Comparison Of Risk-Adjusted Returns On Investment In Reasonable Royalty Analysis

By Stevan Porter and Michelle Rakiec

Introduction

At its most basic, a reasonable royalty analysis begins with one simple question: How much better off is the accused infringer for using the patented technology? Perhaps due to their directness in addressing that issue, the "analytical approach" and variant techniques have been attractive methods in reasonable royalty inquiries for some time.

So-called "excess return" analyses like the analytical approach offer distinct intuitive appeal and quantitative frankness, and, in light of *Uniloc's* abolition of the 25% Rule, are almost necessarily taking on an increasingly prominent place in patent infringement damages analysis.[1] Their relevance may be reinforced not only by legal prescription, however, but also by rapid innovation's compression of product life-cycles.[2] Hyphenated product life-cycles can yield special acuity as to the financial returns generated by an accused product and thus enable enhanced precision in measuring an accused infringer's profit benefit due to patent use.

The following sections of this article describe one excess return methodology that may be progressively indicated in post-25% Rule reasonable royalty inquiries, particularly in the face of brisk innovation that may reduce product life-cycles.

Generalized Excess Returns Analysis

Since no later than *TWM v. Dura*, the so-called analytical approach has advised a straightforward comparison to understand an accused infringer's willingness to pay for patent access.[3] The approach involves comparison between the accused party's profit rate on sales of product embodying the patent property, on the one hand, and profit from product not embodying the patent, on the other. To the extent the patented product generates an income advantage, there is compelling evidence that the infringer would have been willing to pay an amount up to that incremental benefit for rights to the technology.

Intuition underlying excess return analysis is appealing, and an evaluation of excess returns can offer substantial insight as to a reasonable royalty. Nevertheless, information constraints sometimes present in patent infringement proceedings can weaken applicability of the approach. There may not be contemporaneous sales and profit information for two similar products differentiated by patent use, for instance. Disparities in product life-cycle stage, marketing support, manufacturing techniques and the like can complicate cross-product profit rate comparison even when contemporaneous sales data do exist. And relationships between products' profit returns can fluctuate across time, further muddying the picture.

Owing to such difficulties, variants of the "plain vanilla" analytical approach have been proffered and accepted as probative in reasonable royalty analysis. *TWM v. Dura* itself sanctioned comparison between an accused infringer's anticipated profit rate—that is, margins forecasted prior to accused product launch—and the accused product's actual

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1. *Uniloc USA, Inc. v. Microsoft Corp.*, 632 F.3d 1292 (Fed. Cir. 2011): "This court now holds as a matter of Federal Circuit law that the 25 percent rule of thumb is a fundamentally flawed tool… relying on the 25 percent rule…is thus inadmissible under Daubert…"

2. See, for example: Magnier, Kalaitzandonakes and Miller. "Product Life Cycles and Innovation in the US Seed Corn Industry." *Int. Food and Agribusiness Mgt. Rev.* 2010;13(3):17-36.

Economic foundations for associating innovation rates with product life-cycles can be found in: Klepper S. "Entry, Exit, Growth, and Innovation Over the Product Life Cycle." *Am Econ Rev.* 1996;86(3):562-583.

3. *TWM Mfg. Co. v. Dura Corp.*, 789 F.2d 895 (Fed. Cir. 1986).

experienced profit rate.[4] Actual profit incremental to that forecasted was considered instructive as to the patent's quantum of economic contribution.

Other analysts have commented on similarly derivative approaches, some of which have taken on exotic-sounding names like "Financial Indicative Running Royalty Model," that incorporate more advanced financial considerations.[5] These appear to have been developed with an eye toward broadening the analytical approach's applicability in cases of relative information scarcity. Of course, the very assumptions that may be necessary to broaden a methodological technique's service can also cause it to be so fragile that it cannot practically be deployed.[6] Indeed, the credibility of excess return models can be undermined in the face of information constraints when sensitivities to assumptions are high and those assumptions play a determinative role in results.

