

Trends in Patent Damages

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The U.S. patent system continues to attract the attention of a broad audience, ranging from the U.S. Congress to the mainstream media. Such attention has centered on questions of patent quality, longer pendency periods, and increased litigation. Additionally, large damages awards and/or settlements in recent high-profile patent disputes have been pointed to by proponents of patent reform. The U.S. House of Representatives and the U.S. Senate are both currently considering patent reform legislation. Should Congress pass this legislation, it would modify existing patent laws in several significant ways,¹ including the calculation of damages in patent infringement cases. This writing looks at trends that have developed in patent damages awards since the formation of the Court of Appeals for the Federal Circuit (CAFC) in October 1982.²

Case Filings

Over 90 U.S. District Courts “have original jurisdiction of all civil actions arising under the Constitution, laws, or treaties of the United States.”³ Congress established the CAFC on October 1, 1982. The CAFC has nationwide jurisdiction in a variety of subject matters, including patents. Appeals of patent cases tried in district courts are heard by the CAFC. Recent statistics (1993–2006), gathered from the Judicial Business of the Courts, show the following number of patent infringement cases commenced in the U.S. District Courts (see Exhibit 1).⁴

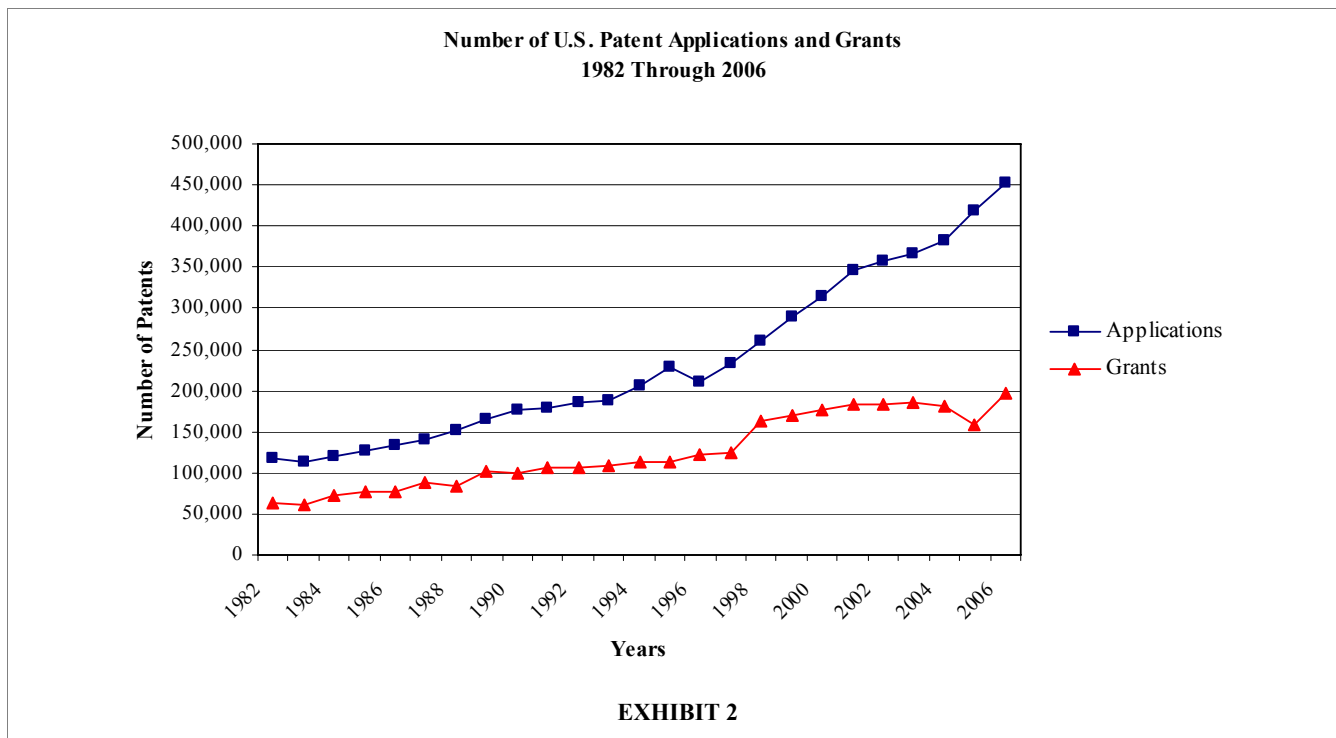
A dramatic increase has occurred in the number of patent infringement cases commenced per year from 1993 to 2006. The number of cases commenced during 2006 (2,830) represents an increase of more than 80 percent over the number of cases commenced in 1993 (1,553). However, the annual rate of increase in the number cases commenced has slowed since 2000. In the seven years from 1993 to 1999, the number of cases commenced increased by approximately 50 percent. In contrast, the number of cases commenced in the seven years from 2000 to 2006 increased by only about 15 percent.

Patent Cases Commenced by Year

YEAR	NUMBER	% INCREASE
1993	1,553	
1994	1,617	4%
1995	1,723	7%
1996	1,840	7%
1997	2,112	15%
1998	2,218	5%
1999	2,318	5%
2000	2,484	7%
2001	2,520	1%
2002	2,700	7%
2003	2,814	4%
2004	3,075	9%
2005	2,720	-12%
2006	2,830	4%

