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Use Of The 25 Per Cent Rule In Valuing IP



BY ROBERT GOLDSCHIEDER, JOHN JAROSZ AND CARLA MULHERN*

Introduction

As the importance of intellectual property ("IP") protection has grown, so has the sophistication of tools used to value it. Discounted cash flow,¹ capitalization of earnings,² return on investment,³ Monte Carlo simulation⁴ and modified Black-Scholes option valuation methods⁵ have been of great value. Nonetheless, the fairly simple "25 Per Cent Rule" ("Rule") is over 40 years old and its use continues. Richard Razgaitis has called it the "most famous heuristic, or rule of thumb, for licensing valuation."⁶

The Rule suggests that the licensee pay a royalty rate equivalent to 25 per cent of its expected profits for the product that incorporates the IP at issue. The Rule has been primarily used in valuing patents, but has been useful (and applied)

in copyright, trademark, trade secret and know-how contexts as well. Since the Rule came into fairly common usage decades ago, times, of course, have changed. Questions have been raised on whether the factual underpinnings for the Rule still exist (i.e., whether the Rule has much positive strength) such that it can and should continue to be used as a valid pricing tool (i.e., whether the Rule has much normative strength).

In this paper, we describe the Rule, address some of the misconceptions about it and test its factual underpinnings. To undertake the latter, we have examined the relationship between real-world royalty rates and real-world industry and company profit data. In general, we have found that the Rule is a valuable tool (rough as it is), particularly when more complete data on incremental IP benefits are unavailable. The Rule continues to have a fair degree of both "positive" and "normative" strength.

History of the Rule

One of the authors — Robert Goldscheider⁷ — did, in fact, undertake an empirical study of a series of commercial licenses in the late 1950s.⁸ This involved one of his cli-

ents, the Swiss subsidiary of a large American company, with 18 licenses around the world, each having an exclusive territory. The term of each of these licenses was for three years, with the expectation of renewals if things continued to go well. Thus, if any licensee "turned sour," it could promptly be replaced. In fact, however, even though all of them faced strong competition, they were either first or second in sales volume, and probably profitability, in their respective markets. These licenses therefore constituted the proverbial "win-win" situation. In those licenses, the intellectual property rights transferred included: a portfolio of valuable patents; a continual flow of know-how; trademarks developed by the licensor; and copyrighted marketing and product description materials. For those licenses, the licensees tended to generate profits of approximately 20 per cent of sales on which they paid royalties of 5 per cent of sales. Thus, the royalty rates were found to be 25 per cent of the licensee's profits on products embodying the patented technology.⁹

1. D.J. Neil, *Realistic Valuation of Your IP*, 32 *les Nouvelles* 182 (December 1997); Stephen A. Degnan, *Using Financial Models to Get Royalty Rates*, 33 *les Nouvelles* 59 (June 1998); Daniel Burns, *DCF Analyses in Determining Royalty*, 30 *les Nouvelles* 165 (September 1995); Russell L. Parr & Patrick H. Sullivan, *Technology Licensing: Corporate Strategies For Maximizing Value* 233-46 (1996); Richard Razgaitis, *Early-Stage Technologies: Valuation and Pricing* 121-58 (1999).

2. Robert Reilly & Robert Schweihs, *Valuing Intangible Assets* 159-66 (1999).

3. Parr and Sullivan, pp. 223-33.

4. V. Walt Bratic et al., *Monte Carlo Analyses Aid Negotiation*, 33 *les Nouvelles* 47 (June 1998); Razgaitis, pp. 160-77.

5. Dr. Nir Kossovsky & Dr. Alex Arrow, *TRRU™ Metrics: Measuring The Value and Risk of Intangible Assets*, 35 *les Nouvelles* 139 (September 2000); F. Peter Boer, *The Valuation of Technology: Business and Financial Issues In R&D*, 302-06 (1999).

6. Razgaitis, p. 96.

7. See, e.g., Richard S. Toikka, *In Patent Infringement Cases, the 25 Per Cent Rule Offers a Simpler Way to Calculate Reasonable Royalties*. After *Kumho Tire*; *Chances are the Rule Faces Challenges to its Daubert Reliability*, *Legal Times* 34 (August 16, 1999).

8. Robert Goldscheider, *Litigation Backgrounder for Licensing* 29 *les Nouvelles* 20, 25 (March 1994); Robert Goldscheider, *Royalties as Measure of Damages* 31 *les Nouvelles* 115, 119 (September 1996).

*Robert Goldscheider, *Chairman, International Licensing Network*.

John Jarosz and Carla Mulhern, *Principals, Analysis Group/Economics*.

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Mr. Goldscheider first wrote about the Rule in 1971.¹⁰ He noted, however, that in some form it had been utilized by valuation experts prior to that.¹¹ For example, in 1958, Albert S. Davis, the General Counsel of Research Corporation, the pioneer company in licensing university-generated technology, wrote:

*If the patents protect the Licensee from competition and appear to be valid the royalty should represent about 25% of the anticipated profit for the use of the patents.*¹²

A form of the Rule, however, existed even decades before that. In 1938, the 6th Circuit Court of Appeals, in struggling with the problem of determining a reasonable royalty, heard expert testimony to the effect that:

*... ordinarily royalty rights to the inventor should bear a certain proportion to the profits made by the manufacturer and that the inventor was entitled to a 'proportion ranging from probably ten per cent of the net profits to as high as thirty per cent,' which should be graduated by the competitive situation.*¹³

Regardless of its origins and author(s), the concept has aided IP valuers for many years.

Explanation of the Rule

In its pure form, the Rule is as follows. An estimate is made of the licensee's expected profits for the product that embodies the IP at issue. Those profits are divided by the expected net sales over that same period to arrive at a profit rate. That resulting profit rate, say 16 per cent,

is then multiplied by 25 per cent to arrive at a running royalty rate. In this example, the resulting royalty rate would be 4 per cent. Going forward (or calculating backwards, in the case of litigation), the 4 per cent royalty rate is applied to net sales to arrive at royalty payments due to the IP owner. The licensee/user receives access to the IP, yet the price (i.e., royalty) it pays will still allow it to generate positive product returns.

The theory underlying this *rule of thumb* is that the licensor and licensee should share in the profitability of products embodying the patented technology. The a priori assumption is that the licensee should retain a majority (i.e., 75 per cent) of the profits because it has undertaken substantial development, operational and commercialization risks, contributed other technology/IP and/or brought to bear its own development, operational and commercialization contributions.

