

Reasonable (Not Rational) Royalties

A Statistical Abstract

What are the key factors that courts consider to determine reasonable royalties as provided under 35 U.S.C. 284? It is somewhat daunting to attempt to rationalize an area of the law in which opposing expert witnesses regularly disagree by a factor of 1000% to 2000%. Do courts consider all relevant factors or do they merely take the simple average of the opposing experts? Yes and yes. This note is meant to provide a statistical summary of recent research that I conducted on the caselaw of reasonable royalties. I statistically describe the conclusions in the caselaw and offer some evidence of potentially important relationships between financial characteristics of the patentee and infringer and the resulting royalty.

Court Methodology

The Federal Circuit Court of Appeals describes the process of determining a reasonable as one that appears similar to the ‘hypothetical’ methodology of determining a fair market value of a privately held business:

Lacking adequate evidence of an established royalty, the court was left with the judge-created methodology described as “hypothetical negotiations between willing licensor and willing licensee.”¹

¹*Fromson v. Western Litho Plate & Supply Co.*, 853 F.2d 1568, 1574 (Fed. Cir. 1988).

Further on in the opinion, the Court describes how this methodology works:

The methodology encompasses fantasy and flexibility; fantasy because it requires a court to imagine what warring parties would have agreed to as willing negotiators; flexibility because it speaks of negotiations as of the time infringement began, yet permits and often requires a court to look to events and facts that occurred thereafter and that could not have been known to or predicted by the hypothesized negotiators.²

Not only does the Court openly deny any absolute scientific method to the determination of a reasonable royalty, but it also strongly advocates the use of ex post data in the process.

The Statistics

More than 150 cases concerning reasonable royalties were reviewed that covered the period from 1973 to 1998. Of these cases, 136 rendered opinions about appropriate reasonable royalties in either dollar amount or as a percentage of the infringer's sales. Of these 136 cases, four concerned claims against the United States government, 36 rendered opinions only in dollar terms and 96 rendered opinions as a percentage of the infringer's sales. The average and median value for these 96 cases was 12.1 % and 10.0%, respectively, in a range of. 75% to 42.2%.

²Id. at 1575. See also *LAM Inc. v. Johns-Manville*, 718 F.2d 1056, 1068 (Fed. Cir. 1983) (affirming admission of post-infringement growth rates to form a basis for lost profits for lower sales growth) citing *Sinclair Refining Co. v. Jenkins Petroleum Process Co.*, 289 U.S. 689, 697-98 (1933) and *Trans World Mfr. Corp. v. Al Nyman & Sons, Inc.*, 750 F.2d 1552, 1556-58 (Fed. Cir. 1984) (the exclusion of evidence of infringer's actual ex post profits is held to be error).

Overall it would appear that reasonable royalty cases are increasing in frequency and that royalty cases are increasingly being determined as a percentage of sales. See Chart I for a histogram of cases. Chart II shows the historical trend of the rates in such cases and rates appear to be slightly rising over time.

The three factors that appear to influence the reasonable royalty the most are the patentee's profitability, the infringer's profitability and the midpoint of the range suggested by the two parties' opposing experts. A correlation analysis for each variable reveals that each relationship is statistically significant at a 99% confidence level. For the 28 cases that disclosed the patentee's profitability, the reasonable royalty represented an average of 48% of the patentee's rate of profitability. In those 28 cases, however, the court did not necessarily determine the royalty based on the patentee's profitability. Chart III shows the relationship between the reasonable royalty and the patentee's profitability, showing a definite linear, upper trend. Chart IV shows that there may a trend over time to narrow the range within which the reasonable royalty varies as a percentage of the patentee's profitability to a range of 10% to 50%.