EXHIBIT 1

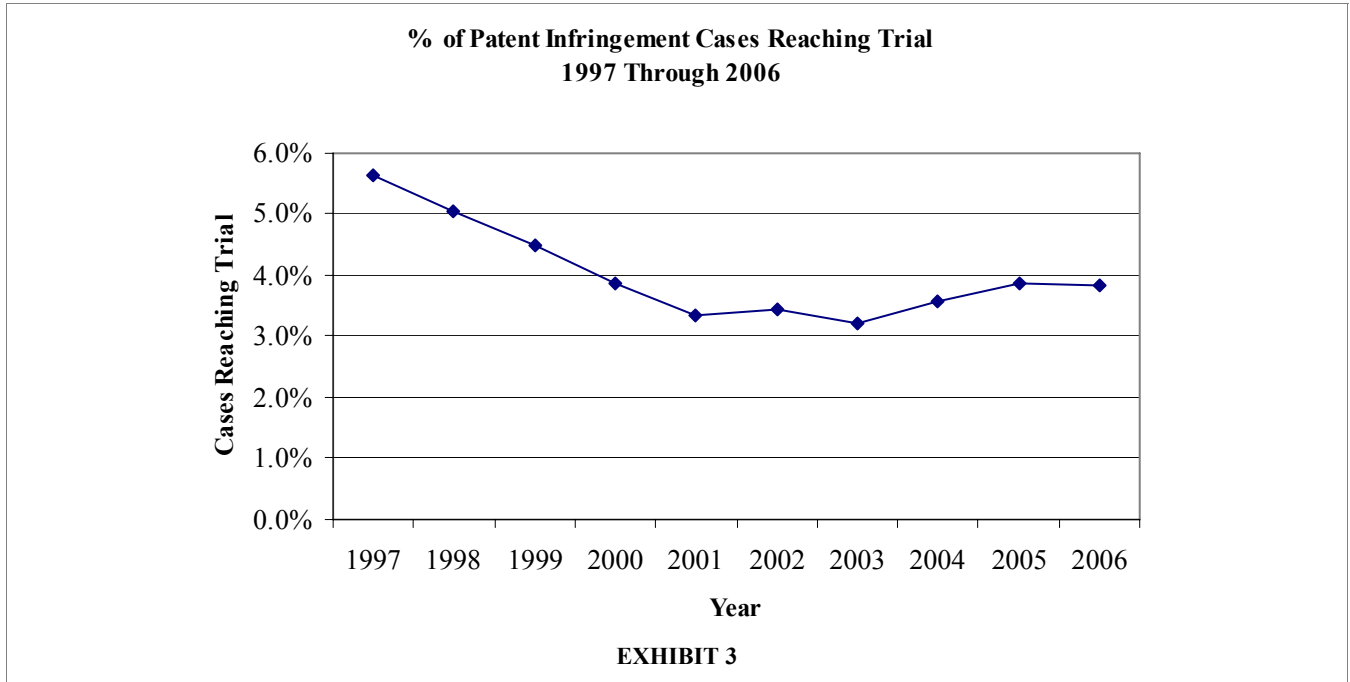
During the same period, a rapid increase has occurred in the number of patent applications filed and the number of patents granted. Exhibit 2 below summarizes the number of patent applications filed and the number of patents granted from 1982 to 2006.⁵



The number of patent applications filed per year has increased 284 percent since 1982, with 117,987 applications filed in 1982 and 452,633 applications filed in 2006. The graphic above illustrates the growth in patent applications from 1982 to present. The graphic shows an increase in the rate of growth around 1994 and continuing to the present. During the same period, the number of patents granted per year increased 211 percent, from 63,005 in 1982 to 195,885 in 2006.⁶ The graphic illustrates that patent grants have not kept pace with the rapid increase in applications, as the gap has continually widened since 1998.

Despite the increase in patent applications, patent grants, and infringement suits, the number of infringement suits reaching trial has decreased and stabilized over time. In the 1996 decision *Markman v. Westview Instruments, Inc.*⁷ (Markman), the CAFC determined that the construction of patent claims is a matter to be determined solely by the courts, and the court would, in general, hold a hearing (dubbed Markman Hearing) during the case proceedings to rule on patent claim construction issues. At the time of the decision, many questioned how many cases, if any, would actually be tried past the Markman hearing and, for those tried, whether a jury would ultimately be seated for the case. Since the Markman decision, fewer cases have gone to

trial. Exhibit 3 below illustrates that cases reaching trial have decreased from almost 6 percent of cases in 1997 to less than 4 percent of cases in 2006. Cases reaching trial seem to have stabilized, remaining between 3 percent and 4 percent of cases filed from 2000 forward.



Damages Trends

The authors of this article maintain a database of patent infringement damages awards. This database includes all damages decisions that have the following characteristics:

- involved a patent infringement action
- were decided since 1982, the creation of the CAFC
- were published/reported in either the U.S. Patent Quarterly (USPQ) or Lexis/Nexis through December 31, 2006
- have stood on appeal or remain to be heard by the CAFC

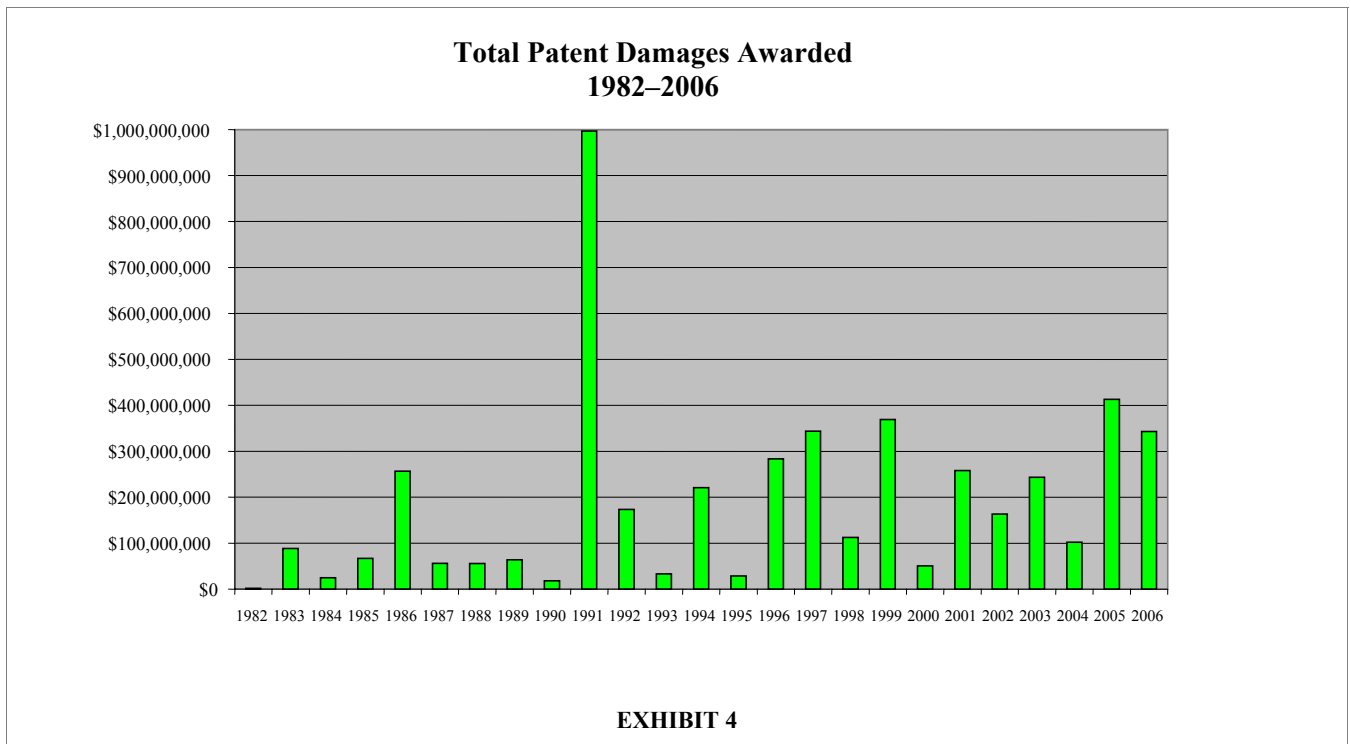
While the authors have captured all cases that involve patent damages decisions and meet the above criteria, those decisions that were remanded, reversed or vacated on appeal for issues related or unrelated to damages are excluded from the analysis. The database is updated annually to include all decisions published in the prior year. Because many of the published decisions do not contain sufficient detail to include in the complete analysis, an attempt is made to gather additional facts from published articles and/or the trying attorneys.