Excess Risk-Adjusted Returns on Investment

A variant of the analytical approach, which examines relative risk-adjusted returns on investment ("RROI"), may function well even when stubborn information constraints are in place. When the total life of the accused product has passed—that is, up-front investments in development and marketing all the way through profit harvesting and extinction have occurred—a comprehensive understanding of the product's financial returns is accessible.[7] Those returns can then be compared with a relatively broad set of comparator projects' returns, accordingly broadening the available avenues for evaluating patent contribution.

Although it is certainly not always the case that accused product sales are exhausted when the damages analysis occurs, the fact set is doubtless becoming increasingly common as product life-cycles undergo attenuating pressure from brisk innovation. Short product life-cycles increase the likelihood that a patent infringement damages study will be undertaken after the accused product has been extracted from the market or is at least nearing the end of its marketing term. When the full financial profile of a product's existence is known (or estimable), the experience can be reduced to two important figures: up-front expenses and total lifetime profit or free cash flows. Taken together, these figures indicate the total financial return generated by the product for the alleged infringer.

Understanding the anticipated financial return of a product launch, or any project, is a critical element of firms' decision-making, and evaluating returns ex post is important in measuring the success of projects.

Firms will only undertake projects when the associated return is anticipated to be positive; a company could hardly be expected to regularly invest in projects it believes will lose money. In this regard, firms typically contemplate project investment by considering net present value ("NPV"). NPV distills up-front expenses, lifetime profits or cash flows, and risk into a single, present-period dollar figure. If a project will cost $100 up-front, is expected to generate $75 in free cash flow at the end of each year for two years, and has risk such that expected cash flows must be discounted by 10 percent per year, then the math looks like this:

$$NPV = -\$100 + (\$75 / 1.10) + (\$75 / 1.10^2)$$

The NPV is accordingly $30. Since the value is positive, the project would presumably be undertaken. Notably, this $30 NPV figure can be converted to a percentage of the up-front costs associated with the project. Dividing the project's NPV by the present-value up-front cost equals 30 percent, or the total risk-adjusted return on investment. As this example shows, if the RROI of an undertaking is greater than the applicable discount rate, then capital is effectively deployed in that project since the discount rate reflects a firm's cost of capital. If the cost of investment is 10 percent and the return from investment is 30 percent, then the investment generates an economic gain.

RROI can be calculated in this way for both forward-looking decision-making or for comparing investment success across projects ex post when actual data take the place of forecasted data. It also can be computed for a firm's overall operations in much the same way

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4. *TWM Mfg. Co. v. Dura Corp.*, 789 F.2d 895 (Fed. Cir. 1986): "The special master, citing Georgia-Pacific and Tektronix, used to so-called 'analytical approach', in which she subtracted the infringer's usual or acceptable net profit from its anticipated net profit realized from sales of infringing devices."

5. Epstein RJ, Marcus AJ. "Economic Analysis of the Reasonable Royalty: Simplification and Extension of the *Georgia-Pacific* Factors." *J Pat Trademark Off Soc*. July 2003;85(7):555-583.

6. Damodaran, Aswath. *Damodaran on Valuation 2nd ed*. Hoboken, NJ: John Wiley & Sons; 2006:Ch.12(415).

7. In an era of truncated product life-cycles, even those accused products not yet removed from the market at the time of the damages evaluation may be subject to relatively precise sales and profit forecasting since their remaining time on the market may be short.

it is calculated for individual projects or product experiences. Indeed, the sum of all a firm's net returns from projects over a given period of time constitutes firm-wide RROI for that period. RROI generated by the accused product in excess of comparators can point to a measure of economic benefit obtained through use of the patent property.

RROI analysis accordingly affords the opportunity for simple comparison between accused product lifetime returns and firm-wide (or relevant comparator product or project) returns even when certain informational constraints that might have limited traditional analytical approach methodology are imposed. For instance, if reliable accused product forecasts or contemporaneous comparator product sales data are unavailable, or if forecasts or comparators cover only a portion of accused product's scope or timing, then RROI analysis may offer insight where other approaches cannot.