Focus of the Rule is placed on the licensee's profits because it is the licensee who will be using the IP.¹⁴ The value of IP is, for the most part, de-

pendent upon factors specific to the user (e.g., organizational infrastructure).¹⁵ IP, like any other asset, derives its value from the use to which it will be put.¹⁶

Focus also is placed on *expected* profits because the license negotiation is meant to cover forthcoming and on-going use of the IP.¹⁷ It is the expected benefits from use of the IP that will form the basis for the licensee's payment of an access fee. Past, or sunk costs, typically should be ignored because a decision is being made about the future.¹⁸ That is, what going-forward price results in the product being a sound investment? Any product in which the projected marginal benefits exceed the projected marginal costs should be undertaken.

Focus is placed on *long-run* profits because access to IP often will afford the user more than just immediate benefits.¹⁹ Focusing on a single month or single year typically will not properly represent the forthcoming and on-going benefits of the IP. In many occasions, it takes some period of time for a new company or new product to obtain its operational efficiencies and a steady state. Furthermore, up-front investments often need to be amortized over the economic life of a product (not just its starting years) in order to evaluate properly the economic returns to the product.

14. In the reasonable royalty determination in *Standard Manufacturing Co., Inc. and DBP, Ltd. v. United States*, both sides' experts focused on the patent holder's profit rate. The Court took exception noting that defendant's profits were a "more realistic and reliable estimation of profits which were to [the plaintiff] by the infringement since they are derived from the actual sale of [the infringing product]." *Standard Manufacturing Co., Inc. and DBP, Ltd. v. United States*, 42 Fed. Cl. 748, 767 (1999). The Court noted that a variety of federal courts held the same, citing *Mahurkar v. C.R. Bard, Inc., Davol Inc. and Bard Access System, Inc.* 79 F.3d 1572, 1580 (Fed. Cir. 1996) (district court did not err in calculating portion of award when it initially used infringer's profit rate); *TWM Manufacturing Co., Inc. v. Dura Corp. and Kidde, Inc.* 789 F.2d 895, 899 (Fed. Cir. 1986) (affirming district court's computation of damages based on infringer's profits); *Trans-World Manufacturing Corp. v. Al Nyman & Sons, Inc. and Al-Site Corporation*, 750 F.2d 1552, 1568 (among factors considered in determining reasonable royalty was the infringer's anticipated profit from invention's use, and evidence of infringer's actual profits probative of anticipated profit.)

15. Baruch Lev, "Rethinking Accounting," Financial Executive Online Edition, March/April 2002 Cover Story, <http://www.feimaggable/articles/3-4-2002.coverstory.cfm>.

16. In some circumstances, the licensor's profits may provide some guidance. That is, those profits may, in part, reflect his/her appetite for a license and those profits may serve as a surrogate for missing or unknown licensee profits.

17. Razgaitis, p. 108. *Fonar Corporation and Dr. Raymone V. Damadian v. General Electric Company and Drucker & Genuth, MDS, P.C. d/b/a South Shore Imaging Associates*, 107 F.3d 1543 (Fed. Cir. 1997). *Hanson v. Alpine Valley Ski Area, Inc.*, 718 F.2d 1075 (Fed. Cir. 1983).

18. Richard Brealey & Stewart C. Myers, *Principles of Corporate Finance*, 123 (6th Ed. 2000).

19. Razgaitis, p. 108.

9. Robert Goldscheider, *Technology Management: Law/Tactics/Forms* § 10.04 (1991).

10. Robert Goldscheider & James T. Marshall, *The Art of Licensing - From the Consultant's Point of View*, 2 *The Law and Business of Licensing* 645 (1980).

11. Robert Goldscheider, *Technology Management: Law/Tactics/Forms* §10.04 (1991).

12. Albert S. Davis, Jr., *Basic Factors to be Considered in Fixing Royalties*, Patent Licensing, Practising Law Institute, 1958.

13. *Horoath v. McCord Radiator and Mfg. Co. et al.*, 100 F.2d 326, 335 (6th Cir. 1938).

Finally, the Rule places focus on fully-loaded profits because they measure the (accounting) returns on a product. Gross profits represent the difference between revenues and manufacturing costs. Gross profits, however, do not account for all of the operating expenses associated with product activity. Those costs include marketing and selling ("M&S"), general and administrative ("G&A") and research and development ("R&D") expenses. Some of those costs are directly associated with product activity, others are common across product lines.

"Fully-loaded" profits account for the fact that a variety of non-manufacturing overhead expenses are undertaken to support the product activity, even though they may not be directly linked to certain volume or activity levels. And such costs are often driven by product activity. Failure to take into account these operating expenses may lead to an overstatement of the returns associated with the sales of a product.

According to Smith and Parr:

*Omission of any of these [overhead] expenses overstates the amount of economic benefits that can be allocated to the intellectual property. In a comparison of two items of intellectual property, the property that generates sales, captures market share, and grows, while using less selling and/or support efforts, is more valuable than the one that requires extensive advertising, sales personnel, and administrative support. The economic benefits generated by the property are most accurately measured after considering these expenses.*²⁰

According to Parr:

The operating profit level, after consideration of the nonmanufacturing operating expenses, is a far more accurate determinant of the contribution of the intellectual property. The royalty for specific intellectual property must reflect the industry and economic environment in which the property is used.

20. Gordon V. Smith & Russell L. Parr, *Valuation of Intellectual Property and Intangible Assets*, 362 (2nd Ed. 1994).

Figure 1
25 Per Cent Rule Illustration - Revenue Side

	No Patent	Revenue Enhancing Patent	25 Per Cent Rule
Revenues	\$100	\$110	
Cost of Sales	\$40	\$40	
Gross Margin	\$60	\$70	
Operating Expenses	\$30	\$30	
Operating Profits	\$30	\$40	$(\$40 \times 25\%) / \$110 = 9.1\%$

*Some environments are competitive and require a lot of support costs which reduce net profits. Intellectual property that is used in this type of environment is not as valuable as intellectual property in a high-profit environment where fewer support costs are required. A proper royalty must reflect this aspect of the economic environment in which it is to be used. A royalty based on gross profits alone cannot reflect this reality.*²¹

Fully-loaded profits may refer to either pretax profits or operating profits. Pretax profits are calculated as revenues minus: 1) cost of goods, 2) non-manufacturing overhead expenses and 3) other income and expenses. The historical relationships underlying the 25 Per Cent Rule, however, have in fact been between royalty rates and operating profits.²² The latter is revenues minus: 1) cost of goods sold and 2) non-manufacturing

21. Parr, pp. 170-71.

overhead. Not subtracted out is other income and expenses. In many cases, these two measures of profit are quite similar; in other cases, they are not. Given that the value of intellectual property is independent of the way in which a firm (or project) is financed,²³ from a theoretical point of view, the operating profit margin is the correct measure to use.

