

Prejudgment Interest Rates in Patent Cases Don't Compound an Error

BY ROY J. EPSTEIN

I. Introduction

The patent damages trial is over with the exception of one last detail. Pursuant to 35 U.S.C. § 284, the court intends to award prejudgment interest. The judge has asked the parties to brief the issue, because both the interest rate and the question of whether to compound it are within the court's discretion. This contrasts with Lanham Act violations, for example, where the interest rate is specified in 26 U.S.C § 6621. The ability to engage the court with solid economic analysis on these points can be worth a significant amount of money. How should you proceed? What arguments do you have?

The recent district court decision in *Union Carbide v. Shell Oil* shows the potential stakes.¹ This case involved alleged infringement of a patented process for the production of ethylene oxide, which has considerable value as an input for manufacturing various synthetics such as polyester fiber, resin and film. On top of a substantial jury award, the district court entered judgment in favor of Union Carbide for prejudgment interest in the amount of \$42.4 million. This was the cumulative effect of using the prime rate of interest over a damages period from 1993 to 2004.

Should Union Carbide have been disappointed? The court awarded only simple interest, which reduced the amount of interest by millions of dollars over the 11-year damages period. Was Shell fortunate that the court used the prime rate? After all, it is generally accepted

that prime is “the rate at which US banks will lend to their prime corporate customers”² and that it is “the lowest rate of interest on bank loans at a given time and place.”³ The short answer to these questions is that the bottom-line amount of prejudgment interest was probably excessive by several million dollars.⁴ But to understand why requires economic analysis.

The district court in *United Carbide* is highly experienced in patent matters, and its treatment of interest is reconcilable with established precedents. The Federal Circuit has affirmed both simple interest⁵ and use of the prime rate⁶ at various times. So there is almost certainly no error under an abuse-of-discretion standard. The broader issue is that courts, as well as many litigators, appear not to be aware of recent developments that bear on improved determination of prejudgment interest.

In particular, use of the prime rate for prejudgment interest is rapidly becoming anachronistic for several reasons. Economic analysis has advanced, better data have become readily available, and financial markets

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have changed dramatically. Courts should be receptive to new methods, particularly ones that offer greater reliability and are easy to implement. These methods should lead to improved outcomes in terms of making the plaintiff whole without overcompensation. One can even predict that courts will change in this direction, and it will be incumbent upon litigators to keep up with them.

II. The Conceptual Framework

The cases consistently teach that prejudgment interest is an element of compensation to make the plaintiff whole. The loss of use of the money due as damages in effect is another component of injury.⁷ Under exceptional circumstances, a court may decline to award interest, particularly if the plaintiff is found to have caused undue delay in bringing suit or prosecuting its case. Nonetheless, prejudgment interest is typically necessary to achieve the make-whole standard (i.e., to place the patent holder in as good a financial position as would have occurred in the absence of infringement).⁸ In addition, prejudgment interest promotes prompt case resolution by eliminating a financial benefit to defendants from the inherent delays of litigation.

These are sound general principles. The problem is that there is an enormous range of possible interest rates, from the risk-free Treasury rate on the low end of the spectrum to the “lost” rate of return on highly profitable investments a plaintiff may claim it would have undertaken had it not been damaged. A coherent analysis has to justify a particular rate. The main economic paradigms are discussed next.

A. The Defendant Borrowing Model

A standard conceptual framework in economics for determining the appropriate rate of prejudgment interest is the defendant borrowing model, sometimes known as the “coerced loan” theory. It works as follows. Suppose there is a finding that the defendant caused \$1 million in damages to the plaintiff at some earlier date. In this case the plaintiff should have had an additional \$1 million in assets during the time since the injury. The fact that the defendant has the use of the \$1 million after the date of the injury is tantamount to a loan (albeit an involuntary one) by the plaintiff. As explained by Judge Richard A. Posner some years ago, “the defendant who has violated the plaintiff’s rights is in effect a debtor of the plaintiff.”⁹ Viewed as a loan, the competitive level of prejudgment interest is the market rate that the defendant would pay to borrow such an amount.¹⁰ This market rate reflects expected inflation and includes an appropriate premium for the risk of default by the defendant on its obligation.¹¹

The logic of the borrowing model has additional implications. Because the amount of the judgment is typically not secured by collateral and the damages could be payable at any time (depending on how quickly the legal proceedings move forward), the model implicitly con-

templates the defendant’s rate for short-term, unsecured debt. Put differently, it involves a hypothetical short-term loan that is continually rolled over (with accumulated interest) until the judgment is paid. The interest rate on the loan should reset on each roll over to track current market conditions, including possible changes in the creditworthiness of the defendant.

