A Note on Antitrust Issues in the Licensing of Intellectual Property

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Abstract

Intellectual property licensing is becoming an increasingly important economic activity, and licensing practices pose ever more complex antitrust issues. This note discusses Richard Gilbert and Carl Shapiro's paper on the subject. First, I consider which aspects of contractual penalty clauses -- the subject of much of their paper -- are most likely to cause welfare losses. Second, I explain why certain anticompetitive practices that, as they indicate, cause static inefficiency are also likely to be undesirable after taking into account that such practices may increase the ex ante rewards to innovators. Third, I comment on how problems posed by standard-setting might be addressed.

It is difficult to overstate the importance of intellectual property licensing or the complexity of the antitrust issues it raises. Accordingly, Richard Gilbert and Carl Shapiro's (1997) paper is a welcome contribution. Indeed, the reader is treated to two papers for the price of one: first, an industrial organization paper that analyzes contractual penalty clauses and, second, a tour through many of the antitrust policy problems involved with intellectual property licensing. What ties these papers together is that many antitrust concerns with licensing are illuminated by an understanding of penalty clauses. But this is not the case for other antitrust questions, and penalty clauses are significant independently of intellectual property licensing or, for that matter, antitrust.

Contracts, Exclusivity, and Penalty Clauses

The authors' analysis of contractual penalty clauses involves a scenario in which there is a single seller and a single buyer -- perhaps a licensor and licensee of intellectual property -- who enter into an initial contract before the arrival of an entrant. As is typical in this setting, the buyer and seller have an incentive to promote their own welfare at the expense of the entrant. This can be accomplished by provisions that penalize the buyer for subsequent dealing with the entrant.

In their model, there is no ex post inefficiency, because if dealing with the entrant is efficient, it is assumed that the original contract will always be renegotiated to allow such dealing to take place in whatever manner is optimal. The extraction of rent from the entrant is, however, important for the efficiency of ex ante investments by each of the parties. For example (and perhaps of greatest relevance for antitrust policy), a prospective entrant may invest less in

preparing for entry if it knows that some of the return on its investment -- more than in the absence of the penalty clause -- will be captured by the incumbent seller and the buyer.

My comments focus on the assumptions of this model.

ENTRANT NOT PRESENT. In the model, it is assumed that the entrant is not present at the time of the initial contract between buyer and seller. As the authors explain, this may often be true, particularly with regard to intellectual property licensing. A prospective entrant may not, at the outset of its research and development program, be in a position to negotiate a contract for a final product with a prospective buyer.

Interestingly, however, in each of the relevant applications discussed in the latter portion of the paper, the seller's important competitors, who may have been disadvantaged by penalty clauses, *were* present when those contracts were written. Thus, it would be useful to further develop the analysis for this case. With a single buyer, as in the authors' model, it would seem that extraction would no longer be possible, which raises the next issue.

SINGLE VS. MULTIPLE BUYERS. The model has a single buyer. The authors comment briefly on the problem with multiple buyers that has been analyzed in previous literature. In such cases, the seller is able to take advantage of the free-rider problem among the buyers. Thus, a seller may be able to enter into contracts that are to the substantial disadvantage of *buyers* in addition to prospective competitors of the seller because each buyer has little effect on the seller's market position in the subsequent time period, but when most buyers sign contracts with penalty clauses, their collective opportunities in the future will be reduced if, for example, entrants are thus deterred from entering.

In fact, the problem presented by the existence of multiple buyers is an important factor, perhaps the decisive factor, in the authors' subsequent applications. Relatedly, the problems

posed by network externalities will be important in precisely this context. The authors agree that penalty clauses are most worrisome in the multiple-buyer context. I nevertheless emphasize this issue in these comments, lest the reader overlook it amidst the extensive elaboration of the model, which emphasizes many unrelated subtleties.

EFFICIENT EX POST RENEGOTIATION. The authors follow the trend of recent contracting literature by assuming that there is perfect renegotiation upon the arrival of an entrant, thereby eliminating the possibility of ex post inefficiency. But, as a practical matter, it is unlikely that renegotiation is costless. Indeed, when there are large numbers of buyers and coordinated renegotiation is necessary, the costs and potential problems may be significant.

In addition, perfect renegotiation assumes that there is no asymmetric information between the parties. In some settings, this may be a plausible assumption, but in the case of intellectual property licensing it is not. In essence, the model assumes that all parties know (and agree upon) both the cost of using the technology and its value to ultimate consumers *before the technology has come into use*. Yet it seems more plausible that those who develop technologies, the seller and entrant in this model, know more about production using the technology and some aspects of potential demand, and the buyers, who may be engaged in aspects of production or in distribution and marketing, will have proprietary information of their own. With trade secrets, where disclosure of what is being sold may tend to destroy its value, the problem of asymmetric information is particularly great. Caves, Crookell, and Killing (1983) document the importance of imperfections in the market for technology licensing, and these imperfections probably explain particular features of existing licensing arrangements (such as the grant of an exclusive license with a royalty, which creates double marginalization, rather than a transfer of intellectual property rights for a fixed sum).

