MEASURING THE IMPACT OF INJUNCTIVE RELIEF ON INNOVATION

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I. INTRODUCTION

In recent years, we have seen antitrust authorities take a dim view of patent holders, especially owners of standard-essential patents ("SEPs"), seeking injunctions against purportedly unwilling licensees. The result is a strong signal and arguably a policy that an SEP owner seeking an injunction faces a significant risk of facing an antitrust challenge. Indeed, the agency actions to date have significantly deterred SEP owners from seeking injunctions. While there has been discussion on both sides of this argument regarding the potential impact of SEP negotiations and injunctions on innovation, there has not been an effort to measure the impact of this "no injunction" policy on innovation investment.

This article considers the impact of injunctions, or more specifically the lack of the availability of an injunction, on an innovator's investment decisions.[2] It concludes that: (1) it is possible to measure the impact that a "no injunction" in patent infringement actions will have on innovation investment, and that (2) such a policy will necessarily reduce investment in innovation. The reduction in investment is caused by the delay in receipt of licensing revenues that will result from eliminating the potential for injunctions, because this delay will negatively affect the inventor's expected return on investment.

The article also considers whether potential awards of interest in patent infringement actions, as an alternative to potential injunctions, will offset this effect and concludes that interest awards are inadequate to eliminate the reduced incentive to invest in innovation.

In more simplistic terms, we can observe that with no threat of an injunction, the pressure to conclude a licensing negotiation is off, and licensing negotiations will take more time to complete. This additional time slows down the stream of revenue that will flow to the inventor. That slow-down reduces the return that the inventor can expect and will cause some of the projects within an inventor's portfolio to become unprofitable and not worth the investment.

II. INNOVATION INCENTIVES AND ANTITRUST

Antitrust and intellectual property law are often said to be compatible in that they are both supposed to encourage innovation.[3] The intellectual property laws do so directly, by creating a period of time in which the inventor can exclude others and exploit its invention, reaping whatever profits are attributable to the invention. The antitrust laws do so less directly, by tolerating this right to exclude.[4]

The need to protect the incentives to invest in technology have long been recognized in the antitrust community. More than 20 years ago, AAG Bingaman noted that "technology is the driving force in the U.S. economy today. And it is clear that without intellectual property rights that assure a return on investment in innovation, that force would wane. Consequently, one simply cannot speak of an antitrust policy without a coherent policy toward intellectual property."[5]

But the antitrust laws also place limits on the permissible scope of exclusion, and U.S. and foreign enforcers have more recently waded more aggressively into enforcement, particularly regarding SEPs, with views on whether specific tactics may be anticompetitive. Despite earlier warnings, this is often done either without consideration of the impact on return in innovation investment, or on the assumption that since the costs of innovation in the particular invention are already "sunk," there is no potential adverse impact.

One area in which regulatory authorities have jumped in with both feet relates to the permissibility of an SEP holder seeking injunctive relief. For example, in *In the Matter of Robert Bosch GmbH*, the FTC found reason to believe that SPX Service Solutions U.S. LLC ("SPX") harmed competition by reneging on a commitment to license SEPs on FRAND terms by seeking injunctions against willing licensees of those patents.[6] The FTC asserted that "SPX's suit for injunctive relief against implementers of its standard essential patents constitutes a failure to license its standard-essential patents under the FRAND terms it agreed to while participating in the standard setting process, and is an unfair method of competition actionable under Section 5 of the FTC Act."[7] Although this issue arose in a merger review that did not directly implicate injunctive relief, the Commission extracted a remedy (ironically a *de facto* injunction) requiring Bosch to forego any further efforts to seek an injunction in its efforts to enforce its IP rights.

In *In the Matter of Motorola Mobility LLC and Google, Inc.*, the FTC alleged that Google reneged on its FRAND commitments and pursued — or threatened to pursue — injunctions against companies that were willing to license the relevant SEPs on FRAND terms.[8] The FTC approved a final order prohibiting Google from seeking injunctive relief unless it takes a series of steps including (1) providing a potential licensee with a written offer containing all of the material license terms necessary to license its SEPs, and (2) providing the potential licensee with an offer of binding arbitration to determine the terms of a license.[9] The consent order also provided potential licensees with a voluntary negotiation framework that they could opt into to negotiate license terms. The order identified only a few narrowly-defined circumstances when Google would be allowed to seek injunctive relief, such as when the potential licensee is not subject to jurisdiction in the United States or when it refuses to agree to terms set by a court or in binding arbitration.

