

Economics and Management of Intellectual Property
HSE, Spring 2008

Lecture 5

“Competition Policy, Standardization and IP”

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Outline of Core Lectures

1. Basics of IP Law (Välimäki)
2. Use of IPRs (Välimäki)
3. Basic Economics of IP
4. Designing Optimal IP Policy
5. Competition Policy and IP
6. Microsoft Cases in the US and Europe (Välimäki)
7. Economic arguments used in legal cases (Välimäki)
8. Cumulative Innovation and IP
9. Basic IP Management
- 10-11. Industry studies: IP in Financial Services etc

Outline of the Lecture

- i) Basics of Competition Policy and IP
- ii) Network Effects and Competition Policy
- iii) Standardization and IP
- iv) Political Economy of IP
- v) Intro to the Microsoft Case

i) Basics of Competition Policy and IP

The Need for Competition Policy

“ People of the same trade seldom meet together, even for merriment and diversion, but the conversation ends in a conspiracy against the public, or in some contrivance to raise prices.

It is impossible indeed to prevent such meetings, by any law which either could be executed, or would be consistent with liberty and justice.

But though the law cannot hinder people of the same trade from sometimes assembling together, it ought to do nothing to facilitate such assemblies; much less to render them necessary”

Is There Tension between Competition and IP Laws?

- Competition laws guard consumer surplus by promoting competition
 - *competition* not *competitors*, as inefficient firms will be wiped out by competition
 - IP creates the incentive to innovate by enforcing temporary market power over innovations
- ⇒ IP needs to reduce at least temporarily competition
- ⇒ DWL

⇒ There seems to be almost by definition a tension between antitrust/competition and IP laws:

- IPRs convey market power, antitrust constrains it
- IPRs bad for competition & competition bad for innovation

- The scope for tension is caused by the fundamental trade-off between ex ante and ex post considerations
 - ex ante: need to stimulate innovation (IP laws)
 - ex post: information is public good, no reason to restrict its use, because it does not wear out (competition laws)
- However, the argument based on static considerations

- The tension is not new but the *balance* has shifted: E.g. in the US 'supremacy' of antitrust laws around 1930-1980, supremacy of IPR laws around 1890-1920; 1980-present
 - Over the past 25 years, IP and its management have become the core competitive assets of firms
 - ⇒ leveraging IPRs is key to success but can violate competition laws
 - ⇒ increasing tension
 - IPRs are also the core competitive assets of nations
 - ⇒ competition laws have become more tolerant (supremacy of IP laws)
 - ⇒ reducing tension

Modern (official) competition policy view:

- there is no inherent tension between IP and competition laws
- the two bodies of laws are complementary, promoting (consumer) welfare

- The “official” view based on dynamic considerations:
 - strong IPRs are good for consumers (more innovations, more CS)
 - competition is good for innovation (“Schumpeterian competition” (Schumpeter 1))
 - “creative destruction” where today’s monopolies are bankrupt tomorrow unless they do not innovate
- ⇒ the competition *for* the market vs. competition *within* the market

- Restating the “official” view:
 - IP law fosters competition for markets and competition law fosters competition within markets
 - The problem is to seek a proper balance between the two bodies of law
- However, how can there be a problem of seeking a *balance* if there is no tension in the first place?
- Yes, the tension is there, cf. Microsoft in US and Europe

Competition Laws

- In the US competition policy governed by the Sherman Act of 1890 and the Clayton Act of 1914. Concerned with horizontal competition.
- In the EU competition policy governed by the Articles 81 and 82 of the EC Treaty (as well as the Articles 87-89 concerning the state aid) from 1957 (the Rome Treaty) and 1992 (the Maastricht Treaty)
 - Article 81(1): Prohibition of agreements/decisions/*practices* that restrict competition
 - Provision contrary to 81(1) automatically void → cannot be enforced

- Article 82: Abuse of dominant position

“Any abuse ...of a dominant position within the common market....shall be prohibited...insofar as it may affect trade between Member States”

e.g.