The borrowing model places bounds on the prejudgment interest rate. The rate is above the rate on T-bills, as no private entity can borrow at that rate. The rate is below the defendant’s cost of capital, as the hypothetical loan does not give the plaintiff an equity interest in the defendant that would require earning the cost of capital.¹² These bounds in general still span a wide range, so further analysis is required. A solution is offered in Section III below.

B. The Lost Return Approach

An alternative to the defendant borrowing model is the plaintiff “lost return” approach. One formulation of the lost return approach runs as follows:¹³

An individual who is not in possession of money that is rightfully his must forgo potential investment gains...For corporations and businesses, the opportunity cost can be calculated within a range where the minimum award would be the firm’s cost of capital and maximum awards would be based on its historical rate of return, if higher.

This is clearly to the advantage of plaintiffs because it is possible to claim lost returns that are far higher than the rate the defendant would pay on a loan. Although superficially plausible, there are several decisive economic problems with using this approach as a general method for determining prejudgment interest.

First, investments entail risk. The universe of “potential investment gains” includes losses as well as gains, yet this doctrine only considers positive outcomes with the cost of capital as a floor. But a firm is not guaranteed to earn its cost of capital on a given project.

Second, awarding the plaintiff’s cost of capital or higher creates an undesirable incentive for the plaintiff to protract the litigation unnecessarily. It makes delay an attractive investment in its own right. This threatens to frustrate efficient settlement and waste the resources of the judicial system.

Third, the lost return approach often implicitly relies on an assumption of imperfect capital markets, which is seldom justifiable in a damages analysis. If the plaintiff had a good investment opportunity, it should have been possible to obtain financing to undertake it so that the return need not have been lost. This fundamentally invalidates the premise of the lost return approach, which assumes the damages necessarily result in abandoning a project or undertaking it on a smaller scale.¹⁴

A variant of this lost return approach posits that the plaintiff would have used the amount of the damages to pay down other debt (i.e., that the plaintiff incurred unnecessary interest payments). This approach in effect substitutes the plaintiff’s rate on this debt for the defendant’s

short-term borrowing rate. The principle criticism of this approach is that plaintiffs often have many different types of debt outstanding that may be quite difficult to analyze—for example, short- and long-term, fixed and floating rate, debt in different currencies, debt with embedded options, and prepayment penalties. Reliably establishing what the plaintiff would have paid down but-for the infringement could require judicial, attorney, and expert resources that would impose undue costs and delays on the case at hand. By comparison, the defendant borrowing model produces an economically rational result and, as will be demonstrated, is far easier to implement.

C. *The Risk-Free Rate*

Some courts have been receptive to use of the risk-free rate on Treasury bills as the prejudgment interest rate.¹⁵ This is not reconcilable with the defendant borrowing model because no private entity can borrow at the risk free rate. Plaintiffs would never claim it as a lost return because it is the lowest possible market interest rate.

One academic theory has rationalized the risk-free rate on the grounds that plaintiffs should not be compensated for the risk of defendant default.¹⁶ Of course, this also grants the defendant the equivalent of a below-market loan. In particular, the defendant borrowing model is framed in terms of the market rate facing the defendant, including the prospective risk of default. The fact that the defendant is still in existence (and able to pay) at the time of judgment does not eliminate the contemporaneous market assessment of default.

Most decisions that use the risk-free rate do not indicate the specifics that led the court to adopt it. Perhaps these are situations where the court felt a jury award was already on the high side or that a large interest award unfairly threatened the financial stability of the defendant. On this basis, the risk-free rate may be used to accommodate exceptional cases that do not fit neatly into an underlying economic theory.

III. **Appropriate Market-Based Interest Rates**

The prime rate has been a common choice for a prejudgment interest rate in the borrowing model since the 1980s. As mentioned above, the Federal Circuit recognized its use in patent cases in *Lam v. Johns-Manville* and Judge Posner later explained it more generally as a “readily ascertainable figure which provides a reasonable although *rough* estimate.”¹⁷ Although the prime rate had advantages years ago, it has become anachronistic. More accurate data are now available. Moreover, the new data show that the prime rate is too high by a substantial margin for most large defendants despite the widespread belief that it errs on the low side.