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3 "[T]he aims and objectives of patent and antitrust laws may seem, at first glance, wholly at odds. However, the two bodies of law are actually complementary, as both are aimed at encouraging innovation, industry and competition." *Atari Games Corp. v. Nintendo of Am.*, Inc., 897 F.2d 1572, 1576 (Fed. Cir. 1990); see also *Intergraph Corp. v. Intel Corp.*, 195 F.3d 1346, 1362 (Fed. Cir. 1999) ("The patent and antitrust laws are complementary, the patent system serving to encourage invention and the bringing of new products to market by adjusting investment-based risk, and the antitrust laws serving to foster industrial competition.").

4 According to Judge Douglas Ginsburg, "The point of the antitrust laws is not to restrict patent rights. . . . It is to ensure that a patent holder does not go beyond the legitimate right to exclude in order to stifle the competition. The solution is to clarify as much as possible where that legitimate right to exclude begins and ends." Leah Nylen, *Antitrust Not a Good Way to Address SEPs, Patent Trolls, Judge Says*, MLex (Nov. 8, 2014), available generally at: www.mlexmarketinsight.com.

5 Eleanor M. Fox, Alan H. Silberman, Phillip A. Proger & Robert C. Weinbaum, *60 Minutes with Anne K. Bingaman, Assistant Attorney General, Antitrust Division, U.S. Department of Justice*, 63 ANTITRUST L.J. 323, 332 (1994).

6 Analysis of Agreement Containing Consent Orders to Aid Public Comment, *In the Matter of Robert Bosch GmbH*, File No. 121-0081 (Apr. 24, 2013), available at: www.ftc.gov/sites/default/files/documents/cases/2013/04/121126boschanalysis.pdf.

7 Id.

8 Complaint, *In the Matter of Motorola Mobility LLC and Google, Inc.*, File No. 121-0120 (FTC July 24, 2013), available at: www.ftc.gov/sites/default/files/documents/cases/2013/07/130724googlemotorolacmpt.pdf.

9 Analysis of Proposed Consent Order to Aid Public Comment, *In the Matter of Motorola Mobility LLC and Google, Inc.*, File No. 121-0120 (F.T.C. Jan. 3, 2013), available at: www.ftc.gov/sites/default/files/documents/cases/2013/01/130103googlemotorolaanalysis.pdf.

These two cases reflect a view by the majority of FTC Commissioners at the time that an SEP owner who seeks an injunction is abusing its market power with anticompetitive effect. But neither of these decisions considers the impact on upstream innovation investment that flows from denying an inventor the possibility of an injunction.[10]

In contrast, courts have concluded that there is nothing inherently anticompetitive in an SEP holder seeking an injunction. In a U.S. federal decision at the appellate level, *Apple v. Motorola*, the U.S. Court of Appeals for the Federal Circuit affirmed the district court's denial of an injunction to the SEP holder, Motorola. In so doing, the court described the eBay standard as providing "ample strength and flexibility for addressing the unique aspects of [FRAND] committed patents and industry standards in general."[11] The court expressly rejected "a *per se* rule that injunctions are unavailable for SEPs [subject to a FRAND commitment]."[12] The court explained that "[a] patentee subject to [FRAND] commitments may have difficulty establishing irreparable harm. On the other hand, an injunction may be justified where an infringer unilaterally refuses a [FRAND] royalty or unreasonably delays negotiations to the same effect."[13] The court recognized the need to balance between the competing interests of encouraging participation in standard-setting organizations while at the same time ensuring that SEPs are not overvalued.[14] The court noted that district courts are "more than capable of considering these factual issues when deciding whether to issue an injunction."[15]

These different approaches reflect, perhaps, differing views by the IP and antitrust communities on the rationale for considering injunctive relief.

III. INNOVATION RETURN ON INVESTMENT

It is only rational to assume that investment decisions in the innovation field follow the same basic principles as other investments. Below we discuss and apply the basic elements of investment logic and how these considerations might play out in a typical setting involving IP and IP licensing.

A. Return on Investment

The need to obtain a return on investment ("ROI") is both a textbook principle and an investment reality. Whether viewing it from the perspective of an engineer within the confines of a big conglomerate seeking formal approval for an outlay of funds, or from the standpoint of a fledgling entrepreneur with a dream who is considering whether to spend the next two years locked-up in his garage, the ultimate question is the same: will the investment pay off? That question is answered through an evaluation, whether formal or informal, of the return on investment.