Similarly, in the, 16 cases that the court disclosed the infringer's profitability.~but did not base the royalty on that factor), the reasonable royalty was an average 62% of the infringer's rate of profitability. See Chart V for a representation of this relationship. In those 13 cases when the court specifically mentioned basing the rate on a share of the infringer's profitability (awarding an average of 5 7% of the infringer's profitability), the average reasonable royalty was 15.5 %. (In the seven cases in which the court's determination was based on the patent's cost savings for the infringer, the average royalty was 10.6%.) In contrast, when the court based the reasonable royalty on established royalty rates, the average royalty was 9.4%. Chart VI shows that the range for the reasonable royalty as a percentage of the infringer's profitability to vary has narrowed in recent years within 10% to 60%.

Perhaps as an example of statistical myopia, one of the most accurate ways to project the court's opinion is to take the average of the experts' opposing opinions. For the 28 opinions that cited opposing opinions, the royalty was an average of 43.5% of the total of the two opinions. Perhaps patent case judges are more like Solomon than many of their opinions would have us believe. See Chart VII for a representation of this relationship.

The patents in dispute were categorized roughly into industry groupings as follows:

	<u>Cases</u>	<u>Low</u>	<u>High</u>	<u>Average</u>
<u>Industry</u>				
Automotive	9	.75%	30%	8.75%
Commercial	29	1.50%	33%	10.0%
Consumer	21	1.00%	23%	10.6%
Industrial	14	.75%	25%	12.7%
Medical	19	1.5%	42%	16.0%
Oil Drilling	4	6.0%	23%	11.75%

For example, royalties in the medical industry appear to be significantly different from those in the automotive industry.

Also interesting are the factors that failed to show significant distinctions. In sixteen of the cases, the royalty was determined by the jury for an average of 13.7% as opposed to the average of 13% for the 52 cases determined by a judge. Similarly, cases that awarded enhanced damages did not show an average significantly greater than those cases which failed to render enhancements. Of the 96 cases, 26 cases offered an average of 139% enhancement for an average

royalty of 13.4% as compared to 11.5% for those cases that declined enhancement.

On the basis of numbers alone, any conclusions would be tentative at best.

Statistical analysis of a large body of caselaw is like trying to describe a three dimensional object in one dimension. While this remains a good attempt to describe some interesting relationships between the data, it is inherently limited by the suspect quality of the data's representativeness. Few cases reported the same data underlying their opinions and some courts define key terms differently. For example, many courts define profitability on the basis of incremental accounting but others insist on net profits. Many cases represent a review of lower courts' decisions that are only being challenged for selected issues underlying the royalty determination. Certainly few opinions based on jury determinations provide much discussion of the key factors that determined the rate. Thus while this analysis attempts to offer some distinctions from factors that appear to significantly influence the determination of a reasonable royalty, it would be over reaching to try to contend that the underlying sample is necessarily representative of the process or that even the sub-samples of cases that were drawn to offer the distinctions are necessarily representative of the 96 case population.

