The Relationship Between Intellectual Property Law And Competition Law: An Economic Approach

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Themes of Paper

- Optimality: Existing protection granted under IPR laws is broadly consistent with economic theory of property rights and specific characteristics of intellectual property.

- Equality: Since the main distinguishing features of various types of property already handled effectively by existing protection regimes, all sources of market power should be treated equally under Competition Law.

- Coverage: Despite equal treatment, certain abusive practices arise more often in intellectual property-based dominance cases. Existing guidelines can be extended to cover these practices explicitly within a set of principles that consistently cover all forms of property.

Scope of the Paper

- Economics viewpoint only
- Review of the existing economics literature on intellectual property rights
- Implications for the interface between Competition Law and Intellectual Property Law
- Application of these principles and this literature to some specific issues

The Economic Goal of Institutions

- Promotion of Static Efficiency (i.e. promotion of decisions to allocate economic assets based on the true opportunity costs and benefits generated by that asset)

  E.g. Monopoly is *not* statically efficient, because the monopolist restricts supply of the good to the point where prices faced by consumers are above the marginal cost of production in order to make a profit.

- Promotion of Dynamic Efficiency (i.e. promotion of investment decisions based on the true opportunity costs and social benefits of that investment)

  E.g. Refusing private reward for investment would result in a lack of dynamic efficiency because private benefits of the investment would not reflect any positive social benefits.

- Static efficiency arises if we have perfect competition in all markets
- There is no reason to believe that private investment choices will generally be efficient as two opposing forces are at play:
  - Appropriability
  - Business Stealing

Economics and Property Rights

- Why are property rights important? Promote efficiency

1. *To maintain peace and order* (for example, to minimise physical violence -- and attendant costs -- aimed at control of assets that generate economic rewards)

2. *To assign decision rights* (parameters of choice must be clear in order for either type of efficiency to obtain)

Economics of Property Rights, Continued

3. *To reward investment* (Without the possibility of collecting a reward, economic agents generally would not invest. Hence, it would not be possible to have socially beneficial improvements occur over time: the private reward would not reflect the social benefits)

4. *To favour the diffusion of information* (socially wasteful expenditure on maintaining secrecy; potential reduction in the pace of economic development if rights are not made conditional on the release of information). This function of property right is clearly more important for assets that generate large amounts of information that is potentially useful for further investments.

Intellectual Property vs. Real Property

Intellectual property generates a large amount of information that is potentially relevant to future investments. Further, it tends to be non-rivalrous in the sense that using intellectual property does not necessarily preclude use by another party of the same intellectual Property $\Rightarrow$ ex post efficiency is fostered by allowing free access.

$\Downarrow$

Expect rigths of limited duration, conditional on (some) diffusion of Information.

Expect lots of attention to be given to the scope of these rights

Intellectual Property vs. Real Property

For rivalrous assets, there is usually little room for ambiguity in defining the scope of property rights. Furthermore, 'real property' rarely generates large flows of useful information.

⇓

Expect property rights assigned for the whole useful life of the asset and Without any 'diffusion' requirements.

Exclusivity and Information

For rivalrous assets, it having *exclusive* property rights granted for the useful life of the asset leads to economic efficiency, as this allows both current costs and benefits of usage to be balanced as well as costs and benefits of investments in the property.

For non-rivalrous assets, efficiency is fostered by allowing *free* access *once The asset has been created .*

These rights need *not* be made conditional on the divulgence of information if informational aspects are *not* of great importance to costs and benefits of use. Otherwise, conditional rights crucial to avoid secrecy to prevent either imitation or obsolescence.

Hence, we focus on *reward* and *diffusion* below...

Economics Literature on Patent System: Reward Function

- Early work focuses on the case of a single innovation, hence no role for disclosure.

- Focus on length of protection [Nordhaus (1969), Scherer (19720]: the longer the length, the greater the reward but the larger the social loss due to "monopoly distortion": i.e., the social loss that is incurred when an owner of an asset restricts access to the point where those who would be willing to pay more than the social cost of access are not served. Trade-off between dynamic and static efficiency

Reward Function, Early Literature

- Later, this literature was extended to include the idea of patent “breadth”. With a single innovation, breadth is simply whatever makes a patent more costly to imitate.

- The issue then is how to *structure* the reward to innovation, for a given size of the reward.

- Tandon (1982): regulated royalty on licensing can be understood as ‘breadth’. Infinite length with finite breadth is optimal.

- Gilbert and Shapiro (1990). If granting greater breadth increases reward to investment quickly relative to the monopoly distortion cost, then short but broad patents optimal. Otherwise, long and narrow patents optimal.
  If profits and welfare are concave in output ‘long and narrow is best’.