Return on investment measures the gain or loss generated on an investment relative to the amount of money invested. ROI is typically used to compare the efficiency of different investments. The purpose of the ROI metric is to measure, per period, rates of return on money invested in an economic endeavor to decide whether to undertake an investment. It is also used as indicator to compare different project investments within a project portfolio.[16]

To calculate ROI, the net profit of an investment is divided by the cost of the investment, and the result is expressed as a percentage or a ratio.[17]

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10 The FTC's MMI complaint asserts that the challenged practices will adversely impact *downstream* innovation by raising the cost of licensing, but gave no consideration to the impact on *upstream* innovation. This seems shortsighted given that the potential for downstream innovation is derived entirely from upstream innovation. See Complaint, §3.

11 *Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1332 (Fed. Cir. 2014).

12 Id. at 1331.

13 Id. at 1332.

14 Id.

15 Id.

16 *Return on Investment (ROI)*, BusinessDictionary, www.businessdictionary.com/definition/return-on-investment-ROI.html.

17 *Return on Investment (ROI)*, Entrepreneur, www.entrepreneur.com/encyclopedia/return-on-investment-roi.

$$ROI = \frac{\text{Net Profit (Gain from Investment − Cost of Investment)}}{\text{Cost of Investment}}$$

This basic formula yields the answer to the question "will the investment pay off" but the calculation of the net profit and cost of investment often requires some additional analysis.

B. NPV

Except in the case of scratch-off lottery tickets, investment costs and gains are rarely instantaneous. Thus, an ROI analysis necessarily involves a time component and, accordingly, the need to consider the value of future cost and, particularly, revenue streams, reduced in form to a "present value." A net present value ("NPV") calculation is a basic concept in which the flow of all future revenue streams is discounted to account for the delay in time over which they will be received. Thus, while a dollar that is received in the present is worth a dollar, a dollar that won't be received until next year is worth something less than a dollar, both because of the inflation that is expected to occur over that period of time, and the lost opportunity to invest that dollar over the same period. Thus, the "present value" of next year's dollar is lower than the "present value" of today's dollar and, therefore, next year's dollar must be "discounted" to determine its "net" present value. The obvious question is by how much next year's, and every successive years,' dollars should be discounted.

C. Target Rate of Return

In considering an investment of risk capital, an investor will want to make a return on that capital that accounts not only for the time value of that money, but also for the risk that the individual investment (often within a portfolio of investments) won't make a return at all. Typically, the greater the risk associated with the investment, the greater the return demanded.[18] Within companies, this is often called the "target rate of return" or "hurdle rate" and reflects the level of return that must be anticipated before monies will be allocated to a project. The theory is that if the investment cannot generate at least that level of return, the money is better spent on something else that will generate that rate of return or, alternatively, better not spent at all.

Putting this all together, calculating the NPV of profits, incorporating the concept of expected return, implies the following formula:

$$NPV = \sum \{\text{Net Period Cash Flow}/(1+R)^T\}$$

where R is the rate of return and T is the number of time periods. The expected ROI of a project would consist of the NPV of all expected profits, using the above formula, less the NPV of all investments, using an identical formula.

IV. IMPACT OF INJUNCTIONS

The antitrust concern related to injunctions ties directly to the issue of bargaining power and whether allowing an IP holder, in particular an SEP holder, to threaten the use of an injunction distorts competition and allows the SEP holder to abuse the dominant position that may arise from their IP being included in the standard. In essence, the fear is that the implementer will have its feet held over the fire and be forced to pay higher royalty rates more immediately than otherwise would be the case. The FTC Complaint in Motorola concludes that "… manufacturers using Google's SEPs would be forced, by the threat of an injunction, to pay higher royalty rates…." Obviously, if this threat is to be avoided, these royalties must be paid before the application for injunction is addressed by a court. Otherwise, the risk would either be perfected or cease to exist. The flip side of the argument is that without a threat of injunction the implementer would have more time to negotiate and obtain a license at a lower royalty rate.