Chart I: Frequency of Reasonable Royalty Opinions

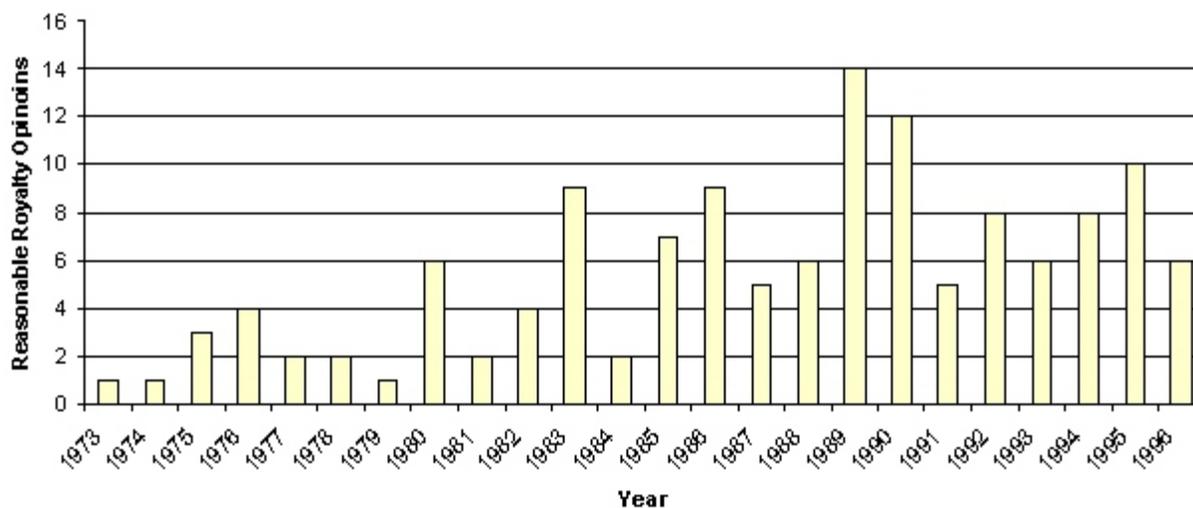


Chart II: Reasonable Royalties Over Time

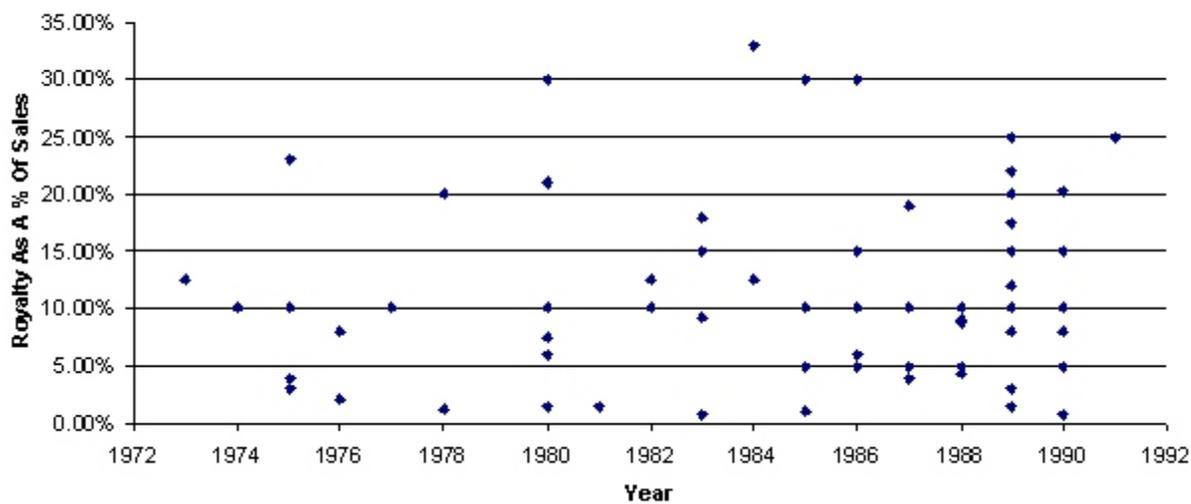


Chart III: Reasonable Royalty v. Patentee's Profitability