Although decisions are not published for all cases that are tried, the number of cases published is large enough

to allow for statistically significant inferences to be made about trends in the entire population of patent infringement cases.

Since 1982, over \$4.5 billion in patent damages have been awarded (and stood through appeal) in the approximately 320 decisions published. Over 85 percent of these dollars have been awarded since 1990. The largest award, \$873 million awarded in the 1991 decision in *Polaroid Corp. v. Eastman Kodak Co.*⁸ case, remains a multiple of the next largest award.

Looking at the amount of total damages awarded by year reveals an increase in damages starting in the mid-1990s. In the 14 years from 1982 to 1995, total damages exceeded \$200 million in only 3 years. Total damages have exceeded \$200 million in 7 of the 11 years from 1996 to 2006. Refer to Exhibit 4.



There has been, and continues to be, a large degree of variance in the size of damages awards. Such variance in award size makes it difficult to see trends if one looks at averages, but looking at medians clearly shows that the size of awards has generally been increasing over time as shown in Exhibit 5.

**Median Damages Awards
1982–2006**

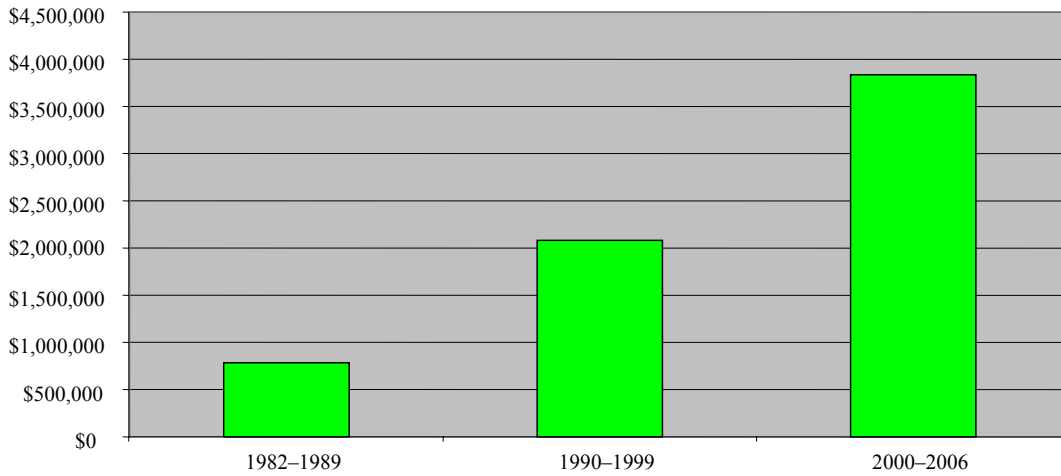


EXHIBIT 5

Top Damages Awards

Exhibit 6 shows a list of the top 10 damages awards. Of the top 10 awards, only one award occurred prior to 1990 while four awards have occurred since 2000. These top 10 awards account for almost 50 percent of the total patent damages awarded since 1982.

The patents in these cases include technologies and methods from a broad range of technologies and/or industries including instant photography, eye surgery procedure, pre-wired wall panels and desk components, rock drill bits, heat-shrinkable biaxially stretched film, computer software, silver catalyst used in the production of ethylene oxide, MRI equipment, water-activated casting materials, and oil and gas well fracturing. An award related to computer software, *z4 Technologies, Inc. v. Microsoft Corp. & Autodesk, Inc.*⁹, entered the top 10 list for the first time in 2006. Prior awards related to computer software that would have made the top 10 list have not stood on appeal. Microsoft Corporation was sued by Alcatel-Lucent over audio patents and in February 2007, a jury awarded damages totaling approximately \$1.5 billion; however, this decision was overturned on August 6, 2007.¹⁰

Top 10 Patent Damages Awards for the Period 1982–2006

CASE	YEAR	TOTAL DAMAGES
Polaroid Corp. v. Eastman Kodak Co.	1991	\$873,158,971.00
Advanced Medical Optics, Inc. v. Alcon Laboratories, Inc. & Alcon Manufacturing, Ltd.	2005	\$213,900,000.00

Haworth Inc. v. Steelcase Inc.	1996	\$211,499,731.00
Smith International, Inc. v. Hughes Tool Co.	1986	\$204,809,349.00
Viskase Corp. v. American National Can Co.	1999	\$164,925,789.00
z4 Technologies, Inc. v Microsoft Corp. & Autodesk, Inc.	2006	\$160,300,000.00
Union Carbide Chemicals & Plastics Technology Corp. & Union Carbide Corp. v. Shell Oil Co., Shell Chemical Co., and CRI Catalyst Co.	2005	\$153,615,773.69
Fonar Corp. & Dr. Raymond V. Damadian v. General Electric Co. & Drucker & Genuth MDS, P.C.	1997	\$128,700,000.00
3M v. Johnson & Johnson Orthopaedics	1992	\$116,797,696.00
BJ Services Co. v Halliburton Energy Services Inc.	2003	\$98,100,000.00

EXHIBIT 6

General Trends

While the cases that result in large damages awards attract the most media attention, the majority of cases result in damages awards of far less than those in the above cases. Since 1982, approximately 75 percent of damages awards were less than \$10 million. However, the percentage of cases resulting in damages greater than \$10 million has increased over time from 15 percent of cases from 1982 to 1989 to 31 percent of cases from 2000 to 2006. Exhibit 7 segregates damages awards into categories by dollar amounts over time.