This article does not evaluate the assumption of higher royalty rates, but only the inherent delay caused by the lack of pressure to resolve the case when an injunction is not possible, for example because seeking an injunction has been deterred by the threat of antitrust repercussions.[19]

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18 This is quite similar to betting on a horse race, where an investor will bet on a "longshot," where the odds of winning are low, only if the expected return is particularly high.

19 While the issue of higher royalty rates stemming from the threat of an injunction may be subject to debate, in the absence of empirical analysis, I

A. Measuring the Cost of Delay

If we conclude that the result of a "no injunction" policy is to cause a delay in the outcome of licensing negotiations, then it is clear that this delay will have an adverse impact on the inventor's ROI calculation. Moreover, if we assume that this no-injunction policy impacts all investments under consideration – because the chilling effect of antitrust enforcement applies to all investments in innovation related to potential SEPs – then it becomes clear that some investments will not be made.

To illustrate this point, we consider a standard scenario in three phases. The first phase occurs when the inventor is considering an investment in innovation that will require an up-front investment in an innovation and invents the new technology. In the second phase invention is patented, published and adopted into a standard. In the third phase, the inventor licenses that invention over time and gains licensing revenues that are expected to offset the initial investment and make an adequate return.
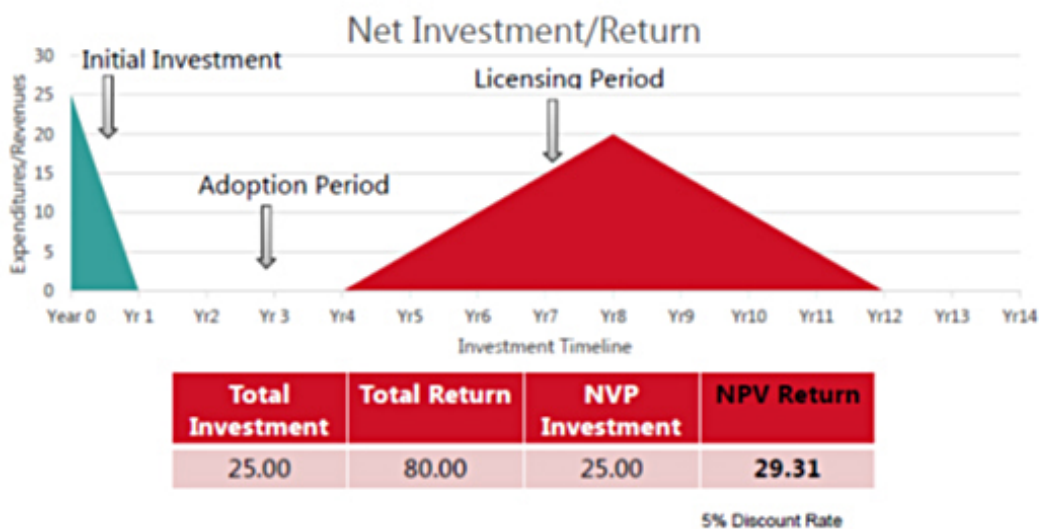
In the example below, the Phase 1 investment is $25 and is made in Yr. 1. The Phase 2 implementation period, in which no innovation expenditures are made and no licensing revenues are received, takes 3 years, from Yr. 2 – Yr. 4 inclusive. The licensing period we assume begins in Yr. 5, ramps up through Yr. 8, then declines through Yr. 11 to zero in Yr. 12. This is intended to capture, perhaps, the increasing levels of adoption followed by decreasing adoption as new technologies take over. We utilize a modest 5 percent rate of return.

For returns we assume as follows:

Year	1	2	3	4	5	6	7	8	9	10	11	12
Profit / (Investment) in $	(25)	0	0	0	5	10	15	20	15	10	5	0

Utilizing the 5 percent discount rate as the target rate of return, we would calculate the ROI on the $25 investment would be $29.31. This would represent a profit in excess of the discount rate of $4.31, or a return that is 17.24 percent above the target rate of return. Thus, an investment with this ROI profile would gain approval and be funded (unless all other potential investments had a higher expected ROI).

NPV 1- Injunction Possible

Net Investment/Return

Total Investment	Total Return	NVP Investment	NPV Return
25.00	80.00	25.00	29.31

5% Discount Rate

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assume that the high judicial standard for injunctive relief, and the equitable balance inherent in a Court's decision, imply that injunctions will not be granted inappropriately and, therefore, the parties will be able reasonably to evaluate, *ex-ante*, the risk value related to the possibility of an injunction. In other words, the serious offenders will know that they have a more significant risk of facing an injunction than the less serious or non-offenders.