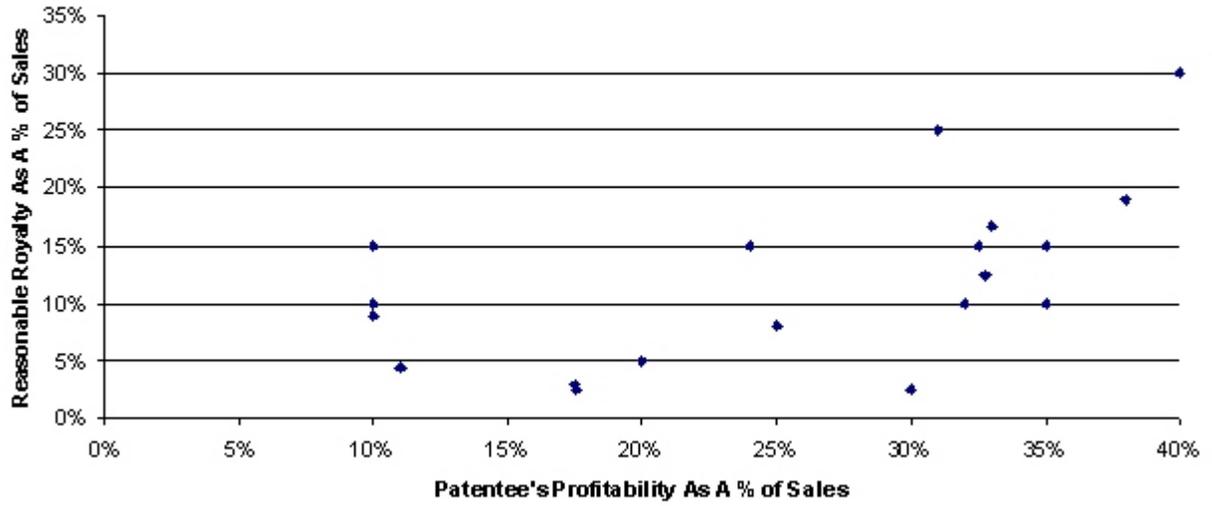


Chart IV: Reasonable Royalty As a % of Patentee's Profitability

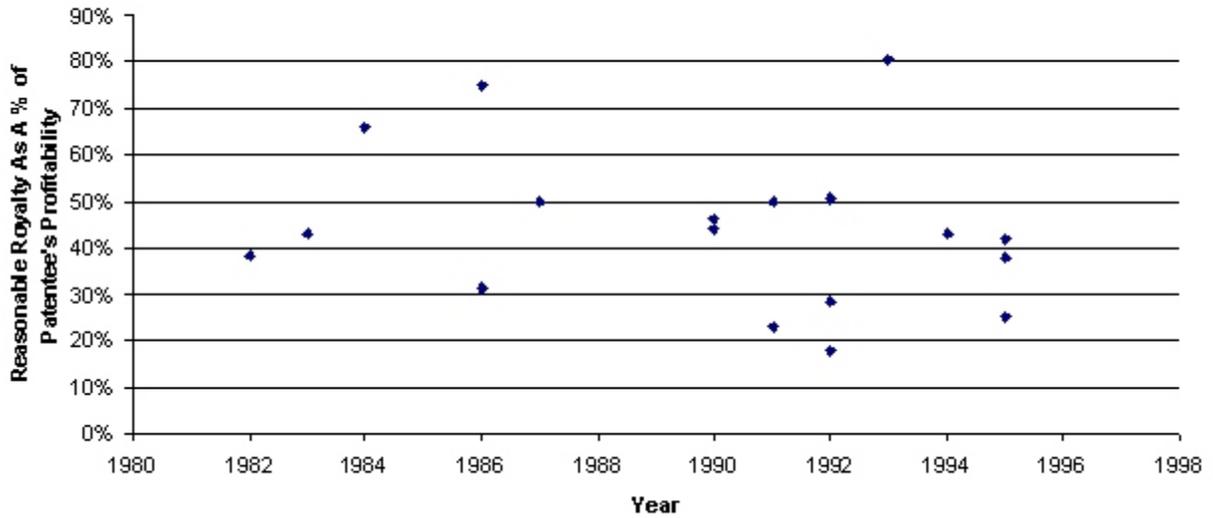


Chart V: Reasonable Royalty vs. Infringer's Profitability

