

PATENT DAMAGES : The More Things Change

INTRODUCTION

The estimation of damages in a patent infringement case attempts to place the plaintiff in the financial position it would have enjoyed absent the violation. In practice, however, various approaches that purport to share the same goal sometimes give very different answers. What drives these differences, and which approach should be used in any particular set of circumstances? Are divergent estimates largely a result of advocacy, or do they reflect genuine differences of opinion between economic experts?

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The explosion of patent infringement litigation in recent years has brought with it a variety of economic arguments to support estimates of damages. In this article, we examine a case in which *The Brattle Group* provided expert testimony to highlight some of the most common approaches to estimating damages as well as some of the economic issues that drive the results. We show that large differences in estimates, both across methodologies and among different applications of the same methodology, often reflect flawed application rather than fundamental differences.

CASE STUDY: *MOBIL V AMOCO*¹

In a major patent infringement case, *Amoco Corporation* was required to pay damages for infringing a patent of *Mobil Oil Corporation* related to the production of paraxylene, a precursor of polyester. Amoco initially had adopted the technology, known as MVPI, but later developed an alternative technology, AMSAC, which was nevertheless found by the court to violate Mobil's patents. Mobil claimed damages of \$584 million, equal to half the alleged cost savings that Amoco had enjoyed as a result of the new technology. Mobil argued that this approximated the agreement that the two parties would have come to had they derived a licensing arrangement for MVPI in "hypothetical negotiations."

In response, Amoco pointed to a number of licenses that Mobil had negotiated with other manufacturers. Using the royalty rates in these licenses as a benchmark for what a "reasonable royalty" would have been, damages were just \$70 million, a fraction of Mobil's claim.

Both Mobil's "hypothetical negotiation" and Amoco's "reasonable royalty" approach sound reasonable. However, they produced very different answers. Faced with such an enormous difference, how was the court to choose between the two? In this case, economic analysis yielded a key insight: properly applied, the hypothetical negotiation analysis should have resulted in the same \$70 million estimate that was obtained using a reasonable royalty approach.

THE FLAWS IN PLAINTIFF'S ANALYSIS

Mobil's analysis ignored two critical alternatives facing Amoco in hypothetical negotiations. First, Mobil assumed that Amoco only could have chosen to use old technology or to license MVPI. However, Amoco simply could have purchased paraxylene from companies that already licensed MVPI at the established rates. Competition among licensed companies would have brought paraxylene prices in line with the established MVPI royalty rates.

Amoco did not have to stay in the paraxylene business. In fact, the rates demanded by Mobil at trial exceeded Amoco's actual profits on paraxylene over the infringement period. Amoco never would have accepted the rates proposed by Mobil because it could not have afforded them.

The correct result is found by considering the entire competitive landscape. If equally efficient competitors licensed MVPI at standard rates, then competition would not have allowed Amoco to survive under significantly higher rates. Conversely, Mobil would not have struck a deal with Amoco at ~~less~~ than the standard rates, because clauses in existing contracts required Mobil to extend any specific discounts to ~~all~~ its MVPI customers. The only possible outcome of a hypothetical negotiation would have been a license rate essentially equal to the established rates. The court correctly concluded that damages should be based on the "established" MVPI royalties.

The court also considered a third approach, based on an estimate of "lost profits" on incremental sales and royalties that Mobil would have received had Amoco never made use of MVPI, and, therefore, never become involved in making the products in question. This might include profits on increased sales of end products by Mobil itself, as well as increased royalty payments corresponding to increased sales made by other licensees. If Amoco had licensed the infringing AMSAC technology to other manufacturers, then

Mobil's "lost profits" would also include foregone royalties from AMSAC licensees. If competition from AMSAC had lowered the royalty rates negotiated for MVPI, then the impact on Mobil should also be considered part of lost profits.

However, the court found that Amoco's infringing technology did not compete with Mobil's, since Amoco did not sell its technology to anyone else. The impact of the infringement was, therefore, limited to Amoco's own production of paraxylene, from which Mobil lost no more in profit than it did from other licensees' use of the technology. Since the royalty rates contained in other licenses were presumably sufficient to compensate Mobil for profits lost to those licensees, they must also have been sufficient to compensate for profits lost to Amoco. Consequently, the "lost profits" approach in this case would be the royalties not received from Amoco – the same \$70 million estimate of damages.