- imposing unfair purchase/selling prices
- limiting production to the prejudice of consumers

- Taken literally these would prohibit most uses of IPRs, however...

In the US:

- implementation based on case law where the enforcers are ultimately the courts

⇒ this offers flexibility

- the Department of Justice and the Federal Trade Commission can act in behalf of consumers and bring the cases to the courts
- These agencies notify firms on the actions that may cause competition policy concerns. E.g.
 - In 1995 they issued *Antitrust Guidelines for Licensing Intellectual Property*
 - In 2007 they issued *Antitrust Enforcement and IPRs*

In the EU:

- Article 81(3) give a block exemption to agreements that promote technological progress
 - e.g. R&D cooperation, technology transfers (TTBE)
- The European Commission issues regulations and guidelines on how to apply the Treaty
 - *Regulation (EC No.772/2004) on the Application of Article 81(3) to Technology Transfer Agreements & associated Guidelines*

- Existence of IP not such indication of dominance/abuse of it
- Article 82 typically is not a concern for small firms if they leverage on IPs
- But: IP one of the factors enabling the abuse of dominant position. E.g.
 - preventing competitors from entering the market
 - preventing the use of necessary production factors

- Both the US and EU Guidelines & Regulation take the view that IP is not intrinsically anticompetitive

e.g., the EC: “IPRs promote dynamic competition...” ... “there is no inherent conflict between IPRs and Community competition rules”

- Both, nonetheless, impose a number of market share and other restrictions

e.g., the EC: “IPRs are not immune from competition law intervention”

Note: “market/monopoly power”

- The concept is used in the lectures as an economic concept: A firm has market power if it can price above its MC.
- legal concept is different
- market power itself is not necessarily a violation of competition laws but its abuse certainly is

Some Two-Handed Economics of Competition-IP Nexus

1) Is competition bad for innovation?

- If innovation is key to prosperity and innovative industries ubiquitous
- ⇒ Competition laws should be restricted to traditional industries such as asphalt, paper&pulp or auction houses...
- Competition laws too static as they do not recognize the Schumpeterian competition (Schumpeter 1) in innovative industries

- Monopolies can stimulate innovation (Schumpeter 2): The case of *nondrastic* innovation
 - Consider a monopoly and a potential entrant. The entrant can enter if it innovates first, the monopoly can deter the entry by innovating first
 - The monopoly earns: π^m
 - If the entrant enters, both firms earn duopoly profits: π^d
 - The monopoly's incentive to innovate: $\pi^m - \pi^d$
 - The entrant's incentive to innovate: π^d
 - $\pi^m - \pi^d \geq \pi^d \Leftrightarrow \pi^m \geq 2\pi^d$
- \Rightarrow The monopoly's incentive to stay a monopoly larger than the entrant's incentive to become a duopolist!

2) Is competition good for innovation?

- ⇒ Does the tension arise because firms leverage IPRs more aggressively and more sophisticated manner?
- Innovation a costly way to deter entry.
 - IPRs facilitate tying, bundling, predatory and exclusive behavior that aim at preserving market power, and do not necessarily stimulate innovation
 - are IP and innovation substitute competitive strategies?

- Monopolies can be bad for innovation (Arrow): the case of *drastic* innovation
 - Consider a monopoly and a competitive industry.
 - The monopoly earns π^m in pre-innovation market and $\pi^m + \Delta$ in the post innovation market
 - \Rightarrow the monopoly's incentive to innovate $\pi^m + \Delta - \pi^m = \Delta$
 - Competitive firms earn 0 before innovation but the innovator earns $\pi^m + \Delta$ after the innovation
 - \Rightarrow The competitive firms' incentive to innovate $\pi^m + \Delta > \Delta$
 - \Rightarrow In the competitive industry the incentive to become a monopoly larger than the monopoly's incentive to replace himself, "the best of all monopoly profits is a quiet life" 22

Incentives
to innovate

Degree of Competition
Inverse strength of IP

3) Can IP & competition generate *too much* innovation ?

