4G) includes upstream specialists (Interdigital), Asian mfg specialists (Kyocera), plus VI firms

The Benefits of Specialization

- Offers a comparative advantage
  - Do only what you do best
- Lowers barriers to entry
  - Semiconductor fabrication plant costs around €7.36 billion to build
- Offers efficiencies of scale
  - Fabrication plant serving multiple chip designers
  - R&D shop with full utilization of research staff
- Increases competition

The Role of IPR in Specialization

- Cannot separate design or R&D from production without means to share ideas
  - Can't "unlearn" an idea, so need protection to encourage sharing and trading
- IPR facilitates financing
  - Provides backers with signal of quality and exit value (in sale of IPR)
- Example:
  - Fabless chip firms are 5X more likely to patent than vertically integrated semiconductor firms (Hall & Ziedonis, 2001)

The Role of Licensing in Specialization

- IPR licensing provides means for trading
  - Patents offer mechanism for licensing “know-how”, along with codified knowledge (Arora, Fosfuri, & Gambardella, 2001)
  - Means for enforcing breach of contract
- Licensing creates complete product
  - Example: In “information security market”, increase in number of upstream licensors leads to an increase of downstream firms (Arora & Nandkumar, 2007)

IPR Licensing No Longer a Distraction

- Upstream specialists earn profits through licensing
  - With no downstream products, licensing revenues become primary/only source of profits
  - Licensing fees fund R&D for next generation of IPR
- Cross licensing no longer sole dispute resolution
  - Pure upstream firms do not need a cross license as they have no downstream good to infringe
  - Pure downstream firms cannot offer a cross license as they have no IPR to trade

Conflict was Inevitable…

- Firms with different business models have very different motives…
- …What IPR to include in a standard
  - Upstream firms want their IPR included in a standard to ensure licensing revenues
  - Downstream firms want to minimize IPR inclusion, as long as commercial value of the standard holds
  - Vertically integrated firms have a mixtures of goals – first mover advantage & licensing revenue for own IPR, limited IPR from owners to hold cost down

…And How to License That IPR

- Upstream firms want to maximize licensing revenue
  - Trade off high royalty against quantity demanded
- Downstream firms want royalty free or low licensing fees
  - Minimize their costs
- Vertically integrated firms have mixed incentives
  - To the extent they actively license, maximize licensing revenue and raise downstream rivals' costs
  - Lower their own IPR licensing costs

Problems Stem from Different Motives

- Non-FRAND licensing:
  - Patent holder attempting extortionary pricing?
  - Licensee negotiation posturing to lower fees?
  - Legitimate disagreement over the value of IPR?
- Patent ambush:
  - Deception by patent holder?
  - Poor due diligence by licensee?
  - Honest oversight on both sides?

NPEs Should not be Made Scapegoats

- Dichotomy between “honest” firms that make products and “trolls” that do not is a false one
- The world is a more complicated place now that specialization coexists with integration…
- …but society benefits from diversity of different business structures
  - Specialization: comparative advantage, reduced barriers to entry, increased competition
  - Integration: reduced double marginalization, economies of scope

The Bottom Line

- Agencies should focus on the conduct deemed anticompetitive, not the business model of the firm accused of practicing the conduct
- Recognize that anticompetitive conduct possible from all business models
  - Patent hold up not restricted to NPEs
- Careful attention to unintended consequences
  - Direct effect on questionable conduct
  - Indirect effect on firm incentives, strategies, business model decisions