ALTERNATIVE APPROACHES TO DAMAGE ESTIMATION

Mobil v Amoco illustrates the three chief approaches to estimating damages from patent infringement:

1. Reasonable Royalty: estimated from actual royalties paid by licensees of the infringed or comparable patents.²
2. Hypothetical Negotiation: the royalty that the infringer should and would have paid, estimated by analysis of a hypothetical negotiation between the infringer and patent holder.³
3. Lost Profits: the "lost profits" on incremental sales and royalties that the plaintiff would have made had the defendant never used the technology, and therefore never been active in the markets in question.⁴

The three approaches are not all explored in every case. The “reasonable royalty” approach is generally preferred on evidentiary grounds,⁵ and the other methods adopted primarily when royalties on the same or other products are not deemed comparable.⁶ The “lost profits” approach typically is limited to cases where there is collateral damage to the plaintiff’s other licensing activity or the plaintiff itself is engaged in production using the infringed technology. In *Mobil v Amoco*, all three approaches were discussed because the plaintiff disputed the comparability of other MVPI licenses, submitted expert testimony on “hypothetical negotiations,” and also argued for “lost profits” from alleged collateral damage of the defendant’s infringement on other licenses. The court in that case considered all three approaches and concluded that, when implemented correctly, they should yield the same estimate.

However, often the three approaches will not give the same estimate. It is important to know when the estimates will not coincide and to understand what factors drive the differences. These include the nature of the market and industry in question, the evolution over time of information about the patent and its value, and the interpretation of available evidence.

CLAIMS OF UNIQUE EFFICIENCIES

If the defendant is uniquely efficient in the manufacture of the final good, the reasonable royalty and “lost profits” approaches will yield the same damages. The hypothetical negotiations approach, however, could indicate a higher figure. Analyses of hypothetical negotiations commonly forecast the benefits of a patent and assume that the plaintiff would have shared in the residual after allowing a “normal” profit to the infringer. Unique efficiencies would lead to a conclusion that the defendant could “afford” to pay a higher royalty rate than others.

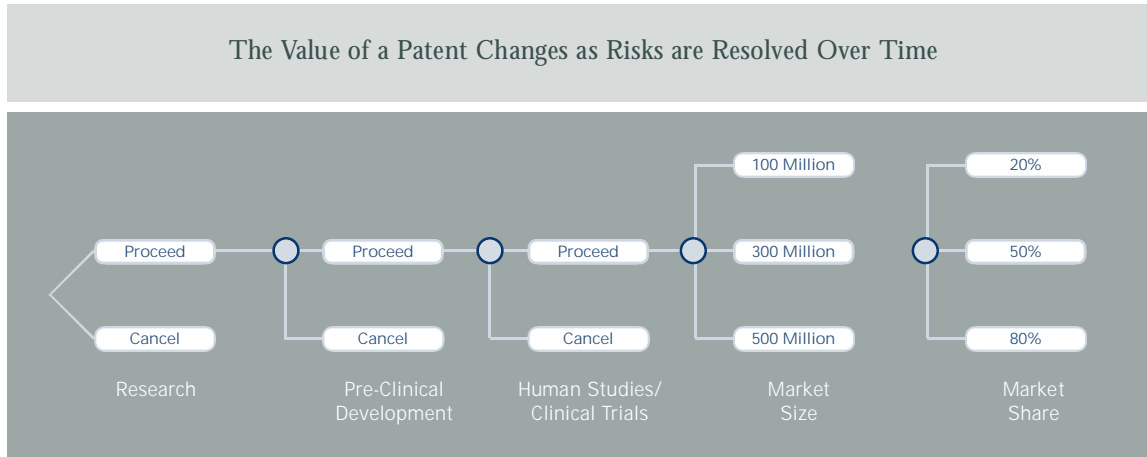
However, a hypothetical negotiation analysis that considers all relevant competitive factors will not necessarily lead to a conclusion that the defendant’s efficiencies will lead to a higher royalty rate. The defendant may be able to arrange a deal with a manufacturer that was already licensed through a sublicense of the technology, a joint venture, or an acquisition supplemented by a long-term supply contract. If a defendant could retain simultaneously the benefits of its efficiency advantage and obtain access to the technology through such options, it would not accept in hypothetical negotiations a higher rate than paid by others.⁷ Under these conditions, all three approaches would still yield the same damage estimate.