Suppose that firm A and firm B each have one piece of identical intellectual property and each manufactures and sells one product that embodies that intellectual property. The only difference between the firms is that firm A is heavily financed by debt and firm B is not. Firm A would then have significant

22. Robert Goldscheider, *Technology Management: Law/Tactics/Forms* § 10.04 (1991), Razgaitis, p. 103.

23. Brealey & Myers, Chapters 2 & 6.

Figure 2
25 Per Cent Rule Illustration - Cost Side

	No Patent	Cost Reducing Patent	25 Per Cent Rule
Revenues	\$100	\$100	
Cost of Sales	\$40	\$30	
Gross Margin	\$60	\$70	
Operating Expenses	\$30	\$30	
Operating Profits	\$30	\$40	$(\$40 \times 25\%) / \$100 = 10\%$

interest expenses to deduct from its operating profits resulting in pretax profit levels below operating profit levels. Firm B does not have any interest expense to deduct. Thus, on an operating profits basis, firm A and firm B would have equivalent profit margins; but, on a pretax basis, firm B would be considerably more profitable. Application of the 25 Per Cent Rule to operating profits would result in the same royalty rate in the case of firm A and firm B; whereas, application of the Rule to pretax profits would result in a lower royalty rate for firm A. Since the underlying intellectual property and the products embodying it are identical for both firms, one would expect to obtain the same resulting royalty rate. Thus, application of the Rule to operating profits would yield the appropriate results.

Illustration of the Rule

IP, like any asset, can be (and is) valued using three sets of tools. They are often referred to as the Income Approach, the Market Approach and the Cost Approach.²⁴ The Income Approach focuses on the returns generated by the user owing to the asset at issue. The Market Approach focuses on the terms of technology transfers covering comparable assets. The Cost Approach focuses on the ability (and cost) to develop an alternative asset that generates the same benefits.

The 25 Per Cent Rule is a form of the Income Approach. It is particularly useful when: 1) the IP at issue comprises a significant portion of product value and/or 2) the incremental benefits of the IP are otherwise difficult to measure.

IP is often priced based on the enhanced revenues and/or reduced

costs that it generates versus the next best alternative.²⁵ The extent of that excess (or incremental value), holding all else constant, may form the upper bound for the appropriate price.²⁶

The 25 Per Cent Rule can be (and is) applied when the licensee reports product line revenue and operating profit data for the product encompassing the IP. It need not be the case that the IP at issue be the only feature driving product value. (In fact, underlying the Rule is the understanding that a variety of factors drive such value.) That is why only a portion of the profits — 25 per cent — is paid in a license fee. And that is why the appropriate profit split may be much less than 25 per cent of product profit.

The Rule also can be (and is) applied when the licensee does not report profits at the operating profit level. (In fact, there are very few instances in which firms report *product* profits at such a level.) As long as product revenues and costs of goods sold are reported (i.e., gross margins are available), the accountant or economist can (and does) allocate common (or non-manufacturing overhead) costs to the product line in order to derive operating profits.

The illustration in Figure 1 shows how the Rule is applied.

A patent may enhance or improve product revenues through increased prices (though that may occur with a reduction in volume²⁷) or through increased volume. The second column in Figure 1 illustrates the impact of a revenue-enhancing patent. Applying the 25 Per Cent Rule to the expected operating profits results in a royalty rate of 9.1 per cent.

A patent may also reduce product costs. Figure 2 illustrates that by

applying the 25 Per Cent Rule to such expected operating profits results in a royalty rate of 10 per cent.

Valuators (and courts) who use the 25 Per Cent Rule occasionally split the expected or actual cost (i.e., incremental) savings associated with the IP at issue.²⁸ According to Degnan and Horton's survey of licensing organizations who base a royalty payment on projected cost savings, almost all of them provide for the licensee paying 50 per cent or less of the projected savings.²⁹ The apparent reasoning is that such incremental benefits should be shared.

Splitting the cost savings by 75/25, however, may not be consistent with the 25 Per Cent Rule. In Figure 2, the incremental (or additional) cost savings are \$10. Splitting that amount (\$10) by 25 per cent, results in a running royalty rate of 2.5 per cent ($\$10 \times 25\% / \100), which is 1/16 of the new "product" profits, rather than 1/4. Applying the Rule to *incremental* savings (or benefits) results in a running royalty that is lower than that dictated by the 25 Per Cent Rule. It may under compensate the IP owner. The 25 Per Cent Rule, in its pure sense, should be applied to fully loaded operating profits, not to already computed incremental benefits.

Several courts have (implicitly) recognized the problem of splitting incremental benefits. In *Ajinomoto*, the district court wrote:

Although the 'licensing rule of

27. Paul A. Samuelson & William D. Nordhaus, *Economics* 47 (17th ed. 2001). *Crystal Semiconductor v. Tritech Microelectronics International, Inc.*, 246 F.3d 1336 (Fed. Cir. 2001).

28. *Standard Manufacturing Co., Inc. and DBP, Ltd. v. United States*, 42 Fed. Cl. 748, 764-765 (1999). *Ajinomoto Inc. v. Archer-Daniels-Midland Co.*, No. 95-218-SLR, 1998 U.S. Dist. LEXIS 3833, (D. Del. March 13, 1998). *Tights, Inc. v. Kayser-Roth Corp.* 442 F. Supp. 159 (M.D.N.C. 1977). *Dow Chemical Co. v. United States*, 226 F.3d 1334 (Fed. Cir. 2000) Razgaitis, pp. 117-18.

29. Stephen A. Degnan & Corwin Horton, A Survey of Licensed Royalties, 32 *les Nouvelles* 91, 95 (June 1997).

24. Shannon P. Pratt et al., *Valuing a Business: The Analysis and Appraisal of Closely Held Companies*, 149-285 (3rd Ed. 1996); Shannon P. Pratt et al., *Valuing Small Businesses and Professional Practices*, 507-524 (2nd Ed. 1993); Gordon V. Smith & Russell L. Parr, *Valuation of Intellectual Property and Intangible Assets*, 127-136 (2nd Ed. 1994); Robert Reilly & Robert Schweih, *Valuing Intangible Assets* 118-203 (1999).

