THE ACCURACY AND MANIPULABILITY OF LOST PROFITS DAMAGES CALCULATIONS: SHOULD THE TRIER OF FACT BE "REASONABLY CERTAIN?"

Jonathan T. Tomlin & David R. Merrell*

I. INTRODUCTION

In commercial litigation, plaintiffs commonly seek lost profits damages. Many courts have allowed a degree of uncertainty in the calculation of damages and have articulated a standard that damages need to be calculated with only "reasonable certainty."[1] Intersecting with this standard is a commonly held perception that simple methods of calculating damages are often more understandable and persuasive to a judge or jury than more complex methods. When presented with the results of such simple methods, should the trier of fact be "reasonably certain" that the results are accurate? Moreover, should there be a concern that the lost profits damages presented have been manipulated to provide a favorable result? This article brings empirical evidence to bear on these highly important issues. The accuracy and manipulability of damages calculations influences whether the law will result in the attainment of such goals as just compensation, optimal deterrence of harmful acts, and efficient breach of contract.

This article will evaluate several versions of the well established and often used "before and after" approach to damages calculations by applying this method to a large sample of *undamaged* United States firms. This sample simply assumes a fictional damaging event and damage date for these firms. Thus, unlike an actual litigation environment in which the damages are unknown and typically in dispute, the damages for this sample are known with certainty to be equal to zero. The certainty of the actual damages for the sample allows a comparison of the damages

* Jonathan Tomlin: Principal, LECG, LLC, Los Angeles, California 90067. David Merrell: Analysis Group Inc., Dallas, Texas. The opinions in this article do not necessarily represent those of LECG or Analysis Group.

[1] *See, e.g.,* ATACS Corp. v. Trans World Communications, Inc., 155 F.3d 659, 668 (3d Cir. 1998); City of Greenville v. W.R. Grace & Co., 640 F. Supp. 559, 569 (D.S.C. 1986); Rombola v. Cosindas, 220 N.E.2d 919, 922 (Mass. 1966); RESTATEMENT (SECOND) OF CONTRACTS § 352 (1981); U.C.C. §1-106 comment 1 (2004); MARK A. GLICK ET AL., INTELLECTUAL PROPERTY DAMAGES: GUIDELINES AND ANALYSIS 35 (2003).

generated by a particular calculation method and, thus, for an assessment of the accuracy of the calculated damages. Any calculated damages are "phantom" damages that result from an inaccurate calculation.

Damages methods that courts have previously used and accepted are highly capable of producing substantial "phantom" damages and are highly capable of manipulation. For example, out of the three methods employed in the sample, there exists at least one method that yields non-existent "lost" revenues that exceed 20% of actual revenues for about half of the sample firms. These results indicate that many damages methods should require additional evidence on their appropriateness, and courts should inquire as to why the litigants chose particular methods. Without such additional information, the trier of fact should have little certainty that the damages presented are accurate and have not been manipulated.

Section I below provides an overview of the law and economics of lost profits calculations. Section II explains the theoretical sources of uncertainty that arise from the use of simple damages methodologies. This uncertainty can arise from the failure of a particular method to yield accurate damages calculations or from manipulation in applying the method or choosing data. Section III explains the data sample and the results obtained. As shown, the various methods often yield substantial damages when they do not, in fact, exist. Section IV assesses the prospects of courts excluding simple damages calculations when they are unreliable and explains factors to which courts should look in evaluating damages methods. Section V concludes the article.

II. BACKGROUND ON THE CALCULATION OF LOST PROFITS: THE LAW AND ECONOMICS

A. Economics of Lost Profits Calculations

A plaintiff may incur lost profits due to a variety of harmful acts such as fraud, false advertising, antitrust violations, intellectual property infringement, and breach of contract. Lost profits are equal to the difference between the profits that the plaintiff would have received "but-for" the harmful act and the actual profits received by the plaintiff, appropriately adjusted to present value.[2] For example, if a