The possibility of ex post inefficiency should be taken seriously. This complication makes the potential social costs of penalty clauses greater than suggested by the authors' model. On the other hand, such a prospect may, as in Aghion and Bolton (1987), tend to moderate contracting parties' attempts at rent extraction through penalty clauses because some of the ex post surplus that is destroyed might otherwise have been their own.

REWARDS VS. PENALTIES. A final comment on the authors' model concerns a matter of interpretation. The analysis focuses on penalty clauses, under which the buyer pays the seller a penalty that is an increasing function of the extent to which the buyer purchases from the entrant. The extreme case of an exclusive dealing contract involves a prohibitive penalty for any positive purchases from the entrant.

It is useful to compare these sorts of penalties to *rewards* for purchasing from the seller, such as the offering of lower prices. Predatory pricing or royalty-free licensing are extreme examples of such rewards. The authors' analysis identifies some subtle differences between these two methods of inducing buyers to prefer dealing with the seller, but clearly rewards for purchasing from the seller and penalties for purchasing from others are similar. (In the limiting case in which final demand is totally inelastic, rewards and penalties tend to be the same; the difference in expected ex post transfers between the buyer and seller can be offset by adjustments to the value of the fixed transfer between the parties that is specified in the initial contract.) The main point is that rewards may involve externalities in a manner analogous to penalties, so antitrust analysis must be alert to the full range of mechanisms that may be used to disadvantage competitors.

Antitrust Analysis of Intellectual Property Licensing

Why is the antitrust analysis of intellectual property licensing so challenging? In addition to the frequent importance of vexing factual questions and intricate legal disputes (such as whether a party's patent is really valid), there is an important conceptual conflict that is particularly hard to avoid in this context -- namely, even if one could establish that a licensing scheme involved static inefficiency, the scheme may nevertheless be socially desirable if the ex ante incentive to innovate due to the additional reward is sufficiently great. Antitrust policy must deal with this difficulty.

Gilbert and Shapiro, drawing on the 1995 Federal IP Guidelines, offer some useful general insights into this matter. They emphasize the flexibility of the antitrust laws and advance the principle that the scrutiny for intellectual property should be no more (or less) harsh than in other contexts. The real content of their approach comes in the broad range of licensing issues that they analyze, often by examining prominent cases.

In the course of their survey of problems and solutions, much of the emphasis is upon two factors: identifying ex post anticompetitive effects (as suggested by their test that asks whether more competition would have existed but for the license) and assessing whether there are likely to be any offsetting efficiencies. The efficiencies that they consider, however, are usually ex post as well; they do not always examine the ex ante inducement to innovation that is provided by various practices. In most contexts in which they offer a clear bottom line, my suspicion is that their answers are nevertheless appealing, but it is worth developing the analysis further to determine whether this is the case.[1]

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[1]Most of the analysis to follow is drawn from Kaplow (1984), where I suggest that the *relative* desirability of various restrictive practices should be assessed by examining the ratio of the reward each practice generates to the deadweight loss it produces. This is, in essence, cost-effectiveness analysis, in which the question of the optimal level of reward is not addressed. With regard to the issue of reward, however, it is suggested that, when a practice provides a reward in excess of the social value of the underlying intellectual property, the practice will be undesirable because such a

CARTELS. Begin with the simplest of examples, which the authors illustrate with the Pilkington case, in which a firm is accused of using intellectual property licenses to organize a cartel in the industry. We generally believe that cartels are inefficient on account of the deadweight loss that results from supracompetitive pricing. But does it follow that a cartel based on valid intellectual property, which does increase the reward to the innovator, is inefficient? After all, the central purpose of granting of intellectual property protection is to reward innovation by facilitating pricing in excess of marginal cost.

It turns out that permitting cartel organization does tend to be inefficient in this context. Suppose, for example, that a process innovation reduces production costs by $1 per unit and that the innovator licenses the industry, nine other equal-sized producers, charging a royalty of $1 per unit and also, through license restrictions (a price minimum, exclusive territories, or whatever), raising the price of the firms' final product by $10. First, one should observe that in this scenario, 90 percent of the cartel profit goes to the other nine firms, not to the innovator; hence, society suffers the full deadweight loss but only a small fraction of the resulting profit might serve as a reward to the innovator. Second, the profit due to cartelization, from the $10 price increase, is vastly greater than the value of the innovation, so even if all of the profit went to the innovator the resulting inducement to innovation would be socially excessive. Thus, it is possible to distinguish the use of intellectual property to organize a cartel from the ordinary case of an innovator collecting a monopoly rent reflecting the value of its innovation.