25. Paul E. Schaafsma, An Economic Overview of Patents, 79 *Journal of the Patent Trademark Office Society* 251, 253 (April 1997).

26. Jon Paulsen, Determining Damages for Infringements, 32 *les Nouvelles* 64 (June 1997).

thumb' dictates that only one-quarter to one-third of the benefit should go to the owner of the technology ... given [defendant's] relatively low production costs and its belief that the sale of [the product] would increase [convoeyed sales], the court concludes that [defendant] would have been willing to share all of the benefit with [plaintiff] and that [plaintiff] would have settled for nothing less.³⁰

Furthermore, in *Odetics*, the Federal Circuit wrote that "one expects [an infringer] would pay as much as it would cost to shift to a non-infringing product."³¹ And in *Grain Processing*, the Federal Circuit adopted the lower court's reasoning that an infringer "would not have paid more than a 3% royalty rate. The court reasoned that this rate would reflect the cost difference between (infringement and non-infringement)."³²

To the extent that incremental benefits (i.e., cost savings) have already been calculated, any profit split applied to those may not be consistent with the 25 Per Cent Rule. In theory, the licensee should be willing to accept a royalty that is close to 100 per cent (not 25 per cent) of the cost savings.

Application of the Rule

The 25 Per Cent Rule is used in actual licensing settings and litigation settings. Over the past three decades, a variety of commentators have noted its widespread use.³³ In their survey of licensing executives, which was published in 1997, Degnan and Horton found that roughly 25 per cent (as a sheer coincidence) of licensing organizations used the 25 Per Cent Rule as a starting point in negotiations.³⁴ They also found that roughly 50 per cent of the organizations used a "profit sharing analysis" (of which

the 25 Per Cent Rule is a variant) in determining royalties.³⁵

A dramatic employment of the Rule occurred in the early 1990's in the course of negotiations between two major petrochemical companies, respectively referred to as "A" and "B". A was a leading manufacturer of a basic polymer product ("X"), with annual sales of over \$1 billion. Its process ("P-1") required the purchase from B of an intermediate compound ("Y") in annual volumes of over \$400 million. A owned a patent on its P-1 process to manufacture X, which would expire in 7 years.

A developed a new process to make X ("P-2") to which it decided to switch all its production of the polymer concerned, essentially for cost reasons, but also because P-2 was more flexible in producing dif-

ferent grades of X. P-2 did not involve the need to purchase Y from B. Rather than simply abandon P-1, however, A decided to offer B the opportunity to become the exclusive worldwide licensee of P-1. The argument was that such a license could be profitable to B because it was a basic producer of Y (which A had been purchasing at a price containing a profit to B), and B could thus manufacture X on a cost-effective basis. Another attraction of such a license would be that it could compensate B for the loss of its sales of Y to A.

B was interested to take such a license to P-1, and offered to pay a 5 per cent running royalty on its sales of polymer made in accordance with P-1. A decided to test the reasonableness of this offer by applying the 25 Per Cent Rule, a good portion of which analysis could employ 20-20 hindsight. A understood the market for X, past and present, and had what it considered to be realistic projections for the future. A had made such a study because it intended to remain in the market for X, utilizing P-2. A was also able to calculate pro-forma profitability to B by subtracting B's margin on its sales of Y to A for use in P-1.

This analysis revealed that B should be able to operate as a licensee under A's P-1 patent at an operating profit of 44 per cent. A shared its fully documented analysis with B and asked "please tell us if we are wrong." If not, A would expect to receive an 11 per cent royalty based on B's sales of X using A's patented P-1 process, based on the 25 Per Cent Rule, rather than the 5 per cent that was offered.

Following study of A's work product, B (somewhat surprised and reluctantly) agreed with A's conclusion. B accepted these terms because B would still make a 33 per cent operating profit under the license, which was higher than B's normal corporate operating profit rate. Over the remaining life of its P-1 patent, this additional 6 per cent royalty amounted to added profit,

33. Robert E. Bayes, Pricing the Technology, in *Current Trends In Domestic and International Licensing* 369, 381 (1977). Marcus B. Finnegan & Herbert H. Mintz, Determination of a Reasonable Royalty in Negotiating a License Agreement: Practical pricing for Successful Technology Transfer, 1 *Licensing Law and Business Report* 1, 19 (June-July 1978). Lawrence Gilbert, Establishing a University Program, 1 *The Law and Business of Licensing* 506, 267 (1980). Robert Goldscheider & James T. Marshall, The Art of Licensing-From the Consultants Point of View, 2 *The Law and Business of Licensing* 645 (1980). H.A. Hashbarger, Maximizing Profits as a Licensee, 2 *The Law and Business of Licensing* 637 (1980). Alan C. Rose, Licensing a "Package" Lawfully in the Antitrust Climate of 1972, 1 *The Law and Business of Licensing* 267 (1980). Yoshio Matsunaga, Determining Reasonable Royalty Rates, — *les Nouvelles* 216, 218 (December 1983). The Basics of Licensing: Including International License Negotiating Thesaurus, *les* 13 (1988). Edward P. White, *Licensing: A Strategy For Profits*, 104 (1990). Martin S. Landis, Pricing and Presenting Licensed Technology, 3 *The Journal of Proprietary Rights* 18, 20-21 (August 1991). Wm. Marshall Lee, Determining Reasonable Royalty, *les Nouvelles* 124 (September 1992). David C. Munson, Licensing Technology: A Financial Look at the Negotiation Process, 78 J.P.T.O.S. 31, 42 n.21 (January 1996). Schaafsma, p. 251. Munson, Figuring the Dollars in Negotiations, 33 *les Nouvelles* 88 (June 1998). Robert Reilly & Robert Schweih, *Valuing Intangible Assets* 193-94, 503 (1999).

34. Degnan and Horton, p. 92.

35. Degnan and Horton, p. 92.

30. *Ajinomoto Inc. v. Archer-Daniels-Midland Co.*, No. 95-218-SLR, 1998 U.S. Dist. LEXIS 3833, at 44 n.46 (D. Del. March 13, 1998).

31. *Odetics, Inc. v. Storage Technology Corp.* 185 F.3d 1259, 1261 (Fed. Cir. 1999).