Reward Function: Early Literature

- Klemperer (1990). If knock-offs are available, broad patents have large monopoly distortion, but narrow patents direct consumers – undesirably – towards low quality knock-offs. Hence, either narrow or broad patents may be desirable.

  Can we say anything without quite precise information on consumer preferences and firms' profits? Can we get away from extreme results?

Reward Function, Sequential Innovation

- A second strand of literature considers that the effective patent life may be limited by subsequent innovation. Hence, we have breadth that determines imitation possibilities ("lagging breadth") and breadth refers to protection from improvements ("leading breadth")

- This strand of literature argues that, as subsequent innovation "steals" rewards from a "first" innovation, early innovators are under-rewarded for the social contribution of sowing the seeds for subsequent innovation. Hence, protection should have large leading breadth [Green and Scotchmer (1995)].

Is Large Leading Breadth Optimal?

- This literature, then, argues for stringent novelty, nonobviousness and utility requirements so that future innovations tend to be unpatentable and infringing. This means that, if improvement is to be made, subsequent innovators must obtain a license (and hence transfer profits to first innovator).

- This literature assumes, however, that no patent race occurs for innovation: If the initial innovator gets such a large transfer, then why bother making subsequent innovations? If the initial innovation is made so valuable, can we get *excessive* resources devoted to "big" ideas and too few "improvements"? [Denicolo (2000)]

Moderation of Leading Breadth

- A stringent patentability requirement may also make innovations large... but infrequent. This increases the incumbency of earlier innovators (and hence their rewards), but tends to make monopoly welfare losses high for each generation. Leading breadth is moderate to balance these effects. O'Donoghue (2000).

  Bottom line on reward literature: moderate leading breadth, stronger argument for strong lagging breadth.

"License to Hunt": Disclosure Function

- A strong novelty requirement has the cost, in a sequential innovation model, of delaying diffusion of information on small steps. [Scotchmer and Green (1990)]

- If patents grant a "license to hunt" then innovators may apply for patents earlier, rather than wait to develop many applications themselves. Hence, protection should be extended to applications that are not fully worked out. [Matutes et al. (1996)]

Bottom line: stronger argument for broad lagging breadth than for strong leading breadth. Some intermediate length appears optimal. In short, a system not far from the current system can be justified. This survives major extensions to systems of picking winners and auctions to supplement existing system.

Economics of Copyrights

- Copyrights protect creative expression, as opposed to invention.
- As copyrights usually apply to work that is difficult to exploit (commercially) without revelation, disclosure effect relatively weaker.
- Copyrighted work often is less obviously sequential and less obviously makes earlier work obsolete. Hence, leading breadth would normally be expected to be small, while lagging breadth (protection against *copying*) would be large.
- Concerns about *freedom of expression* justify further limits on both leading and lagging breadth $\Rightarrow$ rely heavily on length of protection.
- Furthermore, protecting innovative steps under copyright would be inappropriate (for example innovative software). Instead, use patents.

Weaker Protection for Copyright

- If copyrighted material is subject to network externalities, then *weaker* protection might actually increase profits, as it increases the "commitment" of the seller to acquire a large installed base. This reduces hesitancy to buy early (and so can increase profits).

All of this suggests that copyright protection would be expected to be weaker than patent protection, would be more directed at copying and would tend to rely more heavily on length.

Economics of Trademarks

- Symbols/signifiers that distinguish a good/service.
- Economic analysis quite distinct from patents and copyrights.
- Benefit here is to reduce consumer search costs
  - Must apply to experience goods to have this benefit
  - Consistent quality/characteristics must be possible
- Further benefit is to increase incentives to produce high quality by reducing *free riding* by knock offs. The resulting consumer confusion would reduce the willingness to pay and hence the reward to producing high quality. Trademarks enable a *reputation* mechanism

Economics of Trademarks, Continued

- Why not use damages to compensate for deceptive practices instead?
  - inadequate damages won't discipline firms, while excessive damages create perverse incentives for consumers. Moreover, one still needs to identify the supplier.
- Reputational costs supported by trademarkss can be quite high. As these costs are not pocketed by consumers, consumer moral hazard is reduced.
- Trademarks create a reward for high quality, but as identifying marks are in potentially infinite supply, it is not clear that there is an exclusionary static welfare loss. No need for disclosure considerations either: use creates disclosure.

Economics of Trademarks, Continued

- Hence, as long as used, trademark protection economically justified to be quite strong.
- Stockpiling not justified.
- Economic benefits present as long as marks not confusingly similar.

IPR's and Competition Policy

- *Main function* of IP Law is to properly *assign* and defend property rights on assets that might have economic value.

  Main goal is to *balance* the various effects identified earlier.

- *Main function* of Competition Law is to regulate the *use* of (intellectual) property rights when these rights are a source of *market power*.

  Main goal is to minimise adverse consequences of *market power*.