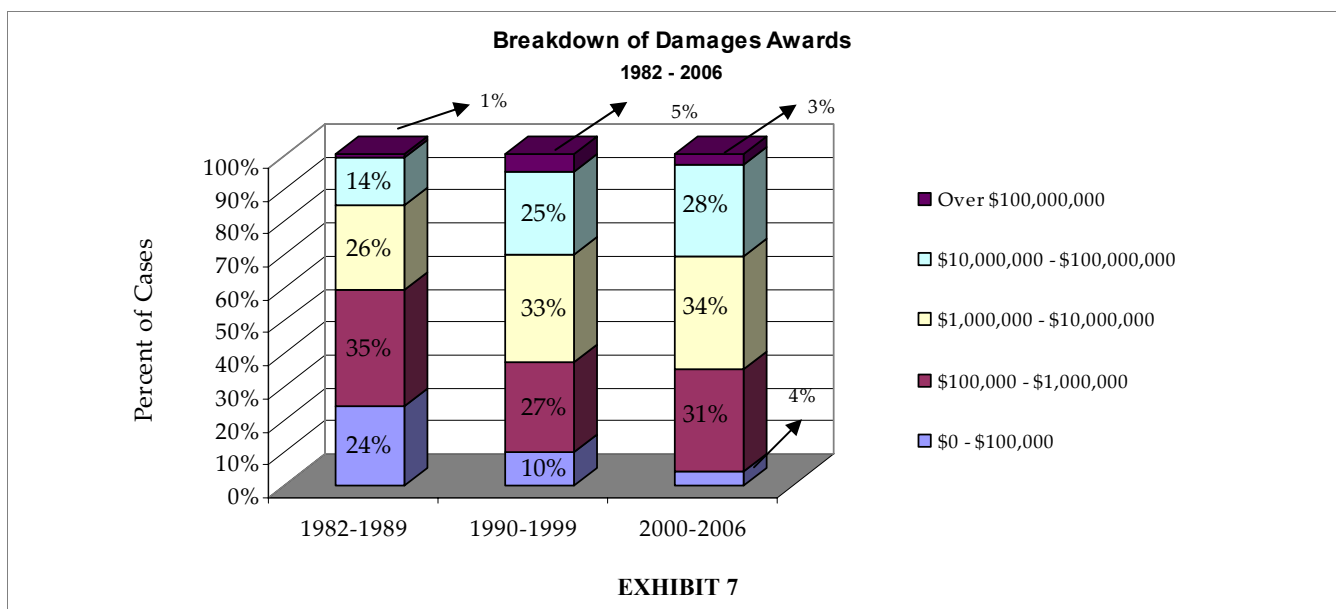
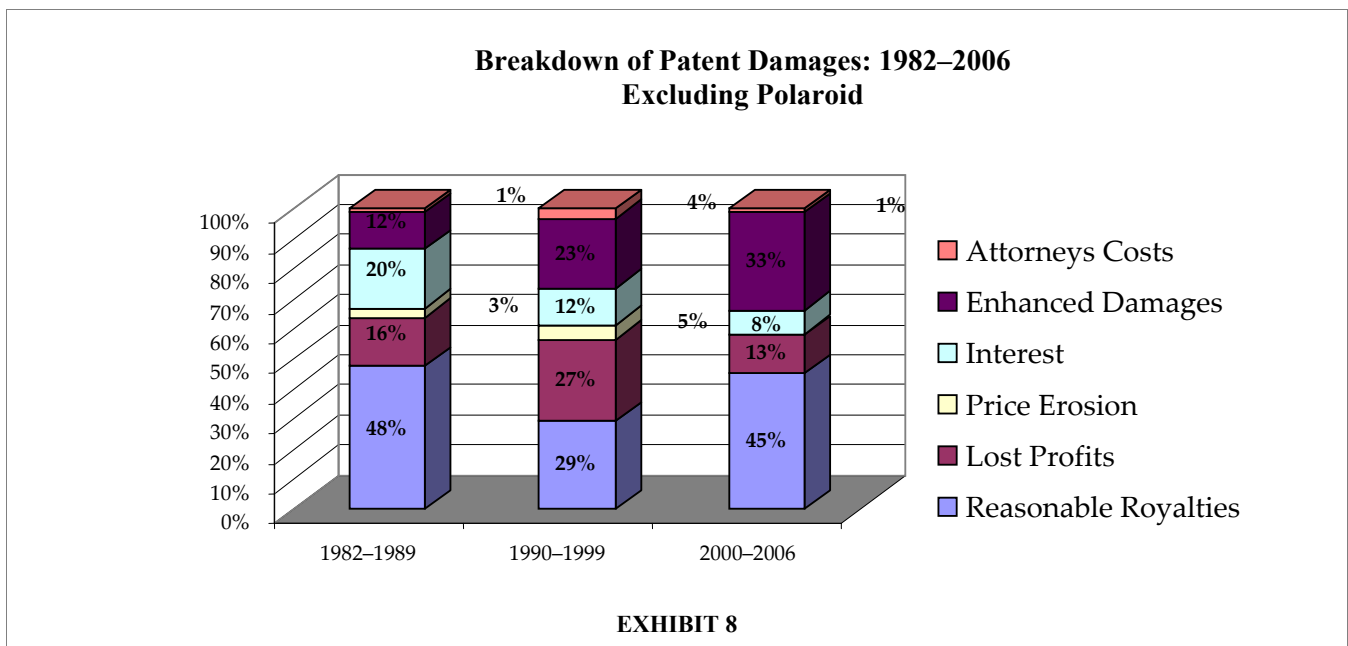