32. *Grain Processing Corp. v. American Maize-Products Co.*, 185 F.3d 1341, 1345 (Fed. Cir. 1999).

in fact, of several hundred million dollars to A.

In *Standard Manufacturing Co., Inc. and DBP, Ltd. v. United States*,³⁶ the U.S. Court of Claims employed a two-step approach to determining a litigated reasonable royalty. The first step involved an estimation of an initial or "baseline" rate. The second step entailed an adjustment upward or downward depending on the relative bargaining strengths of the two parties with respect to each of the (15) factors described in *Georgia-Pacific Corp. v. United States Plywood Corporation*.³⁷

The *Standard Manufacturing* Court found the application of the 25 Per Cent Rule to be an appropriate method for determining the "baseline" royalty rate. And in support of its use of the 25 Per Cent Rule, it cited defendant's expert's (Robert Goldscheider's) considerable practical experience with the Rule.³⁸ The Court also noted that a number of other federal courts had recognized that the 25 Per Cent Rule is a "rule of thumb" typical in the licensing field.³⁹ For example, the 25 Per Cent Rule has been useful in situations where a party analyzes its own IP for management or tax reasons, or as part of a merger, acquisition or divestiture. The Rule has been employed

36. *Standard Manufacturing Co., Inc. and DBP, Ltd. v. United States*, 42 Fed. Cl. 748 (1999 U.S. Claims LEXIS 11).

37. *Georgia-Pacific Corp. v. United States Plywood Corporation*, 318 F. Supp. 1116 (S.D.N.Y. 1970) modified and aff'd, 446 F.2d 295 (2d Cir. 1971).

38. *Standard Manufacturing Co., Inc. and DBP, Ltd. v. United States*, 42 Fed. Cl. 748, 763-64 (1999 U.S. claims LEXIS 11).

39. *Ajinomoto Co., Inc. v. Archer-Daniels-Midland Co.*, No. 95-218-SLR, 1998 U.S. Dist. LEXIS 3833, at 052 n.46 (D. Del. March 13, 1998); *W.L. Gore & Associates, Inc. v. International Medical Prosthetics Research Associates, Inc.*, 16 USPQ 2d 1241 (D. Ariz. 1990); *Fonar Corporation and Dr. Raymond V. Damadian v. General Electric Company and Drucker & Genuth MDS, P.C. d/b/a/South Shore Imaging Associates*, 107 F.3d 1543 (Fed. Cir. 1997). See also, Donald S. Chisum, *Chisum On Patents*, 7 § 20-03[3] [iv], 20-188, 20-189 (1993 and Supp. 1997). *Fromson v. Western Litho Plate & Supply Co.*, 853 F.2d 1568 (Fed. Cir. 1988).

Figure 3
Licensed Royalty Rates (Late 1980's - 2000)

Industry	No. of Licenses	Minimum Royalty Rate	Maximum Royalty Rate	Median Royalty Rate
Automotive	35	1.0%	15.0%	4.0%
Chemicals	72	0.5%	25.0%	3.6%
Computers	68	0.2%	15.0%	4.0%
Consumer Goods	90	0.0%	17.0%	5.0%
Electronics	132	0.5%	15.0%	4.0%
Energy & Environment	86	0.5%	20.0%	5.0%
Food	32	0.3%	7.0%	2.8%
Healthcare Products	280	0.1%	77.0%	4.8%
Internet	47	0.3%	40.0%	7.5%
Machine/Tools	84	0.5%	25.0%	4.5%
Media & Entertainment	19	2.0%	50.0%	8.0%
Pharma & Biotech	328	0.1%	40.0%	5.1%
Semiconductors	78	0.0%	30.0%	3.2%
Software	119	0.0%	70.0%	6.8%
Telecom	63	0.4%	25.0%	4.7%
Total	1,533	0.0%	77.0%	

Figure 4
Industry Profit Rates (1990 - 2000)

Industry	No. of Companies	Wtd. Avg. Operating Margin
Automotive	100	5.0%
Chemicals	126	11.1%
Computers	459	6.9%
Consumer Goods	544	11.0%
Electronics	425	8.8%
Energy & Environment	767	12.2%
Food	240	7.3%
Healthcare Products	433	14.8%
Internet	781	-13.5%
Machine/Tools	174	7.9%
Media & Entertainment	360	10.6%
Pharma & Biotech	534	16.4%
Semiconductors	207	17.4%
Software	534	18.8%
Telecom	627	14.2%
Total	6,309	10.4%

as follows:

- the remaining economic life of the property being valued, which may be shorter than the remaining legal life of any patents that may be part of the analysis, is estimated;

- the operating profit rate expected during each of such years is projected and 25 per cent (or another rate considered appropriate in accordance with the Rule) is applied to each of the annual figures;

- a discounted cash flow analysis is performed, using an appropriate discount rate to convert future flows into a current year lump sum amount.

The rationale for this appraisal methodology is that the plus or minus 25 per cent apportionment is the price of a reasonable royalty that the appraising party would be willing to pay for a license for this property, at that point in time, assuming that it *did not* own it.

The Rule, whether used in litigation or non-litigation settings, provides a fairly rough tool to be augmented by a more complete royalty analysis. The precise "split" of profits should be adjusted up or down depending on the circumstances of each case and relative bargaining positions of the two parties.⁴⁰ If a licensor comes to the bargaining table armed with a relatively strong arsenal of assets, it may be entitled to 25 per cent, or perhaps more, of the pie. Correspondingly, a weak arsenal of assets supports a lower split. In determining the appropriate split of profits, the factors established in the *Georgia-Pacific* case are quite helpful.⁴¹ In fact, many of the courts that have used the Rule in litigation

40. Robert Goldscheider, *Litigation Backgrounder for Licensing*, 29 *les Nouvelles* 20, 25 (March 1994).

41. *Georgia Pacific v. United States Plywood Corp.*, 318 F. Supp. 1116 (S.D.N.Y. 1970) modified and aff'd, 446 F.2d (2d Cir. 1971), the court set forth 15 factors that should be considered in determining a reasonable royalty. See also, Stephen A. Degnan, *Using Financial Models to Get Royalty Rates*, 33 *les Nouvelles* 59, 60 (June 1998).