IPR's and Competition Law, Continued

- Timing differs: IPR's assigned soon after creation of asset, whereas competition law enters later when asset being used.

  This difference implies a difference in *information* (especially about the economic value of the asset, and the structure of the markets where the asset is used)

IPR's and Competition Law Interaction

- Recalling our review of the patent literature, looser competition law tends to raise rewards...and narrow optimal patent breadth in early models. Later models require liberal licensing policy to transfer profits from improvements to early innovators. In fact, allowing collusion is socially beneficial in later papers.

- While IP rights do not necessarily confer significant monopoly power, they can only be effective if they sometimes do.

Given better information available at time of application of Competition Law, would tend to revisit the tradeoffs among effects identified earlier.

Does this put IP Law and Competition Law on a collision course?

How should IP Law adapt to Competition Law?

- IPR protection is based on “expected” rewards.
- Even if competition law *limits* the extent to which monopoly power can be exercised, it is still possible to *balance* effects identified earlier by judicious choice of length and breadth of protection.
- Further, there is no reason for IP law to react to small changes in Competition Law: as the expectation matters, the only need for reaction is if change is significant enough to affect these expectations.
- Larger changes in the ex post regulatory environment should be – and have been accommodated. Ex: US Drug Price Competition and Patent Term Restoration Act of 1984.

Special Treatment for IP-Based Market Power?

Should arguments about the trade-off between static and dynamic efficiency be part and parcel of competition cases involving IPRs?

No

- The relevant trade-offs have already been embedded in the property rights regimes that apply to different types of assets. Hence, there is no reason to treat IPR's differently from other property rights in Competition Law. The *source* of monopoly power should be irrelevant. In fact, making such distinctions would distort investment behaviour.

- There is no consensus in the Economics literature on the optimal market structure to generate innovation, so it is not even clear whether competition Law could "*engineer*" a more innovative environment.

Principles for Competition Policy

- *Restraint* in dissipating investment incentives
- *Commitment* not to revisit rights granted by IP law or balance of effects
- *Restraint* in adjustment in IP law in reaction to changes in Competition Policy
- *Equality* of treatment of all sources of monopoly power

Some Specific Issues: Mergers

- Must look at both the downstream markets where IP is applied and the upstream market for IP rights itself.
- No strict correspondence between the notion(s) of patent breadth and the market power that a patent confers.
- As patents reflect 'intellectual property capacity' and so reflect *potential* market shares, appraisal of merging parties' IP portfolios should take place to obtain rough 'market shares' in the upstream market for intellectual property. This is not an easy task, as it involves evaluating the significance of patents for potential sales.

Some Specific Issues: Licensing

- From an Economic standpoint, these are the same as any other "vertical contract" and so would be covered by the vertical guidelines. There is no clear argument for special dispensations, such as the block exemption on patent licensing.

- On the other hand, contract provisions relating to public good nature of intellectual property are defensible.

  - Knowledge is non-rival $\Rightarrow$ legitimate need to control resale of the IP
  - Need for quality control to preserve the reputation *of the technology*

- Difficulty to measure the 'intensity' with which the licensee uses the contracted input $\Rightarrow$ may justify some control over donwstream activities

Some Specific Issues: Cross-licensing

- Economic effects depend greatly on whether the technologies are substitutes or complements

- Technologies are substitutes if they (potentially) compete with each other. They are complements if using them jointly enables a firm to improve quality or lower cost. Because of this 'value-increasing' effect, cross-licensing of complementary technologies should be treated more leniently than cross-licensing of substitute technologies.

- The fisrt antitrust concern is the *structure of cross-licensing payments*. Competing firms can replicate the monopoly outcome by choosing appropriate levels of royalties. [Katz and Shapiro (1985), Fershtman and Kamien (1994)].

- The 'collusive' effect of royalties proceeds from the same logic as the anti-competitive effects of the cross holding of shares. There is little reason, then to be harsh with one and not the other.

Some Specific Issues: Cross-Licensing as a Facilitating Practice

- Cross-licensing of substitutes facilitates tacit collusion by making punishment harsher.
- The concern remains even if the two firms do not compete in the same markets. In that case, cross-licensing can facilitate mutual entry deterrence
- A tell-tale sign is the cross-licensing of technologies that are not used (much) by the licensee.

Some Specific Issues: Patent Pools

- Very similar to cross-licensing.
- Hence pools containing significant numbers of patents that are substitutes should be seen with suspicion.
- If anything, patent pools are worse than cross-licensing
  - Large number of patents $\Rightarrow$ a large number remain unused $\Rightarrow$ hard to tell 'innocuous' pools form pools that help support tacit collusion
  - Large number of patent $\Rightarrow$ (potential) multi-market contact
  - Frequent 'bundling' $\Rightarrow$ potential for foreclosure {Whinston (1990)] especially if patents are not complements.