- Consider a winner-takes-all patent race
 - social value of innovation = private value of innovation = **S**
 - Cost of innovation **I < S**
 - Each firm wins with pr: **1/n**
 - Free-entry to innovation race: **S/n - I = 0**
- there are **n = S/I > 1** firms in the race
- Socially optimal number is 1!

- An entrant does not take into account that it will reduce the other's winning probability
- ⇒ Business-stealing effect
- ⇒ From the society's point of view there is too much innovation since the costs of innovation should be taken into account!

ii) Network Effects and Competition Policy

Network effects vs. predatory behavior:

- *Predatory pricing:*
 - In an initial stage a firm charges unprofitable price to foreclose rivals from the market and then can charge a high prices that compensates the losses of the first stage
- More generally, *predatory behavior:*
 - A firm incurs short-run losses so as to eliminate competition and gain larger profits in the long-run

- *Network effects*: a consumer's utility from a product depends on the number of other users of the product.
- Direct network effects: the utility depends directly on the number of other users.
 - E.g., e-mail & a camera phone.
- *Indirect network effects*: the utility depends on a feature of a product. The quality of the feature depends on the number of other users.
 - E.g., The utility from an OS depends the number of software applications written on the OS. The number of applications depends on the number of users.

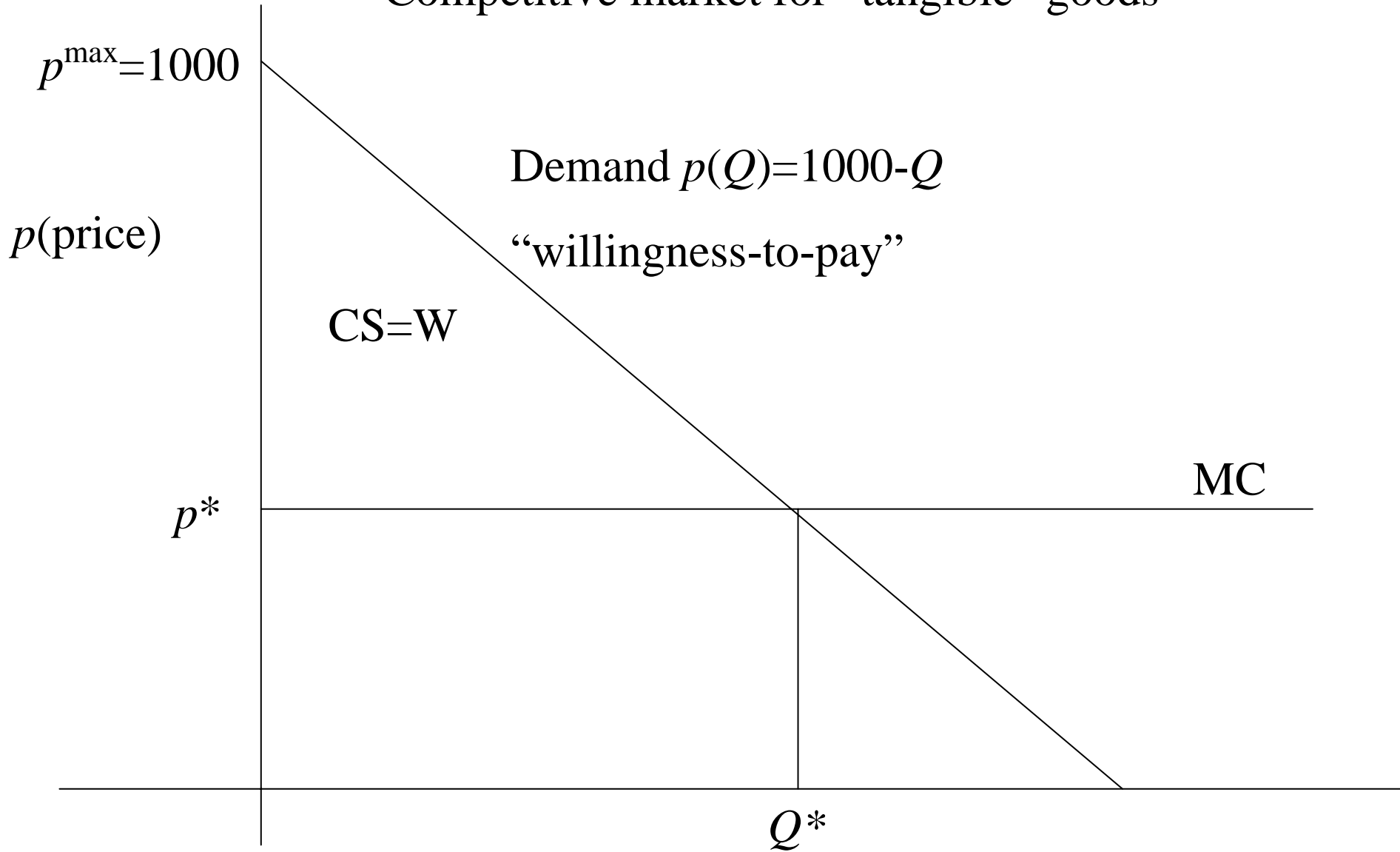
- Network effects create a chicken-and-egg problem:
 - Nobody is willing to buy a product unless it is popular
 - The product cannot be popular unless many are willing to buy
 - Positive feedback: when the customer base grows more and more customers find the product valuable
- ⇒ customer base first grows slowly but then exponentially once critical mass is achieved, works in the reverse direction, too
- ⇒ *Tipping* of a market
- e.g., Spreadsheet market. Lotus vs. Excel. Market shares in 1988: 70% vs. 10%, by 1997: <10% vs. >90%