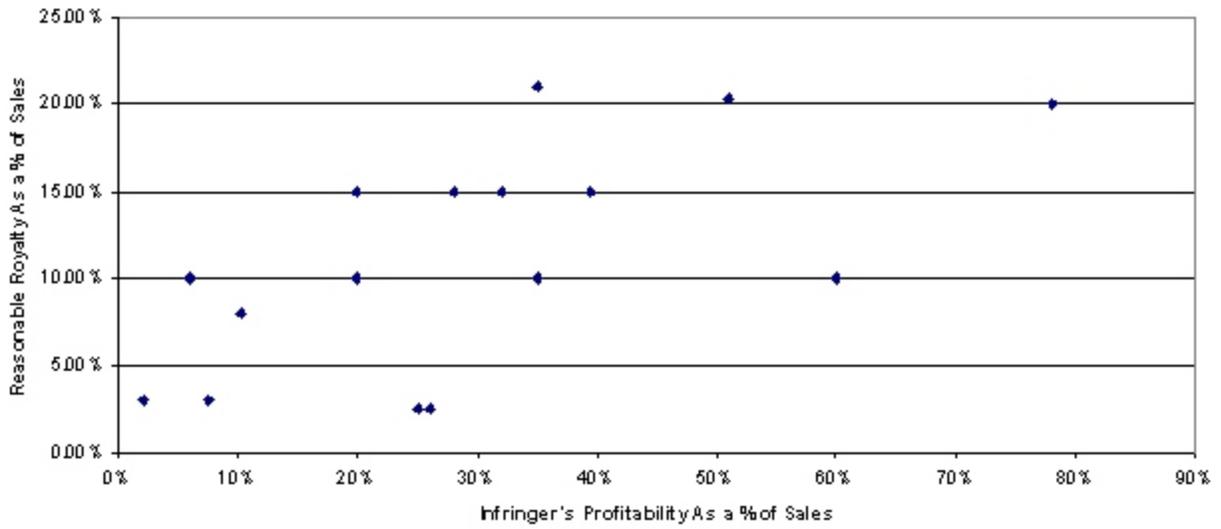


Chart VI: Reasonable Royalty As A % of Infringer's Profitability

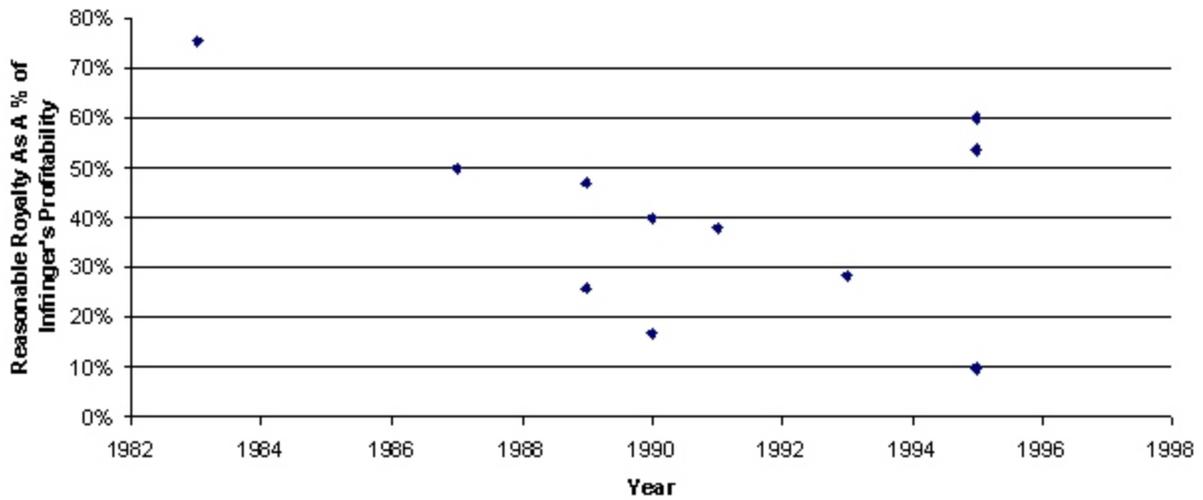


Chart VII: Reasonable Royalty v. Mid Point of Opposing Experts