Figure 5
Licensee Profits (1990 - 2000)

Industry	No. of Companies	Licensee Wtd. Avg. Operating Margin
Automotive	4	6.3%
Chemicals	6	11.6%
Computers	20	8.0%
Consumer Goods	23	16.2%
Electronics	30	8.8%
Energy & Environment	14	6.6%
Food	6	7.9%
Healthcare Products	80	17.8%
Internet	14	1.0%
Machine/Tools	8	9.4%
Media & Entertainment	3	-304.5%
Pharma & Biotech	76	25.4%
Semiconductors	16	29.3%
Software	19	33.2%
Telecom	28	14.1%
Total	347	15.9%

Figure 6
Royalty Rates and Licensee Profits

Industry	Median Royalty Rate	Average Operating Profits	Royalty as % of Profit Rate
Automotive	5.0%	6.3%*	79.7%
Chemicals	3.0%	11.6%	25.9%
Computers	2.8%	8.0%	34.4%
Consumer Goods	5.0%	16.2%	30.8%
Electronics	4.5%	8.8%	51.3%
Energy & Environment	3.5%	6.6%	52.9%
Food	2.3%	7.9%	28.7%
Healthcare Products	4.0%	17.8%	22.4%
Internet	5.0%	1.0%	492.6%
Machine/Tools	3.4%	9.4%	35.8%
Media & Entertainment	9.0%	-304.5%*	-3.0%
Pharma & Biotech	4.5%	24.5%	17.7%
Semiconductors	2.5%	29.3%	8.5%
Software	7.5%	33.2%	22.6%
Telecom	5.0%	14.1%	35.5%
Total	4.3%	15.9%	26.7%

* Fewer than 5 observations in data set.

have done so in the context of evaluating *Georgia-Pacific* factor #13 — “the portion of the realizable profit that should be credited to the invention as distinguished from non-patented elements, the manufacturing process, business risks, or significant features or improvement added by the infringer.”

Justification for the Rule

The Rule, based on historical observations, provides useful guidance for how a licensor and licensee should consider apportioning the benefits flowing from use of the IP. Somewhat untenable (and unrealistic) is guidance that either the licensor or licensee is entitled to all of the returns. No bargain would be reached. Though a 50:50 starting split has a ring of a “win-win” situation, in fact, the evidence suggests otherwise.

Richard Razgaitis has identified 6 reasons for why a 25/75 (starting) split makes sense.⁴² First, “that’s the way it is.” Numerous licensors and licensees have agreed to a 25/75 split. It is, according to him, the industry norm. Second, typically 75 per cent of the work needed to develop and commercialize a product must be done by the licensee. Third, “he who has the gold makes the rules.” Licensees have considerable leverage because of the numerous investment alternatives open to them. Fourth, a 3-times payback ratio is common. Such is obtained by a licensee retaining 75 per cent of the return by investing 25 per cent. Fifth, technology is the first of the 4 required steps of commercialization. The others are making the product manufacturable, actually manufacturing it and selling it. Finally, the ratio of R&D to profits is often in the range of 25 to 33 per cent.

Criticisms of the Rule

Despite (or perhaps because of) its widespread use, the 25 Per Cent Rule has been criticized in several ways. First, it has been characterized as a “crude tool” and as “arbitrary.” According to Paul Schaafsma:

Figure 7
Distribution of Profit Splits - Licensee Profits

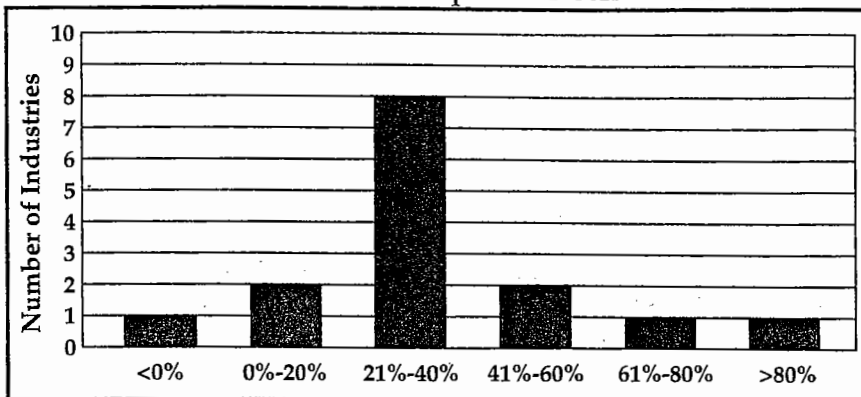
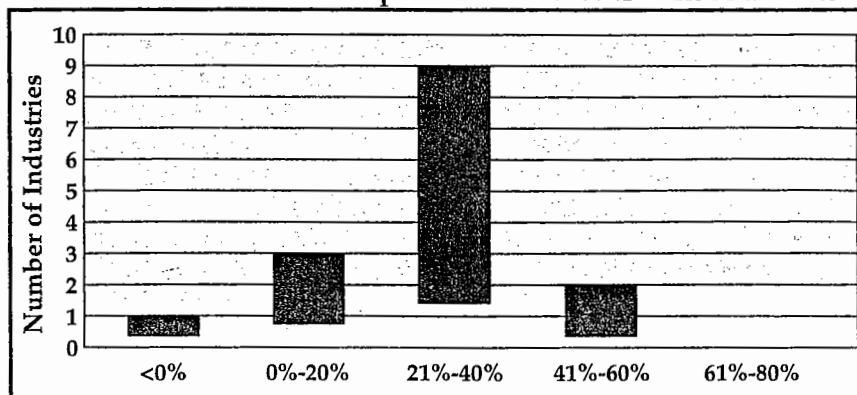


Figure 8
Royalty Rates and Successful Licensee Profits

Industry	Median Royalty Rate	Average Operating Profits	Royalty as % of Profit Rate
Automotive	5.0%	11.3%*	44.1%
Chemicals	3.0%	12.0%	25.0%
Computers	2.8%	8.3%	33.3%
Consumer Goods	5.0%	18.4%	27.1%
Electronics	4.5%	13.1%	34.3%
Energy & Environment	3.5%	9.2%	38.1%
Food	2.3%	14.2%	15.8%
Healthcare Products	4.0%	18.5%	21.6%
Internet	5.0%	10.4%	48.0%
Machine/Tools	3.4%	9.6%	35.0%
Media & Entertainment	9.0%	-13.5%*	-66.7%
Pharma & Biotech	4.5%	25.8%	17.4%
Semiconductors	2.5%	31.9%	7.8%
Software	7.5%	25.1%	21.4%
Telecom	5.0%	14.5%	34.5%
Total	4.3%	18.8%	26.6%

* Fewer than 5 observations in data set.