PRICE DISCRIMINATION. A contrasting case, noted briefly by the authors, is where license provisions -- perhaps tying, differential royalties, or field-of-use restrictions -- are used to

reward will induce socially excessive ex ante investment.

facilitate price discrimination by the owner of intellectual property. In terms of static efficiency, price discrimination is relatively benign: deadweight loss may fall, be unaffected, or rise, but in an amount that is generally less than that associated with ordinary supracompetitive pricing. Suppose, for example, that in a particular case it is demonstrated that deadweight loss rises slightly but profits rise substantially as a result of some licensing practice. Here, it seems that a strong case can be made for allowing the practice, for it rewards innovation in an amount reflecting the true value of the innovation and in a manner that results in less static inefficiency per unit reward than is ordinarily the case. Moreover, in contrast to the cartel case, all of the incremental reward flows to the intellectual property owner.

COMBINATIONS OF COMPETING INTELLECTUAL PROPERTY. Consider a third case, in which holders of competing intellectual property rights -- for example, two patents that independently enable a new product to be produced -- combine their claims. As the authors note, this may arise directly, through acquisition or merger, or in the somewhat more complex instance in which an intellectual property lawsuit is settled through some sort of pooling of rights. It is suggested, in accordance with conventional wisdom, that such horizontal combinations should be prohibited. But the supporting analysis is wholly ex post: the concern is with the loss in competition between the two technologies, *taking as given that the competing technologies were developed in the first place*. If, in the absence of a combination, much of the reward to both innovators would be competed away, making combinations of intellectual property rights illegal would tend to reduce innovation.

Nevertheless, the view that horizontal combinations of intellectual property are detrimental seems likely to be correct. After all, the only social benefit from the second innovation arises if there would be competition, so there would be no loss -- and, in fact, an

efficiency gain from avoiding wasteful R&D expenditures -- if the second innovation were not developed. The second version will be socially valuable only to the extent that it is better than the first, but to this extent the innovator would be able to charge a higher royalty in a competitive interaction.

Obviously, this problem admits of a number of variations, and the analysis depends upon the nature of the competitive interaction among the innovators (are all rents dissipated or only some?), whether innovation is simultaneous or sequential, the extent of uncertainty involved in R&D, and other factors. Accordingly, further research is appropriate before reaching confident conclusions concerning the likely net social consequences of permitting the combination of competing technologies.

STANDARD-SETTING: It is worth exploring further the authors' analysis of standard-setting in industries subject to network externalities. Initially, consider why it might be undesirable for a standard to be protected by an intellectual property monopoly, such as when a firm has intellectual property that must be used by other firms seeking to meet the industry standard. First, such a monopoly may produce substantial deadweight loss ex post even if the value of the innovation was slight. (In the extreme case, the choice of the standard among a range of alternatives, each cheaply developed, may be arbitrary.) Second, the prospect of such a monopoly may induce costly rent-seeking behavior in order to have one's own proprietary method become the industry standard. One might also be concerned that the wrong (less efficient) technique will become the standard, as in the case in which a formal standards-setting process is subverted or, perhaps, when a firm uses contracts with penalty clauses to line up customers in sufficient quantity to tip the market in favor of its technology.

This set of problems involves both antitrust law and intellectual property law. With

respect to the latter, one might ask whether intellectual property protection should apply, say, to an arbitrary technique that can cheaply be developed in instances in which it becomes an industry standard. Of course, the problem with simply denying intellectual property protection is that some techniques become standards precisely because they are better, and the prospect of reward provides incentives for developing superior methods. Accordingly, the authors favor a regime under which a firm's licensing of technology that is required to meet a standard must be done on "fair, reasonable, and non-discriminatory" (FRND) terms. In particular, they emphasize that the appropriate royalty should reflect the ex ante superiority of the technique over competing methods, not the additional hold-up value that arises once the industry is organized around a particular standard. The problem, of course, is that it will be difficult to determine what royalty level would be appropriate, and ex post litigation of such an issue would be expensive and of dubious accuracy.

As a solution, at least in settings in which some organization or government body sets the standard, it might be possible to obtain advance agreement from the firm whose technology is to be chosen. In particular, a firm could be asked to agree not merely to license on FRND terms, but to agree on those particular terms in advance -- e.g., licensing all comers for a royalty of X per unit. Before the standard is chosen, firms proffering competing techniques will have an incentive to bid against each other on royalties (and other terms), and those determining the standard can consider both the value of the technology and the attractiveness of its price. This possible solution also suggests that there may be advantages in having standards explicitly chosen by a formal process rather than allowing them to emerge in the marketplace. Yet there are obvious competing dangers: the body making the choice might be subverted in some manner or, even if it behaves benevolently, it may lack the information that is implicitly brought to bear

in a decentralized market.

References

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