EXHIBIT 7

Various damages measures are available to a successful patentee, including its actual damages, in the form of lost profits, and/or a reasonable royalty. Since 1982, approximately 20 percent of total dollars awarded were

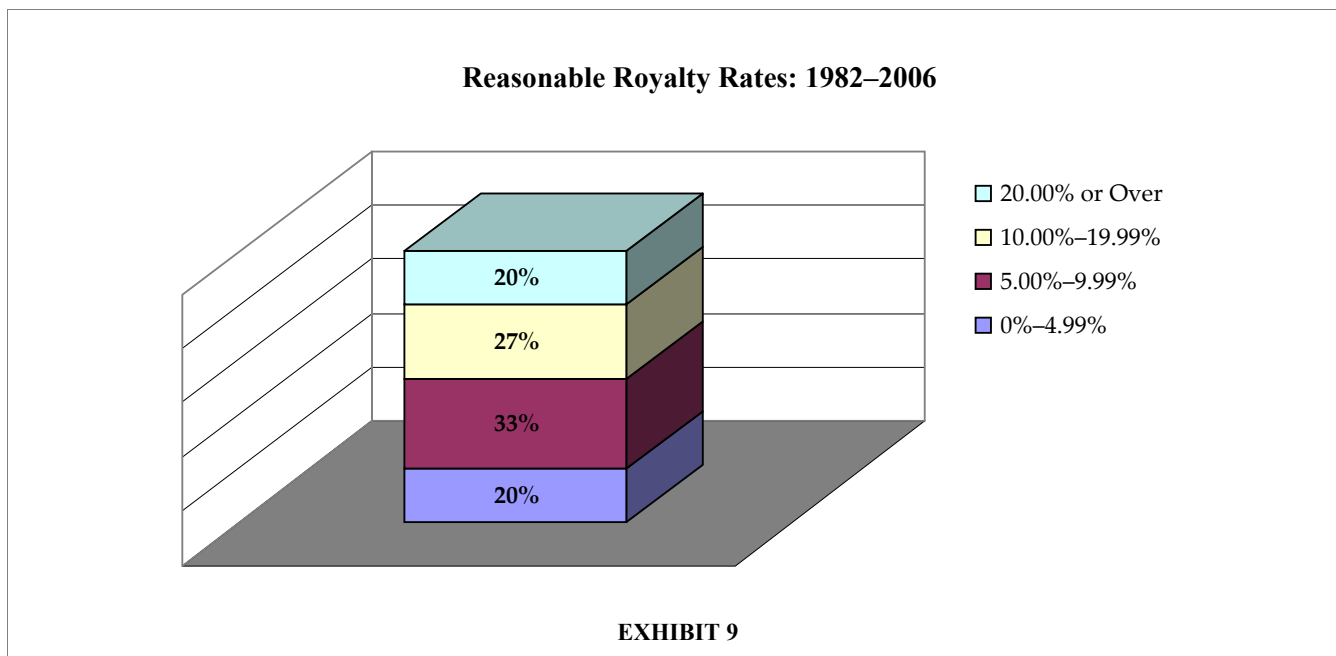
based on lost profits, and 36 percent were based on a reasonable royalty. Of the other types of damages components, 21 percent of the total dollars awarded were based on interest, 19 percent enhanced damages, 2 percent price erosion, and 2 percent attorney fees. Because the *Polaroid* case was litigated for such an extended period, over 11 years, the interest portion of the damages award was over \$400 million. Excluding the *Polaroid* case, of the remaining total damages awarded, 40 percent were based on a reasonable royalty, 18 percent on lost profits, 25 percent on enhanced damages, 12 percent interest, 3 percent price erosion, and 2 percent attorney fees.

Looking at damages components over time highlights trends in how damages are awarded. During the 1990's there was a shift toward lost profits from reasonable royalty. This trend has reversed, and during the 2000's, the percentage of damages awards based on a reasonable royalty has returned to the level experienced in the 1980's. The percentage of damages based on interest has decreased steadily over time, which would appear to indicate that cases are being resolved more quickly. Enhanced damages awards have increased steadily over time. Refer to Exhibit 8.



Patent law prescribes that a reasonable royalty determines the floor of patent infringement damages. This remedy is available to a patentee that cannot prove lost profits or for whom lost profits are not available. Of the cases in which a reasonable royalty was awarded, approximately 60 percent had reasonable royalty rates in the range of 5.00 percent to 19.99 percent. The remaining 40 percent of cases were split evenly between reasonable royalty rates less than 5.00 percent and reasonable royalty rates equal to or greater than 20.00 percent. Refer to

Exhibit 9. Average royalty rates, as well as the number of cases with awards falling into the various rate ranges, have remained relatively constant over time.



While information is minimal regarding the sources the courts have relied upon to determine a reasonable royalty rate, in particular jury awards, the available information shows the most prevalent sources include existing agreements and industry averages.

Of the approximately 96 cases where reasonable royalty damages were awarded and a royalty rate was reported, 10 were based on a royalty rate equal to or greater than 25 percent. Two of these cases were decided in the 1980s, seven were decided in the 1990s, and one was decided in the 2000s. The largest royalty rate awarded, 70 percent of net sales, occurred in 1987 in the *Hartness International v. Simplimatic Engineering*¹¹ case. The royalty in this case was based on actual lost profits, although it was expressed by the court in terms of a reasonable royalty. A list of cases awarding a reasonable royalty of greater than 25 percent is included in Exhibit 10.