Mechanically, an RROI comparison involves calculation of the accused product's risk-adjusted return on investment along with at least one comparator's return. The quantum by which the accused product's return value exceeds the comparator's provides an indication of incremental patent access benefit. For instance, if an accused product RROI is 50 percent on an up-front investment base of $200, while a comparator's RROI is 30 percent, the incremental return is 20 percentage points. The question then becomes: How much would the accused infringer have been willing to pay for those additional 20 points? "But for" patent access, the accused product's RROI can be hypothesized to approximate 30 percent (or $60, since the investment base is $200). With the patented technology, the RROI is $40 greater (*i.e.*, 50 percent * $200 = $100, and $100-$60 = $40). Accordingly, an indicated royalty value of about $40 arises.

Important Considerations

Such analysis is most instructive when a few conditions are met. First, the better the comparator(s), the better the analysis. The more an accused product is part and parcel with the firm's broader operations and product portfolio, the more valuable the insights provided by comparing RROI for the accused product and the firm or other products will be. One reason for this is that an accused product which is substantially dissimilar from other firm offerings may embody a different risk profile. While different levels of risk will not preclude RROI analysis, relative risk and discount rates

will require close attention for purposes of meaningful comparison. Additionally, returns from a product that a firm is not accustomed to marketing may reflect learning costs, dissimilar demand characteristics or other dynamics not found in comparators. A careful RROI analysis can account for these differences, although certain assumptions may be necessary. In the event assumptions are needed, multiple RROI comparisons can help triangulate on a value by diminishing the overall impact of any single assumption.

Second, comparing an accused product with broader firm-wide returns works best when the firm's financial condition has been steady over the period of consideration. A firm's corporate strategy, played out in mergers, acquisitions or divestitures, can have important implications for capital structure and thus costs of capital and returns that do not directly reflect the risks of its internal projects. Large variations in capital structure across the study's time period could cause relationships between product RROI and firm-wide RROI to be disrupted. Similarly, comparison of accused product and comparator product returns should consider whether significant differences existed between the two products' financing.

Third, the necessary data must be available or must be estimable with sufficient precision as to minimize any approximations' effects on the results of analysis. Since comparison of two ratios involves multiple moving parts, poor data quality can cause the study to become unwieldy. Data needed for analysis include not only the quantum of investment and cash flows but also their timing and possibly the capital sources for investment and working capital. Furthermore, if sales of the accused product have generated "halo" effects like enhanced marketability, revenue or profit of other company offerings, then those effects either must be incorporated quantitatively or considered separately.

Even once these preconditions are satisfied, results still must be properly interpreted and couched in qualitative understanding. While a traditional analytical approach inquiry may reactively be translated as an upper bound to a reasonable royalty, comparison of RROI ratios may not be instructive only to the licensee's maximum payment. In fact, selected comparators may themselves represent supra-normal returns on investment due to factors not found in the accused product's experience, thereby "inflating the baseline." More similar comparators lead to a cleaner analysis, which simplifies interpretation. However, even with imperfections in the data or comparators,

RROI comparison can provide indicative—if not specific—reasonable royalty guidance.

RROI comparison can thereby serve as an economically rational, scientifically grounded and case-specific foundation from which to derive a "starting point" royalty that is then adjusted through conventional *Georgia-Pacific* analysis.[8] It is in this regard that such analytical technique can serve the role once occupied by the late 25% Rule in reasonable royalty determination.

Conclusion

Both judicial urging and market dynamics suggest the relevance of the analytical approach and its variants—including RROI comparison—is greater than ever. As an economically meaningful technique to calculating a starting point royalty, RROI comparison is especially pertinent in a post-25% Rule era marked by strict evidentiary requirements and shortened product life-cycles. ∎

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8. *Georgia-Pacific Corp. v. United States Plywood Corp.*, 318 F.Supp. 1116 (S.D.N.Y. 1970), modified, 446 F.2d 295 (2d Cir. 1970), cert. denied, 404 U.S. 870 (1971).

As stated in *Uniloc*: "...one major determinant of whether an expert should be excluded under Daubert is whether he has justified the application of a general theory to the facts of the case."