A more suitable alternative to the prime rate is now online at the Federal Reserve website. Since 1997, the Fed has published average actual short-term market interest rates paid on commercial and industrial loans. The data are gathered in a detailed, comprehensive quarterly survey of commercial and industrial loans known as the

E.2 Survey of Terms of Business Lending (E.2).¹⁸ The E.2 data make it clear that large customers, defined as those qualified to borrow more than \$1 million, typically pay more than 100 basis points *below* prime. The implication is that prejudgment interest in a major damages case should be below prime if the defendant were of only average creditworthiness for taking on the hypothetical debt.

Even beyond that, many defendants will have a demonstrable record of short-term unsecured borrowing that should establish a credible interest rate that does not rely on market averages. For example, many large companies issue commercial paper (CP), which matures in nine-months or less, or maintain unsecured credit facilities that allow them to borrow short-term at favorable rates. Together, these approaches should be workable in many situations.

Finally, it is useful to address the question of compounding. Many cases reveal disputes between the parties over whether interest should be compound or simple.¹⁹ From the point of view of economics, interest should always be compounded because a plaintiff would earn interest on interest when lending money. The only substantive justification for simple interest is greater ease of computation. But this rationale is archaic in an age of spreadsheets. Moreover, nearly all market interest rates involve compounding. Ordinarily, if a court adopts a market rate as the prejudgment rate then consistency requires the court to adopt the associated compounding convention.

If for some reason the court wants to use simple interest then the rate should be increased to adjust for the lack of compounding. For example, suppose the market rate was 10% compounded annually. Total interest would be 33.1% after three years. Simple interest at approximately 11% would achieve the same result.

A. *Federal Reserve E.2 Survey Rates*

E.2 demonstrates that average commercial and industrial loans carry interest rates well below prime. The August 2005 survey is typical in this regard and will serve as an example. The average rate for all loans was 5.22 percent. By comparison, the prevailing prime rate was 6.25 percent. The average loan therefore was 103 basis points below prime.

In fact, rates at prime or above are predominantly for customers who borrow less than \$1 million. Large loans (presumably associated with larger customers) paid much less. For example, the average rate for loans under \$100,000 was 6.89 percent, which exceeded prime by a substantial margin. However, loans over \$10 million averaged only 4.77 percent. That is, the largest customers pay below average rates and receive even larger discounts to prime, presumably because they are less risky, less costly to service, and/or are able to access more competitive non-bank financing.²⁰ For the data as a whole, it is evident that over 80% of all loans (by dollar value) pay less than prime.

The E.2 interest rates are suitable for the defendant borrowing model in other respects. They pertain to short-term, variable rate loans. The averages apply to borrowers who are average risks, not minimal risks. Furthermore, the rates for large loans tend to not to have collateral and so appear to be unsecured.

B. Rates for Defendants with Poor Creditworthiness

Suppose there is evidence that the defendant is a poor credit risk. For example, the damages could exceed its net worth. A higher interest rate is clearly called for and in this situation even the prime rate may be too low. One way to proceed for defendants with poor creditworthiness using broader market data is to use rates for high yield—that is, “junk”—bonds. Spreads on junk bonds are typically on the order of 400 basis points above the 1-year T-bill. Applying this spread to the average T-bill rate for August 2005, for example, implies a prejudgment interest rate of 7.87 percent, which was much higher than prime rate.

C. Alternatives to E.2 for Creditworthy Defendants

If a defendant has a history of short-term unsecured borrowing during the damages period, those rates are reasonable possibilities to consider instead of E.2. The key point is that average CP rates are dramatically lower than the prime rate (average rates on unsecured credit facilities are not published but are probably only marginally higher than CP). When CP or a similar rate is available to the defendant, the result in recent years is on the order of 300 basis points below prime.

Examples of rates on credit facilities can be found in the annual 10-K filings by public companies. For example, in 2001, Nike had a 364-day revolver (due 364 days from the borrowing date) for \$750 million. The interest rate on the revolver at that time would have resulted in a rate of 4.25 percent for Nike, compared to a prime rate of 7.24 percent, again a 300 basis point difference. On the other hand, a defendant with a history of borrowing short-term at higher rates should probably be expected to pay at least those rates in prejudgment interest.

IV. Case Studies

This section briefly illustrates the methods described in this article using a number of patent cases where prejudgment interest was awarded. These vignettes are based only on the limited public information available and should not be viewed as a substitute for a complete analysis. The author defers to the court’s judgment in these cases but hopes the principles described will be of value as similar questions arise in the future.