Reasonable Royalty Rates of 25% or More: 1982–2006

CASE	BENCH/JURY	YEAR	REASONABLE ROYALTY RATE
Hartness International v. Simplimatic Engineering	Bench	1987	70.00%
Williams v. Skid Recycling Inc.	Jury	1994	35.00%
TP Orthodontics v. Professional Positioners	Bench	1992	30.00%

General Surgical Innovations, Inc. v. Origin Medsystems, Inc.	Jury	1999	30.00%
Trans-World Manufacturing Co. v. Dura Corp. & Kiddie, Inc.	Bench	1986	30.00%
Honeywell International Inc. & Honeywell Intellectual Properties, Inc. v. Universal Avionics Systems Corp. & Sandel Avionics, Inc.	Jury	2004	26.00%
Pentech International Inc. v. Leon Hayduchok, All-mark Corp., Inc. & Paradise Creations Inc. (counter claim)	Bench	1996	25.00%
Additive Controls & Measurement Systems Inc. v. Flowdata Inc.	Bench	1993	25.00%
Joy Technologies Inc. v. Flakt Inc.	Bench	1996	25.00%
Smithkline Diagnostics v. Helena Laboratories	Bench	1991	25.00%

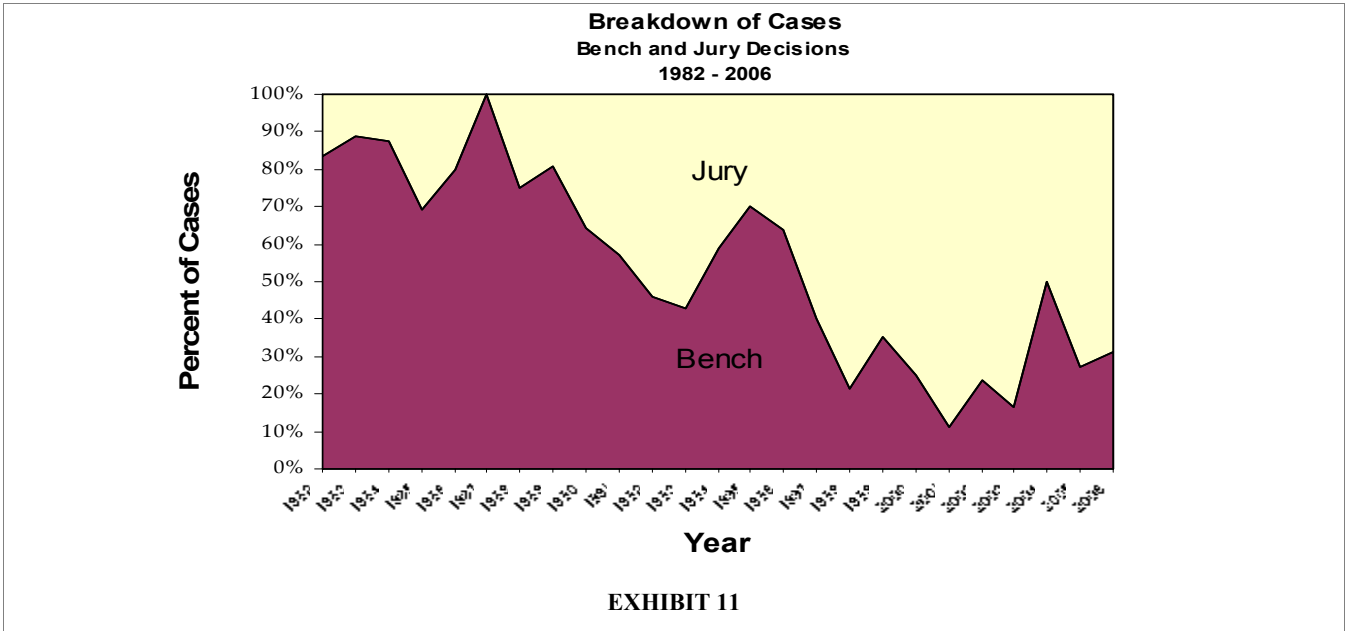
EXHIBIT 10

A successful patentee may also be awarded prejudgment interest on damages that occurred during the infringement period. The courts have computed the interest damages using a variety of measures, the most common of which have been the prime interest rate and U.S. Treasury Bill rates.

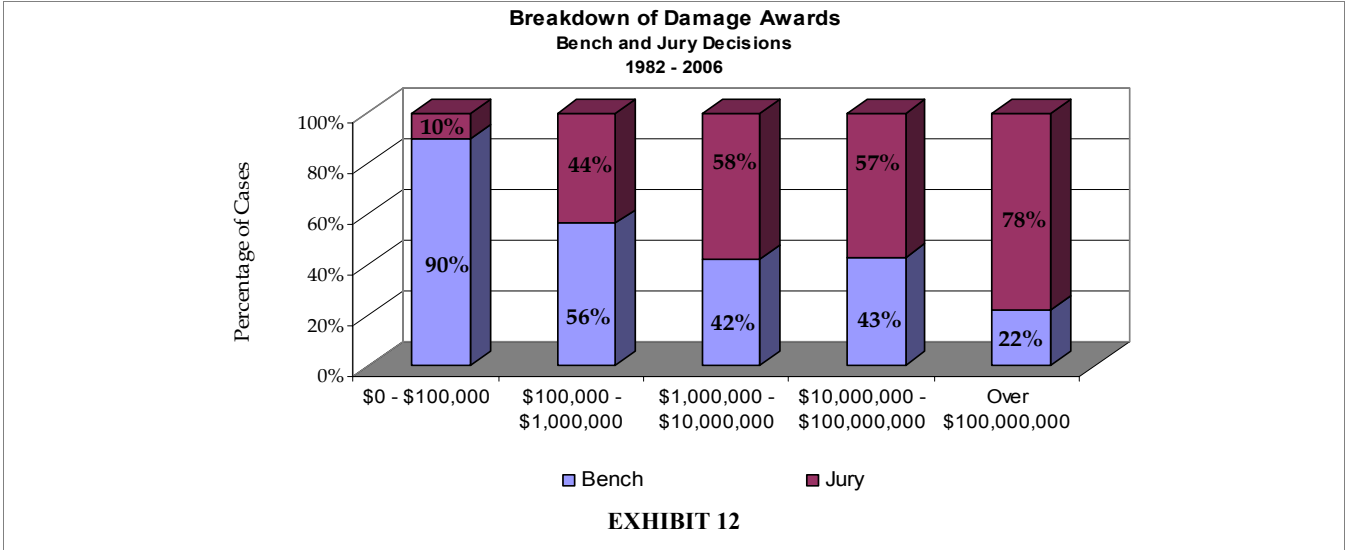
A finding of willful infringement by the defendant may cause the court to consider an award of enhanced damages, that is, a multiple (or other increase) of the original damages award. This award is at the discretion of the court, but it may be substantial, as the law allows for up to trebled damages for a finding of willfulness. Enhanced damages have been included consistently in only about one-third of the damages awards since 1982. However, as a percentage of total damages awarded, enhanced damages have risen over time. Refer to Exhibit 8. The data indicates that, over time, enhanced damages have consistently been awarded at about the same percentage of the cases.