- Crucial role of consumer expectations, they can be self-fulfilling.
 - e.g., if all believe no one buys \Rightarrow no one will buy
 - expectations management, e.g. through product pre-announcements
 - e.g., DVD vs. DIVX. Circuit city's preannouncement of DIVX September 1997 reduced the DVD sales 20% during the Xmas period of 97 (cf. Dranove&Gandal)
- Multiple equilibria because of the role of the expectations.

Supply and demand with network effects

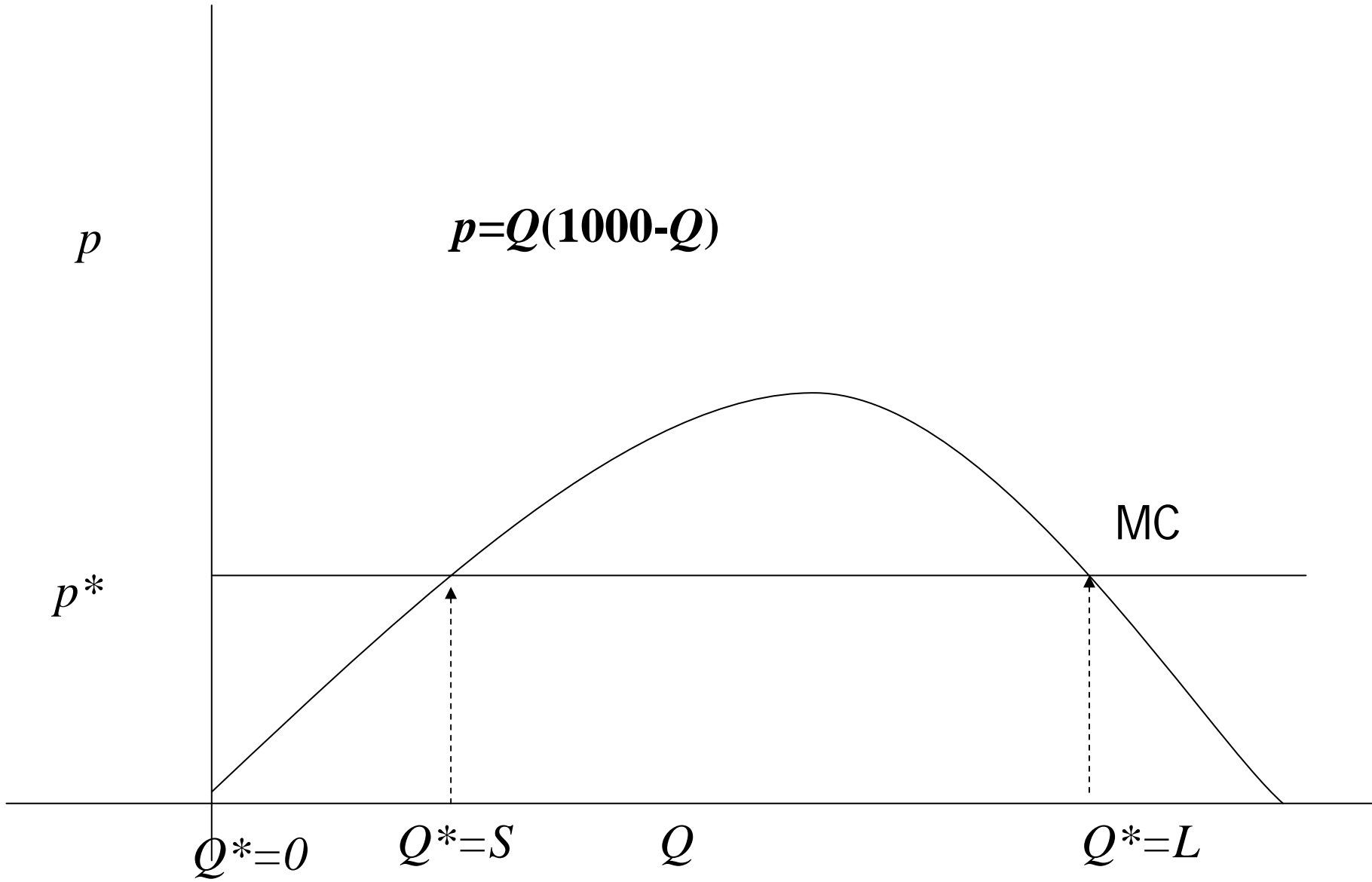
- consider the standard case and let $a=1000$
- i.e. there are 1000 consumers with different willingness to pay $v=1,2,\dots,1000$
- assume positive MC and competition, i.e. $p^*=MC$
- if $MC=p=200\text{EUR}$, the valuation of the marginal consumer $v^*=200\text{EUR}$
- The demand is: $Q=1000-v^* \Rightarrow Q=1000-p \Rightarrow p=1000-Q$
- E.g. if $p=200$, there are 800 consumers willing to buy

Competitive market for “tangible” goods



Q (quantity) or # of consumers

- Introduce the network effect:
 - consumers' willingness to pay vQ
 - i.e. the larger the number of consumers buying the more valuable it is to each consumer
 - the valuation of the marginal consumer: $v^*Q=p$
 - $Q=1000-v^* \Rightarrow Q=1000-p/Q \Rightarrow p=Q(1000-Q)$
 - i.e. for each $MC=p^*$, there are three equilibria: the one without customers $Q^*=0$, the one with a small customer base $Q^*=S$ and one with a large customer base $Q^*=L$



⇒ the firms (and the society) have an incentive to get in
 $Q^* = L$

- a business strategy that prices products temporarily below marginal costs can be vital to induce $Q^* = L$ rather than $Q^* = S$ or avoid the collapse of the market $Q^* = 0$ even without any need to deter entry

⇒ On the one hand, difficult to isolate anticompetitive conducts from competitive business strategies in network industries