Some Specific Issues: Grant-Backs

- The EU does not object to grant-back clauses as long as they are *non-exclusive and mutual*. It also looks more favourably on grant-back clauses affecting *non-severable* improvements and on grant-back involving a quid pro quo.

- (Free) Grant Backs tend to decrease the incentive to innovate, making them undesirable a priori. Mutual grant backs are even worse as they also discourage further innovation by the licensor.

- In order to alleviate the incentive issue, any quid pro quo must be conditional on the production and transfer of improvements. Hence a broad agreement to exchange all improvements without payment would not help at all.

- But conditional payments might be hard to determine ex ante. Ex post payments can be set for severable improvements, but not for non-severable improvements (Hold up)

Some Specific Issues: Grant-Backs

The issue of exclusivity is straightforward: there is no reason to let the licensor obtain through the grant-back more ‘exclusivity’ than already conferred by her patent on the initial technology.

Severable improvement: no exclusivity

Non-severable improvements: exclusivity results from the ownership of the original patent. One should be suspicious of clauses preventing the licensee from selling its improvement to the other licensee of the original licensor.

Is there a positive case for grant-backs? Van Dijk (2000) and Choi (2002)

Some Specific Issues: Compulsory Licensing to Downstream Firms

- If patent confers monopoly power, refusal to grant access should be treated as any refusal to sell in a vertical restraint.
- The correct test in the upstream market is whether the number, type and ownership of alternative technologies is such that he patent-holder enjoys monopoly power.
- In this 'vertical restraint' case, the point of licensing is to ensure sufficient competition downstream. This means that regulated fees should be well below the ECPR level

Specific Issues: Compulsory Licensing to Infringing Innovators

- The potential licensee competes with the patent-holder in the upstream market.

- One should be suspicious of refusals to license if the infringing technology is a complement to the initial patent.
- If the infringing innovation is an improvement on the initial patent, compulsory licensing amounts to an ex post revision of leading breadth and should generally be avoided.
- With infringing improvements, the point of compulsory licensing is to ensure that a socially useful improvement is used $\Rightarrow$ If compulsory licensing is considered then agreements that favour collusion in the downstream market should be contemplated. Licensing fees based on ECPR would be appropriate.

Some Specific Issues: Extending the Patent Monopoly Beyond the Patent Period

- We limit ourselves to the case of post-patent payments.
- Such payments can be seen as paying back a 'loan' from the licensor. This 'lending' behaviour can be justified by capital market imperfections.
- To qualify as a pure repayment, the post-patent fees should be independent of the license's post-patent use of the technology. Lower per unit royalties over longer life could change the IP "balance", as they look like smaller "breadth" of protection given over a longer life.
- If royalties are used, the proper question is whether, for a given total payment, welfare is likely to be higher with smaller royalties over a longer period. This is remarkably similar to the discussion of patent breadth in Gilbert and Shapiro (1990)

Some Specific Issues: Extending the Patent Monopoly Beyond the Patent Period

- Can payments beyond the patent period be seen as a way of ‘leveraging’ the patent-holder monopoly into the post-patent market?
- No

Some Specific Issues: Copyright and Openess of Interfaces

- Most economists would agree that, overall, ensuring compatibility between rival technologies strengthens product market competition

- For complementary technologies, opening the interface should be beneficial for both licensor and licensee $\Rightarrow$ refusal to license might indicate exclusionary intent (does not apply to perfect complements)

- Opening up the interface is likely to be the better policy when the interface itself contributes little relative to ex ante obvious alternatives. However, if the interface itself is innovative or if revealing information sufficient to allow interoperability discloses proprietary information on other aspects of the product, denying access or requiring a significant access fee might be justified.

Some Specific Issues: Trademarks

- **Trademarks – Fragility of Reputation**: Clauses to control behaviour of licensee that affects reputation generally justified.

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- **Umbrella Branding**: Umbrella branding generally does not involve bundling of underlying products. Hence, normal monopoly extension/ foreclosure arguments would not apply. Further, if the quality of the product in the new market does not meet expectations, extension of brand name not only useless but detrimental in original market. Hence, a company using umbrella branding actually has *more* incentives to maintain high quality than a regular firm.

Conclusions

- Optimality: Existing protection granted under IPR laws is broadly consistent with economic theory of property rights and specific characteristics of intellectual property.
- Equality: Since the main distinguishing features of various types of property already handled effectively by existing protection regimes, all sources of market power should be treated equally under Competition Law.
- Restraint: Further, small adjustments, expropriation, and engineering find little support in the Economics literature.
- Coverage: Despite equal treatment, certain abusive practices arise more often in intellectual property-based dominance cases. Existing guidelines can be extended to cover these practices explicitly within a set of principles that consistently cover all forms of property.