Bench v. Jury

Further trends are noted when you break the cases into groups based on the trier of fact. Overall, the trier of fact has been almost evenly split between a judge (52 percent) and a jury (48 percent) since 1982. However, in the past decade, there has been a clear trend toward jury trials. Refer to Exhibit 11. In the period from 1982 to 1989, decisions came from the bench in 82 percent of the cases. In the 1990s, the trend toward more jury trials began so that beginning in 2000 and up to 2006, 73 percent of the decisions came from juries.

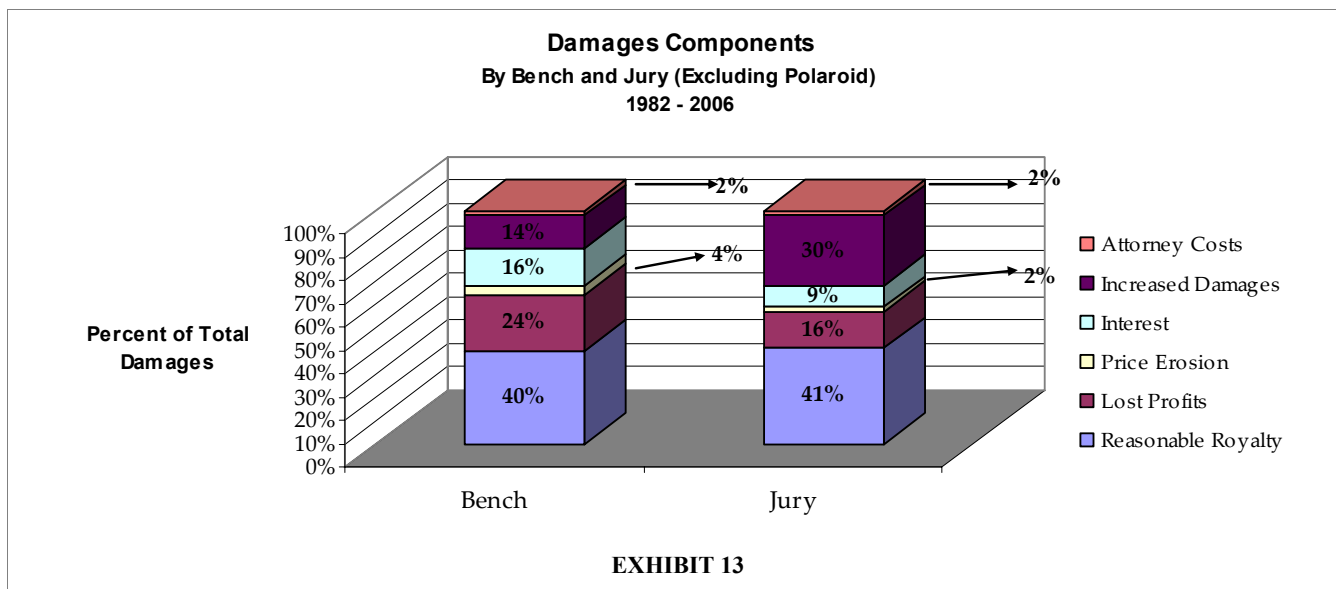


The median damages award over the entire period of approximately \$3.3 million for jury decisions is nearly four times the median of \$830,000 for bench decisions. The data also clearly shows that a higher percentage of large damages awards are issued by juries. Of the top 10 damage awards, listed in Exhibit 6, 7 were jury decisions. This trend is consistent with the decrease in bench trials in concert with the increase in damage awards.



Historically, there have not been large discrepancies in damages awards between juries and the bench in terms of the different damages components. The most notable difference is that enhanced damages comprise 30

percent of the damages awarded by juries and only 14 percent of damages awarded by the bench. Refer to Exhibit 13.



In terms of reasonable royalties, damages are most frequently based on a royalty rate between 0 percent and 20 percent by both the bench and juries. However, damages awards by the bench are split almost evenly into the 0 percent–10 percent range and 10 percent–20 percent range. Jury awards have tended to be in the lower range, with 65 percent of the awards in the 0 percent–10 percent range. Exhibit 10, previously discussed, shows that 7 of the 10 highest royalty rates, used in determining an award of damages based upon a reasonable royalty, came in cases decided by the bench.

Industry Information

Until recently, and not surprisingly, given the volume of utility patents, almost all tried patent infringement cases related to a product or process patent. Additionally, the vast majority of cases involved products in the Manufacturing SIC codes (82 percent). The next closest division was Wholesale Trade SIC codes with only 7 percent. Interestingly, the third highest number of cases was in the Business Services SIC codes. This is interesting because all of the decisions with Business Services SIC codes have occurred since 1993. The rise in cases involving Business Services has occurred during the same time in which business method patents have become more prevalent. Exhibit 14 drills further down into the Manufacturing SIC codes and the 82 percent of infringing cases to examine the damages awards by major manufacturing group.