⇒ On the other hand, if one firm captures the market it can be hard for others to enter

iii) Standardization and IP

- One of the most tedious competition policy problems deal with standardization and IP policies of standard-setting organizations
- Network effects/benefits require that competing products are *compatible* with each other
- Proprietary (protected by IP) products are inherently incompatible
- Standardization (of interfaces) needed to ensure compatibility
 - *De facto* and *de jure* standards

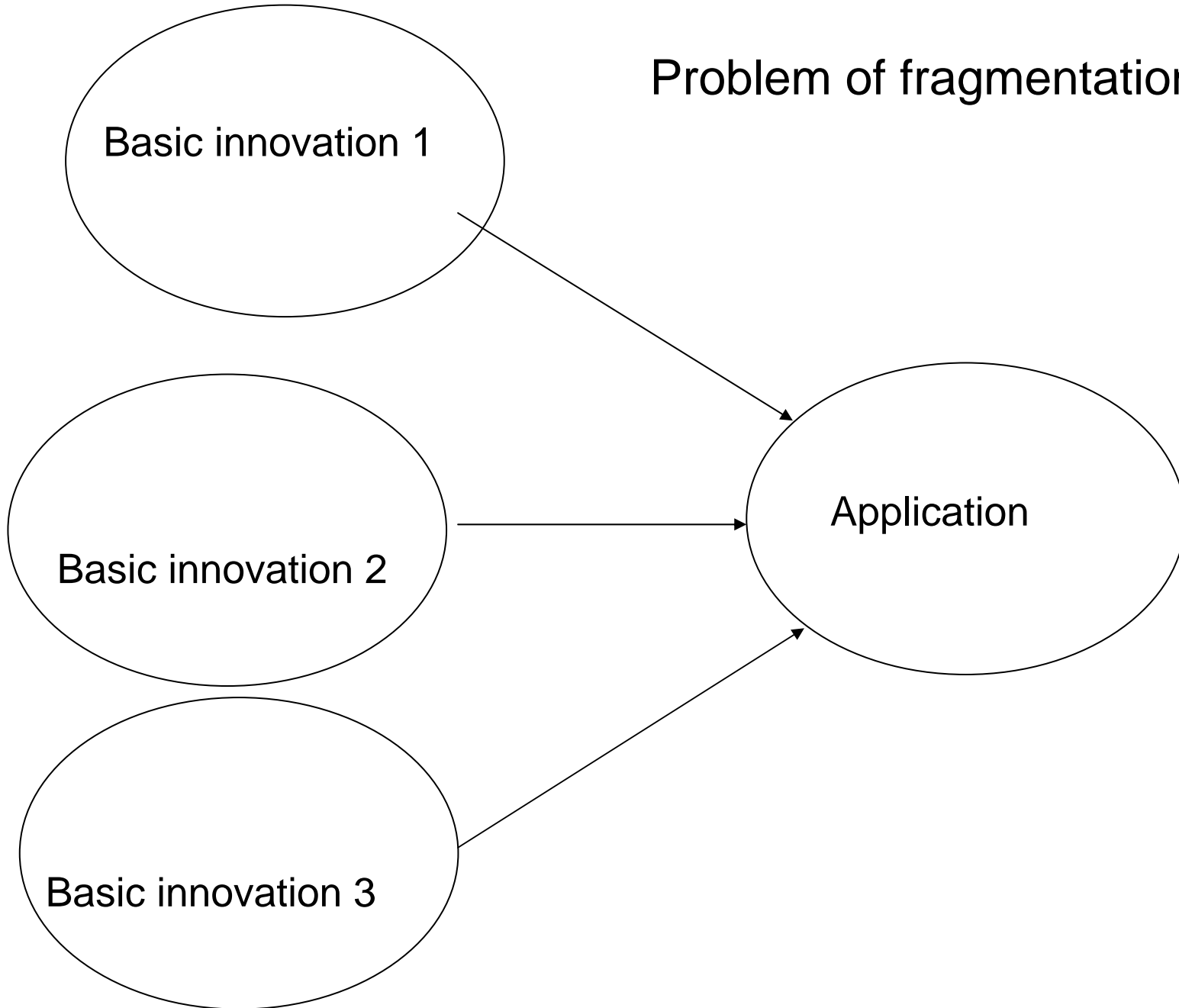
- Compatibility/standardization *increases* competition within the market (ex post) but *reduces* competition for the market (ex ante)
- Choice of whether and when an IP holder should make its proprietary product compatible crucial for success and failure of the firm
- Hard to say whether and when standardization/compatibility is good for an IP holder or a society