In the second scenario, we assume only one change: that an injunction is not possible and that the lack of an injunction threat delays licensing revenues (on average for all licensees) by two years. We hold all else constant, assuming the same licensing revenues and the same distribution as in scenario 1, except that all licensing revenues are received two years later.
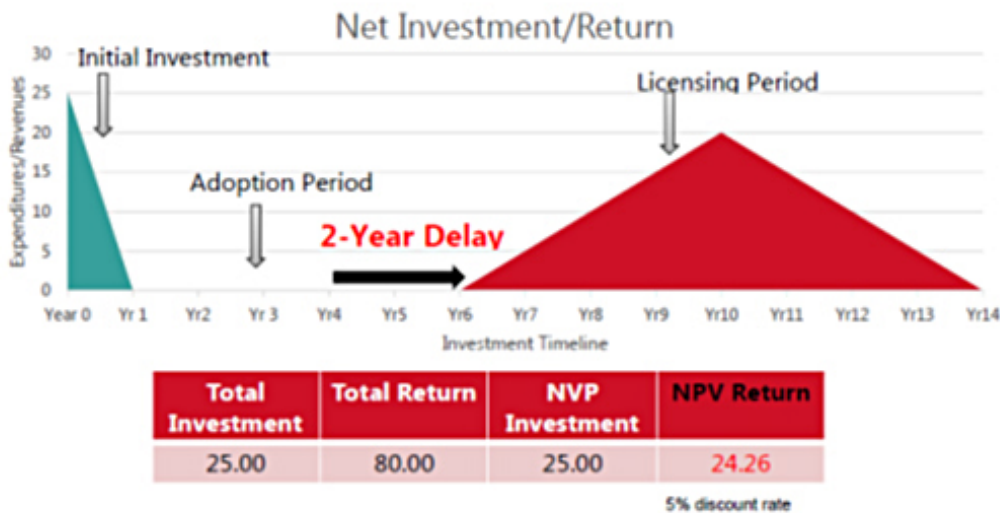
As a result of this delay, the NPV of the stream of revenues drops, and the expected ROI decreases to $24.26. This ROI is below the target rate of return and would not be funded.

While some of these assumptions may not be precise or even entirely realistic (for example, the target rate of return typically will be much higher), the model is not sensitive to the inputs, except to the degree to which the ROI is reduced. The results would always reflect that a delay caused by lack of access to injunctions would result in a decrease in the expected return on innovation investment and a reduction in innovation investment at the margins.

V. IMPACT OF POTENTIAL INTEREST AWARDS

One potential response to the above model is that an infringer who delays licensing will face the prospect of an interest award that will counteract the impact of that delay, making the inventor "whole" under the law and reestablishing the incentive to invest at the initial stages. A small degree of analysis reveals, however, that while an interest award might reduce the impact of delay on ROI (probably only modestly), it likely will never erase it. This is for a simple reason: the interest in awarded in patent suits is necessarily lower than the company's target rate of return. In other words, a court-ordered interest rate will never satisfy the return levels required by an inventor.

The company's target rate of return reflects the basis for a company's decision whether to invest. Thus, if the interest award matched the company's target rate of return, the time delay would have no impact on ROI. But as discussed below, Courts have normally awarded interest based either on a prime interest rate or a rate reflected by treasury bills (the "T-Bill rate"). This rate will never be sufficient. We know this because: (1) the T-Bill rate is nearly always below the Prime Rate; (2) the Prime Rate is always below a company's cost of capital; and (3) a company's target rate of return is always above its cost of capital. We discuss these concepts below.

A. Court-Ordered Interest in Patent Cases

With the idea of making a patent owner "whole" the patent law permits an award of prejudgment interest from the date of infringement through the date of judgment.[20] The patent statute provides that "Upon finding for the claimant the court shall award the claimant damages adequate to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by the infringer, together with interest and costs as fixed by the court."[21]

20 See 4 Annotated Patent Digest § 30:122.

21 34 U.S.C.A. §284.

The latter passage, "as fixed by the court," has placed considerable discretion in the hands of the court terms of the basis and amount of interest to be awarded. The Supreme Court has ruled that "[b]ecause … prejudgment interest should ordinarily be awarded absent some justification for withholding such an award, a decision to award prejudgment interest will only be set aside if it constitutes an abuse of discretion."[22]

A survey of cases reflects that the large majority of interest awards made in connection with patent damage awards are made either at a prime rate compounded annually, or at the Treasury Bill rate.[23] While there is some variance as a result of the discretion afforded judges, these two rate appear to predominate.