*A. AccuScan v. Xerox.*²¹

The jury found Xerox infringed an AccuScan patent and awarded almost \$10 million in damages. Both parties agreed that prejudgment interest was in order. Xerox argued for the risk-free rate on the 1-year T-bill and AccuScan argued for the prime rate. The court elected to use the T-bill rate, which amounted to \$4.7 million in prejudgment interest. The court explained that the T-bill rate

is the basis for postjudgment interest in federal cases according to 28 U.S.C. § 1961 and cited precedents where this reasoning was used for prejudgment interest.²²

The E.2 model yields a middle figure. The exact damages period is not indicated in the opinion but historically E.2 averages about 150 basis points more than the T-bill. This implies total interest approximately \$1 million higher than what was actually awarded but is still significantly below what AccuScan requested. There was no information on U.S.-based short-term borrowing in a number of Xerox 10-Ks reviewed so there is no readily available justification for use of CP or a similar rate.

*B. Gaus v. Conair Corp.*²³

The plaintiff won prejudgment interest on top of a \$28.5 million jury verdict for infringement of a patented device used in electric hair dryers. The district court found that the 52-week Treasury bill rate, compounded annually, was adequate. It appears from the decision that the damages period was more than nine years, from October 1993 to January 2003. Over this period the 52-week T-bill averaged 4.83 percent, so the interest award amounted to several million dollars.

The district court justified its decision by referring to Federal Circuit precedent that prejudgment interest at the T-bill rate is not an abuse of discretion when the patent owner failed to show it borrowed money at a higher rate.²⁴ This appears to be consistent with the variant of the lost return model discussed above. However, it is not clear why the defendant should then receive the equivalent of a below-market loan since its borrowings would certainly be at a rate above the T-bill. Moreover, the decision indicates that the plaintiff was a German inventor. If his principal business was located outside the U.S., it could be difficult to establish how his effective short-run borrowing rate compared to the T-bill.

The defendant borrowing model provides a different answer. Assuming that Conair was reasonably creditworthy for a loan as large as the total damages (the court also enhanced the damages award by 30 percent for willfulness), the E.2 rate should apply. Over the same period, the E.2 rate averaged 6.23 percent, which indicates additional interest on the order of \$1 million relative to the T-bill. Finally, if Conair would not be found creditworthy, the appropriate rate would likely be prime (which averaged 7.68 percent) or higher.

*C. Union Carbide v. Shell*²⁵

As discussed above, the court in this case used the prime rate as the basis for prejudgment interest. But this is an instance where the defendant Shell was a large issuer of commercial paper. In 2003, for example, it averaged approximately \$9 billion in outstanding CP at an average interest rate of 3 percent.²⁶ By comparison, the average prime rate in 2003 was 4.13 percent.

According to the defendant borrowing model, Shell should have been assessed at its applicable CP rate. On this basis, if the 2003 spread between CP and prime persisted over the entire 1993–2004 damages period, Shell

should have paid a rate more than 100 basis points lower than the prime rate. The fact that the court only awarded simple interest at prime mitigated, but did not eliminate, this difference.

V. Conclusion

The determination of prejudgment interest rates can be improved using basic economic principles and readily available data. Existing procedures in patent cases tend to rely on either the prime rate or the risk-free Treasury bill rate. This article has explained why both of these rates are flawed. The prime rate is typically too high and the T-bill rate is too low. An inappropriate rate can be worth a large amount when the damages are large and/or the damages period is long.

A more reliable market-based prejudgment interest should make use of newly available Federal Reserve data on actual rates for commercial and industrial loans. In particular, these data show that the prime rate is too high for an average borrower by over 100 basis points. The analysis also discusses alternatives. When defendants can demonstrate the ability to borrow at more favorable rates, (e.g., in the commercial paper market or by maintaining a credit facility), those rates should be used instead. On the other hand, if the defendant would have significantly below-average creditworthiness for a loan of the size of the damages, higher rates would be appropriate. Finally, there are limited circumstances where the plaintiff's lost investment return may be more suitable for determining the rate that best makes the plaintiff whole.

The case studies discussed above show a variety of procedures in current practice for determining prejudgment interest, some of which are mutually inconsistent or conflict with basic economics. The methods presented in this article will, it is hoped, assist both courts and litigants to reach prejudgment interest awards that are most consistent with the goal of "making the plaintiff whole," and that avoid significant under- or overcompensation.

Endnotes

1. Union Carbide Chemicals & Plastics Technology Corp. v. Shell Oil Co., 2004 U.S. Dist. LEXIS 10730 (D. Del. June 9, 2004), *aff'd in part and rev'd in part on other grounds*, 425 F.3d 1366 (Fed. Cir. 2005).