Figure 9
Distribution of Profit Split - Successful Licensee Profits



42. Razgaitis, pp. 99-102.

A typical 'rule of thumb' ... is for the licensor to command 25% of the profit. While this ... attempts to link the value of the patent to the profitability of commercial exploitation, because it does not relate to the value and degree to which the patent can exclude substitute products and therefore command a patent profit, it is little better than [an] 'industry norm.' ... Patented products add to [] economic profit the patent profit tied into the ability of the patent to further exclude substitutes. ... the portion of the total profit can vary greatly even within a given industry. Adding these values together, and multiplying by an arbitrary fraction to derive the value of a patent is an exercise in arbitrary business analysis.⁴³

According to Mark Berkman:

[The 25 Per Cent Rule does] not take into account specific circumstances that will determine the actual value of the patent at issue. No consideration is given to the number or value of economic alternatives or the incremental value of using the patented technology over other viable alternatives.⁴⁴

And Richard Toikka has questioned whether, in litigation contexts, the Rule is reliable under *Daubert v. Merrill Dow Pharmaceuticals*⁴⁵ and *Kumho Tire Co. v. Carmichael*.⁴⁶

The Rule, however, is one of many tools. Ultimate royalty rates often are higher or lower than 25 per cent of fully-loaded product profits, depending upon a host of quantitative and qualitative factors that can and should affect a negotiation (or litigation). Even critics of the Rule have conceded that, despite its "crudeness", it retains "widespread endorsement and use".⁴⁷ Part of that is due to its simplicity and part of that is due to self-fulfilling prophecy (because of its simplicity, it has become a norm and, because it is a norm, it is used over and over

again). Moreover, the Rule is not intended to be used in isolation. There are a variety of other tools that should be employed in any valuation assignment.

A second criticism is that the Rule is "indefinite". That is, should 25 per cent be applied to gross profits, operating profits, or some other measure of profits? According to William Lee:

The '25% rule' is sometimes a little indeterminate as to whether it refers to 25% of net profit or 25% of gross profit (if you represent the prospective licensor, then of course you apply the 25% against anticipated gross profit; if you represent the prospective licensee, you contend that the 25% applies to net profit!). Note that the indefiniteness as to whether the '25% rule' speaks to net profit or gross profit brings it somewhat in line with the rule of thumb of 1/3 to 1/4 of profit as a reasonable royalty as expressed in [some publications].⁴⁸

In fact, there is no indefiniteness. The Rule is based on historical observations of the relationships between royalty rates and operating margins.⁴⁹ That is, rates often are 25 per cent of operating margins. And it is anticipated operating margins, according to the Rule, against which the profit split figure should be applied. Applying it to another level of profits may be valid and useful in certain contexts, but such an application is not grounded in the concepts and facts surrounding the 25 Per Cent Rule.

Third, some analysts believe that there is no indefiniteness and that, in fact, 25 per cent is meant to be applied to a licensee's gross profits.⁵⁰ (Gross profits, again, represents the difference between revenues and cost of goods sold. No deduction for non-manufacturing overhead costs is included.) They criticize that ap-

plication because gross margin ignores a host of other relevant costs. Such analysts have concluded that while the 25 Per Cent Rule is "simple", "popular" and "easy to understand", it "should be avoided."⁵¹ Focusing on gross profits ignores "too many important factors."⁵²

This criticism is specious, however, because the 25 Per Cent Rule is an allocation (or splitting) of operating profits. Explicit consideration is given to all of the costs, including non-manufacturing overhead, that are needed to support a product or are driven by the product. The Rule is not a split of gross profits.

Furthermore, in their survey of licensing executives, Degnan and Horton found that royalty rates tend to be 10 to 15 per cent of gross profits.⁵³ In other words, royalty rates divided by gross margin is substantially lower than 25 per cent.

In *P&G Co. v. Paragon Trade Brands*,⁵⁴ the court cited testimony that the Rule "is not really even useful as a general guide for deriving an appropriate royalty rate."⁵⁵ In part because of that, the court wrote that it "will consider the [25%] Rule-of-Thumb analysis in determining the royalty rate, [but] this approach will not receive substantial weight."⁵⁶ Nonetheless, in its final royalty analysis, the court did write that "the [25%] 'Rule-of-Thumb' analysis provides an additional confirmation of the reasonableness of a royalty rate of 2.0%."⁵⁷

51. Parr, p. 169.

52. Parr, pp. 169-171.

53. Degnan and Horton, p. 95.

54. *The Procter & Gamble Company v. Paragon Trade Brands*, 989 F. Supp. 547 (D. Del. 1997).

55. *The Procter & Gamble Company v. Paragon Trade Brands*, 989 F. Supp. 547, 595 (D. Del. 1997).

56. *The Procter & Gamble Company v. Paragon Trade Brands*, 989 F. Supp. 547, 595 (D. Del. 1997).

57. *The Procter & Gamble Company v. Paragon Trade Brands*, 989 F. Supp. 547, 596 (D. Del. 1997). The expert's "Rule-of-Thumb" analysis obtained a range of 1.975 Per cent to 2.6 Per cent.

48. Russell L. Parr, *Intellectual Property Infringement Damages: A Litigation Support Handbook* 171 (1993).

49. Robert Goldscheider, *Litigation Background for Licensing*, 29 *les Nouvelles* 20, 25 (March 1994).

50. Parr, p. 169. Berkman, p. 16. Gregory J. Battersby & Charles W. Grimes, *Licensing Royalty Rates: 2002 Edition* 4-5 (2002).

43. Schaafsma, pp. 251-52.

44. Mark Berkman, Valuing Intellectual Property Assets for Licensing Transactions, 22 *The Licensing Journal* 16 (April 2002).

45. 509 U.S. 579 (1993).

46. 526 U.S. 137 (1999).

47. Schaafsma, p. 252.

Fourth, it has been asserted that the Rule is inappropriate to use in those instances in which the IP at issue represents a small fraction of the value residing in a product. The authors are sympathetic to the criticism. However, both the concepts underlying the Rule as well as the empirics supporting it recognize the flexibility of the Rule. The precise split should be adjusted up or down depending on a host of factors, including the relative contribution of the IP at issue. Relatively minor IP often should (and does) command a split of profits lower than relatively important IP.