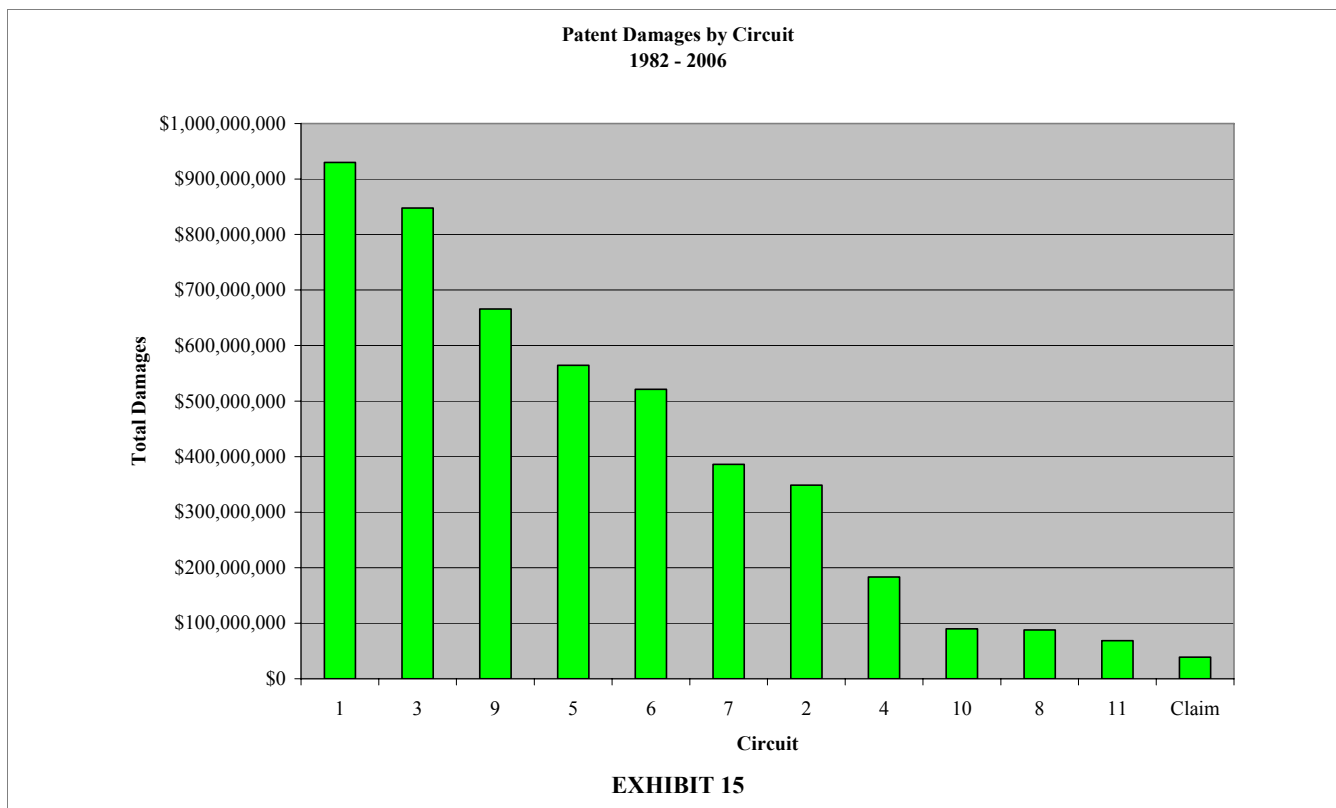
Manufacturing SIC Codes: Percentage of All Cases by Major Group (1982–2006)

MAJOR GROUP	MAJOR GROUP DESCRIPTION	% OF CASES
38	Measuring, Analyzing, and Controlling Instruments; Photographic, Medical, and Optical Goods; Watches and Clocks	15.5%
35	Industrial and Commercial Machinery and Computer Equipment	15.2%
36	Electronic and Other Electrical Equipment and Components, Except Computer Equipment	9.0%
28	Chemicals and Allied Products	7.6%
39	Miscellaneous Manufacturing Industries	6.2%
37	Transportation Equipment	5.9%
34	Fabricated Metal Products, Except Machinery and Transportation Equipment	4.5%
30	Rubber and Miscellaneous Plastics Products	3.8%
25	Furniture and Fixtures	2.8%
32	Stone, Clay, Glass, and Concrete Products	2.1%
20	Food and Kindred Products	1.7%
27	Printing, Publishing, and Allied Products	1.7%
24	Lumber and Wood Products, Except Furniture	1.4%
22	Textile Mill Products	1.0%
23	Apparel and Other Finished Products Made from Fabric and Similar Materials	1.0%
26	Paper and Allied Products	1.0%
33	Primary Metal Industries	1.0%
29	Petroleum Refining and Related Industries	0.7%

EXHIBIT 14

Damages by Circuit

Since 1982, the First Circuit has awarded over \$900 million in damages, followed by the Third Circuit with approximately \$850 million and the Ninth Circuit with over \$665 million. The dominance of these circuits is due primarily to large damages awards. For instance, the *Polaroid* award of \$873 million accounts for over 90 percent of the patent damages awarded by the First Circuit. In the Third Circuit, the *Advanced Medical Optics, Inc. v. Alcon Laboratories, Inc.*¹² case (\$213.9 million) and the *Union Carbide Chemicals & Plastics Technology Corp. v. Shell Oil Co.*¹³ (\$153.6 million) account for over 40 percent of the patent damages awarded in that circuit. In the Ninth Circuit, over 30 percent of the total patent damages awarded are accounted for in the \$204.8 million awarded in the *Smith International, Inc. v. Hughes Tools Co.*¹⁴ case. Refer to Exhibit 15.



It should be noted that settlements have not been included in this analysis. If gathered and analyzed, settlements would represent a large amount of “patent damages,” as most patent disputes are settled before a decision is reached at trial.

The authors would like to recognize Jill Rusk, Christopher Groves, Brandy Fernow, Erin Wikman, Elaine McDermott, Samantha Zyontz, and Marc Peckler of Navigant Consulting, Inc. for their assistance in gathering and analyzing the data that is the basis for this article.

¹ H.R.1908 and S.1145—This article does not represent the opinions of Navigant Consulting, Inc., or any of its employees, regarding legislation pending in either the U.S. House of Representatives or the U.S. Senate.

² The authors of this article have reviewed all patent infringement decisions that include damages reported in The U.S. Patent Quarterly (USPQ) and Lexis/Nexis from 1982 through December 31, 2006, and analyzed any trends. The information in this article includes data from a patent damages database owned by one of the authors, Kathleen M. Kedrowski.

³ 28 U.S.C. 1338a.

⁴ www.uscourts.gov—Judicial Business of the U.S. Courts.

⁵ www.uspto.gov—Patent Statistics, Weekly Data, and Lists.

⁶ www.uspto.gov/web/offices/ac/ido/oeip/taf/us_stat.pdf—U.S. Patent Statistics, Calendar Years 1963—2006.

⁷ 517 US 370 (1996).

⁸ 17 USPQ 2d 1711 (D. Mass. 1991).

⁹ 2006 U.S. Dist. LEXIS 58324 (E.D. Tex. 2006).

¹⁰ Lucent Techs. et al. v. Gateway Inc. et al.

¹¹ 819 F.2d 1100 (1987).

¹² 2005 U.S. Dist. LEXIS 33369.

¹³ 2006 U.S. Dist LEXIS 9833.

¹⁴ 229 USPQ 81 (C.D. Cal. 1986).