2. <http://www.trading-glossary.com/u0098.asp>

3. <http://www.answers.com/topic/prime-rate>

4. Both Union Carbide and Shell appealed but the methodology of prejudgment interest played no further role. In October 2005 the Federal Circuit remanded for a new determination of damages on other grounds. A final resolution of this case is still pending.

5. Gyromat Corp. v. Champion Spark Plug Co., 735 F.2d 549, 557 (Fed. Cir. 1984).

6. Lam, Inc. v. Johns-Manville Corp., 718 F.2d 1056, 1060 (Fed. Cir. 1983).

7. West Virginia v. United States, 479 U.S. 305, 311 n.2 (1987).

8. General Motors Corp. v. Devex Corp., 461 U.S. 648, 655 (1983).

9. Gorenstein Enterprises, Inc. v. Quality Care-USA, Inc., 874 F.2d 431 (7th Cir. 1989).

10. More precisely, the relevant rate is the borrowing rate for the ultimate payer of the judgment. If the judgment is to be paid by insurance instead of the defendant then the insurance carrier is the party that has benefited from the "loan."

11. For further justification of the defendant loan approach see Michael S. Knoll, *A Primer on Prejudgment Interest*, 75 TEX. L. REV. 293 (1996); Michael S. Knoll & Jeffrey Miguel Colon, "The Calculation of Prejudgment Interest" SSRN paper 732765 (May 31, 2005); James M. Patell et al., *Accumulating Damages in Litigation: The Roles of Uncertainty and Interest Rates*, 11 J. LEGAL STUD. 341 (1982); Roman L. Weil, *Compensation for the Passage of Time*, Litigation Services Handbook: The Role of the Accountant as Expert, chap. 37 (2d ed. 1995).

12. If the defendant's capital structure is highly leveraged the borrowing rate could be close to its cost of capital.

13. See John C. Keir & Robin C. Keir, *Opportunity Cost: A Measure of Prejudgment Interest*, 39 BUS. LAW. 129 (1983).

14. The lost return is most defensible when the plaintiff's lost investment is known with great confidence. For example, Harris Trust et al. v. John Hancock Mutual Life Insurance, 122 F. Supp. 2d 444 (S.D.N.Y. 2000), *aff'd in part and rev'd in part*, 302 F.3d 18 (2d Cir. 2002), involved an alleged deficiency in assets in a retirement trust. The court found that the trust would have reinvested the damages in the same manner as the rest of its portfolio and so would have earned a rate equal to the trust's actual overall rate of return. However, while this is a reasonable solution given the facts, such a situation is likely to be the exception, not the rule, particularly in the context of patent damages.

15. Polaroid v. Kodak, 16 U.S.P.Q.2d 1481, 1540 (D. Mass. 1990).

16. Franklin M. Fisher & R. Craig Romaine, *Janis Joplin's Yearbook and the Theory of Damages*, 5 J. ACCT. AUDITING & FIN. 145 (New Series 1990).

17. *Lam*, 718 F.2d at 1060; *Gorenstein*, 874 F.2d at 436 (emphasis added).

18. The survey results are available at <http://www.federalreserve.gov/releases/e2>.

19. See, e.g., Rite-Hite Corp. v. Kelley Co., Inc. 56 F.3d 1538, 1555 (Fed. Cir. 1995).

20. The syndicated loan market has grown rapidly in recent years and facilitated new competition by investment banks, insurance companies, pension funds, and mutual funds to hold portions of large loans. See William F. Bassett and Egon Zakrajšek, *Recent Developments in Business Lending by Commercial Banks*, FEDERAL RESERVE BULLETIN (December 2003).

21. AccuScan v. Xerox, 2000 U.S. Dist. LEXIS 2822 (S.D.N.Y. Mar. 15, 2000).

22. See, e.g., Datascope Corp. v. SMEC, Inc., 879 F.2d 820 (Fed. Cir. 1989).

23. Gaus v. Conair Corp., 2003 U.S. Dist. LEXIS 1445 (S.D.N.Y. Feb. 3, 2003), *rev'd*, 363 F.3d 1284 (Fed. Cir.), *cert. denied*, 125 S. Ct. 346 (2004).

24. See *id.* (citing Laitram Corp v. NEC Corp., 115 F.3d 947, 955 (Fed. Cir. 1997)).

25. Union Carbide v. Shell, 2004 U.S. Dist. LEXIS 10730.

26. Royal Dutch Petroleum Co. 2004 Annual Report, available at <http://www.shell.com/html/investor-en/reports2004/rd/index.html?=:ir>.