Over the past 20 years, the yield on the 10-year Treasury Bill has remained consistently above the prime interest rate.[24] This means that the Prime rate typically reflects a higher award of interest when made by a Court than the T-Bill rate.

B. Cost of Capital

As your parents frequently told you, money does not grow on trees. A company that wants to invest capital in innovation will have to pay for that money. There are two basic ways for a company to raise capital: debt and equity. Debt will be borrowed from a bank or private lender at rates that necessarily will be at or above the prime interest rate. This is so because the prime interest rate is defined as the rate at which a bank will lend money to its very best customers. So even the very best, least risky, companies will borrow money at the prime rate, or somewhere above that rate. And of course there are limits on the amount of money that a bank will lend and lenders require certain capital ratios to ensure that their lent money is secure.

A company can also raise capital by issuing equity, typically by issuing bonds. This alternative exists when a company does not have access to debt or when the cost of debt increases to a point that it is no longer economical to borrow. Thus, the cost of equity will virtually always exceed the cost of debt.

The average cost of a company's debt and equity is referred to as its cost of capital, and the Weighted Average Cost of Capital ("WACC") is the rate that a company is expected to pay on average to all its security holders. As a percentage measurement, this WACC will fall between the company's cost of debt and cost of equity. For example, if a company had one unit of debt capital at a three percent interest rate, and two units of bond equity at a six percent coupon rate, its WACC would be five percent. A company's WACC is dictated by the external market and not by management and companies with a similar risk profile will often have a similar WACC.

The NYU Stern School of Business maintains a helpful site that tracks the cost of debt, cost of equity and weighted average cost of capital for various sectors of industry.[25] A scan of these data reflect a few general rules: (1) the cost of equity always exceeds the cost of debt; (2) the overall cost of capital lies somewhere in between the cost of debt and the cost of equity; and (3) higher risk industries have higher costs of capital than lower risk industries (compare, e.g. banks (4.00 percent), to internet software (7.32 percent), to biotechnology drugs (9.25 percent)).

As a final point, a company's target rate of return must necessarily be above its cost of capital. No company would raise money with the expectation that it could earn only the cost of acquiring that money. A company will raise capital only on the expectation that it can gain a return that exceeds its cost of acquiring that capital, plus a return that adequately accounts for the risk that its investments (or at least some of the investments within its portfolio) will not yield a return.

C. Summary of Impact of Interest Awards

In reduced form, it is clear that awards of interest based on a Prime or T-Bill rate will necessarily be lower than a company's target rate of return. For example, an innovator with a WACC of 8 percent may have a target rate of return of 20 percent. This target rate of return

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22 *General Motors Corp. v. Devex Corp.*, 461 U.S. 648, 657, 103 S. Ct. 2058, 2063, 217 U.S.P.Q. 1185 (1983).

23 See 4 Annotated Patent Digest § 30:125.10, Annotated Patent Digest (Matthews), March 2017 Update. Note that state statutory interest rates, which often are higher, appear to be routinely denied in favor of prime or T-Bill rates.

24 See: http://www.fedprimerate.com/charts/prime_rate_vs_30-and-15-year-fixed-rate-mortgage_vs_10-year-treasury-yield.gif.

25 See: http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/wacc.htm (Cost of Capital by Sector), last updated January 2017.

would be built-in as the discount rate in NPV calculation of the company's analysis of ROI. An interest rate award at four percent (roughly the average of the Prime and T-Bill rates over the past 10 years) will only slightly offset the effect of any delay.

VI. CONCLUSION

A delay attributable to non-availability of injunctions, therefore, will have an adverse effect on the incentive to invest in innovation. The larger the delta between the interest rate awarded and the target rate of return, and the longer the delay, the bigger the effect on innovation incentives. More importantly, by including values for these variables: length of delay, target rate of return, and interest rate expectation, the impact on innovation incentive can be measured directly. Implicitly or explicitly, this analysis is conducted at the initiation of any investment decision, and the impact of a policy that foments delay should be very carefully considered before implementing those policies. To date, in the antitrust community, that analysis has not been adequately conducted.