A claim by the patent owner of unique manufacturing efficiencies also will result in different estimates from the alternative approaches. The prospect of competing with a more efficient patent owner would depress the offer made by a defendant in a hypothetical negotiation. Consequently, rather than license the technology, the plaintiff would prefer to manufacture and sell the final product independently.⁸ Hypothetical negotiations would break down and the “lost profits” analysis would become relevant, yielding damages equivalent to the profit per unit of sale.

CHANGES IN THE VALUE OF TECHNOLOGY

Changes in the value of technology between the date of infringement and the time of trial can create large differences in damage estimates both across and within methodologies. When patents are first issued, they typically carry significant commercial risk that only resolves over time. For example, the value of a patent on a blockbuster pharmaceutical product, worth billions today, would have been very small at the pre-clinical stage of development, when its technical success and market potential were highly uncertain. Lawsuits tend to occur when commercially-successful patents are infringed. Alternative damage approaches, therefore, can yield widely different results simply by focusing on the value of the patent at different points in time.

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The reasonable royalty approach often involves evidence from the beginning of the patent's commercial life when uncertainty is greatest. In addition, patents may belong to universities or small research firms that do not have the resources or risk tolerance required for successful commercialization of the technology. Royalty agreements could reflect a low value corresponding to the early stages of a patent's commercial life. Relative to the time when a royalty agreement could have been reached, the value of the technology may have soared by the time of infringement or by the time of trial. A "reasonable royalty" analysis that relies on early-stage agreements, will tend to yield relatively low damage estimates.

The risk structure of the agreements used to determine a reasonable royalty also must be considered carefully. Royalty agreements reflect not only uncertainty regarding commercialization of a patent at the time of signing, but also the allocation of risks. For example, if royalties are a fixed percentage of sales or profits, the patent owner foregoes immediate cash payments but can realize future benefits if the product is successful. On the other hand, a pure lump-sum royalty payment insulates the patent owner from commercial risk.

Experts may argue before the court whether the plaintiff would have negotiated a royalty based on sales, profits, or fixed payments. If there were no risk or no change in value

over time, the structure of the royalty agreement would have no impact on the damage estimate. Truly comparable royalty agreements would provide equivalent results on a net present value basis. However, if risk has been resolved favorably or unfavorably, different assumptions concerning the structure of a "reasonable" agreement will greatly affect any damage estimate.

An analysis based on a hypothetical negotiation should go back to the time of that negotiation and estimate the value of all possible future scenarios weighted by their relative likelihood of occurrence. This can be difficult. Reliance upon financial projections or other data from the eve of infringement will not assure the correct result. One also should not rely solely on hindsight to select the scenario that actually unfolded between the time of infringement and the time of trial because that scenario reflects the resolution of risks among numerous possible outcomes that would have been possible at the time of the hypothetical negotiation. A lost profits analysis need not, but often does, rely on the actual scenario that unfolded. It does not forecast the expected profits on the eve of infringement, but rather uses hindsight to estimate the profits that the plaintiff would have made by using the patent independently. Therefore, differences in the results of lost profits and other analyses can often be traced to the different ways that each approach treats the resolution of risk over time.

CONCLUSION

The methodology used to determine damages in intellectual property litigation can result in dramatically different estimates that impede settlements or increase the risks at trial. It is important to understand what is driving the differences and if they are justified. The alternative approaches will tend to yield different results when manufacturers have unique efficiencies. When competitors stand to earn similar unit profits from use of a patent, the three major approaches to estimating damages from patent infringement should yield the same results. If they do not, the explanation most often lies in their implementation. In particular, the failure to consider how risk is resolved over time or how it is allocated among the parties can produce large divergences within or across methodologies. The correct analysis of these factors can reconcile differences in estimates and lead to appropriate measures of damage.