- If an IP holder does not want compatibility
 - i) should society want it
 - ii) if yes, how to achieve it?
- Available policy tools are sparse
 - Right to reverse engineer
 - Force compatibility, e.g. by demanding interfaces public, in case of antitrust violation
 - Make sure that an IP holder commits to its announcement of compatibility (in case it has made one) e.g. via consumer protection laws
 - Try to persuade IP holders to standardization (e.g. political pressure, side-payments etc. cf. the case of SEPA)

- There is again (seemingly) inherent tension:
 - Goal of standardization is to foster use of innovations adopted as a standard
 - Goal of IP is to give the its owner a possibility to restrict use
 - Standard-setting organizations (SSOs) try strike a balance

- Even if IP holders agree on standardization in principle and form an SSO, they may encounter the problem of fragmentation:
 - products to be standardized contain various IPRs from various owners

Problem of fragmentation



- In practice, a SSO must establish an IP policy:
 - calls for innovators to disclose essential IPRs and require them to license their IPRs with (F)RAND terms
- On the one hand, IP holders have an incentive to participate as this ensures that their IP might become a part of a standard
- On the other hand, hold-ups are possible
 - Promise (F)RAND ex ante, require something else ex post
 - Not participate or “hide” essential IPRs and emerge only ex post

Fragmentation and royalty-stacking

- suppose more than 2 essential IP holders, an application maker needs a license from all of them
 - c = development cost of the standardized application, yields π
- The available ex ante cake in licensing negotiations $\pi - c$.
- Assume the Nash solution i.e. the parties split the cake 50-50

- If the application manufacturer needs to negotiate with each IP holder separately, the application won't be made:
- Each essential IP holder requires $(\pi-c)/2$
- If there are more than 2 essential IP holders, the application maker is left nothing
 - no incentives to make the application ex ante
- The IP holders need form a SSO, a patent pool, collude, merge, etc
- An SSO has an incentive to ensure ex ante that the sum of royalties is less than $\pi-c$, i.e. commit to the FRAND

- However, once c is sunk, the available cake is π and the IP holders have an incentive to renegotiate
- e.g. handset makers have complained European Commission against Qualcomm
 - The claim is that Qualcomm is not complying with an agreement to license certain patents essential to the WCDMA standard under (F)RAND terms
- But how to determine what is (F)RAND?

- SSOs, patent pools, cross-licensing schemes require coordination among competitors → can be used to soften price competition (cf. Adam Smith)
- More generally, licensing of IP a major source of competition policy concerns
 - E.g. TTBE includes a black list of prohibited agreement clauses. e.g.,
 - Price fixing, limitation production/sales, division of markets/customer, limiting licensee's ability to use own technology and engage in R&D

iv) Political Economy of Intellectual Property

- Lobbying often based on the static/ex post situation
- In the static context strong IPRs are good for producers/innovators and bad for consumers
 - Countries that produce/innovate lobby for strong IPRs and countries that consume/imitate lobby for weaker IPRs
- IPRs tend to be strong because
 - a) producer side is typically more concentrated than consumer side \Rightarrow easier to organize lobby
 - b) countries that produce/are technologically advanced have more political power

But...

- Government's incentive to cheat ex post tends to make IPRs weaker
- Especially if the IPR holding firm is a foreign one