A final criticism of the Rule is that it provides a rough or imprecise measure of incremental benefits. A complete (and accurate) incremental analysis is preferred. None of the authors disagree. The Rule often is an adjunct to other valuation methods. And it is particularly useful when helpful data on incremental value are unavailable or limited. The 25 Per Cent Rule is a starting point to apportioning the profits. William Lee, both a critic and proponent of the Rule, has noted:

...in most instances the rule-of-thumb of approximately 1/4 to 1/3 of the licensee's anticipated profit to go to the licensor is a good starting place for negotiations. Whether or not anticipated profit is expressed during negotiations, the effect of royalty on profitability should certainly be in the minds of the negotiators on both sides. My experience, and apparently the experience of others, tends to show that most successful licensing arrangements end with royalty levels in this range. However, like all rules-of-thumb, circumstances alter cases.⁵⁸

Empirical Test of the Rule

To test the validity of the 25 Per Cent Rule, we attempted to compare royalty rates from actual licensing transactions with the expected long-run profit margins of the products that embody the subject IP. We were able to gather royalty rate data

from thousands of actual licensing transactions.⁵⁹ Because of the confidentiality of these licenses, along with a lack of access to expected (or actual) product profit rates, we were unable to undertake a direct comparison of product profit and royalty rates. We, therefore, examined profit data for two surrogates — licensee profits and “successful” licensee profits.

With the first proxy, we examined the profits for those firms in each industry that were involved in licensing transactions. We used those profit rates as a proxy for expected long-run product profits.

With the second proxy, we examined “successful” licensee profits. We defined as “successful” those licensees in the top quartile in their respective industries in terms of profitability. Presumably, these may more accurately reflect the kind of profit rates that are generated by products that embody valuable IP.

For both proxies, we compared median (or middle of the range) industry royalty rates to weighted average profit rates. Although we considered comparing median royalty rates to median profit rates, for some industries, median profit rates differed substantially from weighted average profit rates due, at least in part, to the presence of a significant number of small, start-up firms earning negative profit margins. Given that the negative margins earned by start-ups may not be indicative of expected long-run profits, we examined weighted average profit margins (which gives these negative profit margins relatively less weight).

Royalty Rates

To obtain information regarding royalty rates observed in actual licensing transactions, we used

information provided by RoyaltySource.com, a searchable database of intellectual property sale and licensing transactions, containing information spanning the late 1980s to the present. From RoyaltySource, we obtained summaries of all available licensing transactions involving the following fifteen industries:

- Automotive
- Chemicals
- Computers
- Consumer Goods
- Electronics
- Energy and Environment
- Food
- Healthcare Products
- Internet
- Machines/Tools
- Media and Entertainment;
- Pharmaceuticals and Biotechnology
- Semiconductors
- Software and
- Telecom⁶⁰

These licenses involved a variety of payment terms — lump-sum, fee per unit and running royalties on sales. For ease of comparison, we confined our analysis to the 1,533 licenses that involved running royalties on sales.⁶¹

Figure 3 shows on an industry-by-industry basis, the information we obtained from RoyaltySource. We have reported minimum, maximum and median royalty rates. The median royalty rate across all industries was 4.5 per cent, though median rates ranged from a low of 2.8 per cent to a high of 8.0 per cent.

Industry Profits

We obtained financial information for the fifteen industries included

60. RoyaltySource database tracks licensing transactions for other industries as well. The industry categories used here were developed by the authors and are somewhat different than the internal classification system used by RoyaltySource.

61. Data available to us from RoyaltySource.com did not allow us to easily convert lump-sum or the per unit royalties into royalties per dollar, which terms were needed for testing our hypothesis. As a result, we excluded those observations from our analysis. We have no a priori reason to think, however, that exclusion of such data biases our results.

59. We were unable to gather (or evaluate) information from proposed transactions that were never consummated. Presumably, in those instances, IP sellers were asking for more than IP buyers were willing to pay. We have no a priori reason to think, however, that exclusion of such “data” biases our results.

58. Lee, p. 2073.

in our analysis from Bloomberg. The Bloomberg database provided financial data for the period 1990 through 2000 for 6,309 companies included in the fifteen industries under consideration. Figure 4 reports both the average operating profit margin for each of the industries.

Licensee Profits

Because total industry profits are not a particularly close match to royalty rates covering a limited number of companies, for our first analysis, we examined profitability data for only those companies that were identified as licensees in the licensing transactions database. Figure 5 reports weighted average operating profit margins for each of the industries.

Royalty Rates and Licensee Profits

A comparison of royalty rates and licensee profits provides some support for use of the 25 Per Cent Rule as a tool of analysis. Across all (15) industries, the median royalty rate as a percentage of average licensee operating profit margins, as shown in Figure 6, was 26.7 per cent. Excluding the media & entertainment and internet industries, the range

among the remaining industries varies from 8.5 per cent for semiconductors to 79.7 per cent for the automotive industry.

In spite of the variation across industries, the majority of industries had ratios of royalty rates to licensee profit margins of 21 to 40 per cent. Figure 7 shows a distribution of the ratios across industries.

Successful Licensee Profits

We also examined profitability data for "successful licensees." We defined those to be licensees with profit rates in the top quartile for each industry. We used these profit rates as a further-refined surrogate for projected product profit rates.

Royalty Rates and Successful Licensee Profits

A comparison of royalty rates and successful licensee profits appears to, again, provide some support for use of the 25 Per Cent Rule. As shown in Figure 8, across all industries, the median royalty rate as a percentage of average operating profits was 22.6 per cent. Excluding the media and entertainment industry, for which only limited data were available, the ratios range from a low of 7.8 per cent for the semicon-

ductor industry to a high of 48.0 per cent for the internet industry.

Figure 9 reports the ratio distribution across industries and shows that, again, the majority of industries have ratios of royalty rates to successful licensee profit margins in the 21 to 40 per cent range.

Conclusions

An apportionment of 25 per cent of a licensee's expected profits has become one, of many, useful pricing tools in IP contexts.⁶² And our empirical analysis provides some support for its use.

A comparison of royalty rates with two proxies for expected long-run product profits (namely, licensee profits and "successful" licensee profits) yields royalty to profit ratios of 27 per cent and 23 per cent, respectively.

Although the data support the Rule generally, there is quite a variation in results for specific industries. As this variation makes clear, the Rule is best used as one pricing tool and should be considered in conjunction with other (quantitative and qualitative) factors that can and do affect royalty rates.

62. Razgaitis, p. 118.