ENDNOTES

- 1 Mobil Oil Corp. v. Amoco Chem. Co., 915 F. Supp. 1333; 1994 U.S. Dist. LEXIS 20851.
- 2 Rates from licenses of the same product, if they meet certain evidentiary requirements, are preferred as "established" royalties, see, e.g., Trell v. Marlee Elec. Corp., 912 F.2d 1443, 1445 (Fed. Cir. 1990); Del Mar Avionics, Inc. v. Quinton Inst. Co., 836 F.2d 1320, 1328 (Fed. Cir. 1987). Otherwise, rates on comparable patents can be used as "reasonable royalties," see, e.g., Hayhurst v. Rosen, 1992 W.L. 123178 (E.D.N.Y. 1992).
- 3 Georgia-Pacific Corp. v. United States Plywood Corp., 318 F. Supp. 1116 (S.D.N.Y. 1970), modified and aff'd, 446 F.2d 295 (2d Cir. 1971), cert. denied, 404 U.S. 870 (1971). Although the court at 1120 listed royalties on the same or other products as evidence that could be considered in the "hypothetical negotiations" exercise, we use the term here more narrowly to refer to the use of financial projections in estimating a royalty rate for damages.
- 4 See, e.g., Bio-Rad Laboratories v. Nicolet Instrument Corp., 739 F.2d 604 (1984), awarding "lost profits" on incremental sales that the plaintiff would have made "but for" the infringement.
- 5 "Where an established royalty rate for the patented inventions is shown to exist, that rate will usually be adopted as the best measure of reasonable and entire compensation [citation omitted]... Where no established royalty is found, one may be selected on the basis of royalty rates for related patents [citation omitted]," Tektronix, Inc. v. United States, 552 F.2d 343 at 347 (main text and fn. 5)(1977). However, "Courts may grant a mixed or split award, using lost profits as a measure for some infringing sales or uses and lost royalties (established or reasonable) as a measure for other such sales o[r] uses" [footnotes omitted], Chisum, Donald S., Patents: A Treatise on the Law of Patentability, Validity, and Infringement § 20.03[1] p. 20-141.
- 6 See, e.g., Tektronix, Inc. v. United States, 552 F.2d 343, 348 (1977)(rejecting defendant's offer of "comparable" royalties.).
- 7 We presume here that effective competition exists among license holders. If there is only one license holder or imperfect competition among various license holders, then the defendant might have to pay more than a "reasonable royalty."
- 8 Differentiation of the final product by the defendant or use of the technology in different markets with entry barriers might produce a different result, but in broad economic terms these situations are inconsistent with the notion of unique plaintiff efficiencies.

PROFESSOR JULIAN FRANKS JOINS *THE BRATTLE GROUP*

The Brattle Group is pleased to announce that Professor Julian Franks has joined the firm as a Senior Advisor. Dr. Franks is the Corporation of London Professor of Finance at the London Business School. He has written extensively on mergers and acquisitions, corporate control, and bankruptcy. He is expert in the valuation of businesses and, in particular, the measurement of competitive returns on investment (the "cost of capital"). He is also one of the world's leading authorities on the investment management industry.

Professor Franks has provided expert witness testimony and consulting assistance on finance issues in the transportation, telecommunications, electricity and water industries. At the International Court of Justice at the Hague, Professor Franks testified on behalf of the United Kingdom in an arbitration over the reasonableness of landing charges at Heathrow Airport. Dr. Franks is presently working with *The Brattle Group* in connection with the multi-billion dollar acquisition of New England Electric System by National Grid Corporation. He has presented findings concerning the transaction structure and the financial integrity of the combined entities to the Securities and Exchange Commission.

Dr. Franks holds a bachelors in economics from Sheffield University, an MBA from Columbia University, and a Ph.D. in economics from London University.

THE BRATTLE GROUP SUCCESSFULLY REBUTS PRICE-FIXING ALLEGATIONS

A team of internal and academic experts from *The Brattle Group* provided the expert economic testimony as part of a successful defense against price-fixing allegations in the ferrosilicon industry. In the course of a criminal investigation and two civil trials *The Brattle Group* participated in all phases of the litigation process by analyzing reports of opposing expert witnesses, creating from paper invoices a large-scale database of defendant's product prices, submitting expert reports, and presenting trial testimony on both liability and damage issues.

In the initial criminal investigation by the Department of Justice, *The Brattle Group* assembled information on market structure and pricing, market strategy, and incentives in the relevant markets. The investigation team at DOJ concluded that the client should *not* be indicted along with others in the industry. In ensuing civil jury trials, first involving several large corporate plaintiffs and then, separately, a large class action, expert reports and trial testimony were presented by Professors Jerry Green of Harvard University and Daniel McFadden of the University of California at Berkeley, Senior Advisors of the firm. They addressed market structure and econometric issues. Gary Taylor and Bill Tye, Principals of the firm, addressed incentive issues and critiqued plaintiff's experts. In each case the jury rejected entirely the plaintiffs' claims and returned a verdict in favor of the defendants.

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Next Issue: PRICE FIXING

Is it collusion or illusion? Many recent allegations of price fixing have focused on "tacit" collusion, rather than on so-called "smoke-filled rooms" where prices are set explicitly. We will explore the economic distinctions and similarities between tacit and explicit collusion, and offer insights on liability and damages analyses.

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