[2] *See, e.g.,* ABA SECTION OF ANTITRUST LAW, ANTITRUST LAW DEVELOPMENTS 789-91 (4th ed. 1997); GLICK ET AL., *supra* note 1, at 35; Robert E. Hall & Victoria A. Lazear, *Reference Guide on Estimation of Economic Losses in Damages Awards*, *in* REFERENCE MANUAL ON SCIENTIFIC EVIDENCE 277, 281 (2d ed, 2000); Victoria A. Lazear, *Estimating Lost Profits and Economic Losses*, *in* LITIGATION SERVICES HANDBOOK: THE ROLE OF THE FINANCIAL EXPERT 5.4 (3d ed. 2001); Jonathan T. Tomlin,

plaintiff would have earned $100 in profits had a harmful act not occurred (the "but-for" scenario), but it actually earned only $75 (the "real world"), then lost profits are equal to $25 ($100 minus $75 is equal to the profits the plaintiff lost as a result of the harmful act). Approaches to calculating damages include the "before and after" approach, the "yardstick" or "control group" approach, and other approaches based on the economics of the hypothetical "but-for" scenario.[3]

The "before and after" approach entails a comparison of the plaintiff's financial performance during the time period in which it was presumably impacted by the harmful act or acts of the defendant with another time period in which the plaintiff was presumably not impacted. The hypothetical "but-for" scenario is one in which the plaintiff would have performed in accordance with the benchmark time period chosen.

The "yardstick" or "control group" approach entails comparing the plaintiff's performance to a financial benchmark based on an alternative geographic area, product line, distribution channel, industry, or firm. For example, the "yardstick" approach may create a hypothetical "but-for" scenario in which one assumes that the plaintiff would have obtained profits consistent with other firms in the same industry.

In applying the "yardstick" approach or the "before and after" approach, additional factors that may have impacted the plaintiff's performance may also be taken into account. In addition to the "before and after" approach and the "yardstick" approach, other methods are available that may include calculating costs incurred by a plaintiff as a result of the harmful behavior at issue.

Methods for calculating damages range from simple to sophisticated. Simple methods used in litigation include comparing the average revenues or profits of a plaintiff before the harmful act at issue with its revenues or profits following the harmful act. More sophisticated methods include the use of multiple regression techniques to analyze lost profits by controlling for other factors outside of the

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Distinguishing the Legal from the Illegal in Antitrust Damages Calculations: Lessons from Netscape v. Microsoft, 17 J. FOREN. ECON. 223, 233-34 (2004).

[3] *See generally* Conwood Co. v. U.S. Tobacco Co., 290 F.3d 768, 793 (6th Cir. 2002); ROBERT L. DUNN, RECOVERY OF DAMAGES FOR LOST PROFITS § 1.1 (5th ed. 1998 & supp. 2005); PATRICK A. GAUGHAN, MEASURING BUSINESS INTERRUPTION LOSSES AND OTHER COMMERCIAL DAMAGES 45-50 (2004); Tomlin, *supra* note 2, at 233-35.

defendant's harmful behavior that may have impacted the plaintiff's profits.[4] The use of multiple regression techniques has become quite common in litigation.[5]

As many commentators on the presentation of damages calculations have observed, simple methods of calculating damages may often appeal to a party attempting to persuade the trier of fact. As Rubinfeld and Steiner note, "a simple graph with a firmly asserted conclusion, even if spurious, can be quickly grasped and readily accepted."[6] Gaughan writes, "Because the methods used must be explained to a judge or jury, who most likely do not have a background in statistical analysis, simple methods have certain advantages. Only if it can be demonstrated that the sophisticated methods are significantly more accurate should they be contemplated."[7] Davis and Laguzza write, "[J]urors, like most other humans, are cognitive misers who prefer to avoid complexity, so they tend to accept arguments that relieve them of the duty to investigate and understand unfamiliar information."[8]

Because of a perceived lack of sophistication on the part of judges and juries and the corresponding perception that simple damages models will be persuasive, experts often present simple models that do not account for other factors potentially impacting the plaintiff firm. Thus, a highly important question arises as to the reliability of such simple models.

B. The Law

Courts generally allow a plaintiff a degree of uncertainty in calculating damages, thus making the burden of quantifying damages lower than than that of

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[4] *See, e.g.,* Daniel L. Rubinfeld, *Reference Guide on Multiple Regression*, *in* REFERENCE MANUAL ON SCIENTIFIC EVIDENCE 179, 182-83 (2d ed. 2000) (hereinafter "Rubinfeld, *Multiple Regression*"); Michael O. Finkelstein & Hans Levenbach, *Regression Estimates of Damages in Price-Fixing Cases*, 46 L. & CONTEMP. PROBS. 145, 145 (1983); Franklin M. Fisher, *Multiple Regression in Legal Proceedings*, 80 COLUM. L. REV. 702, 702 (1980); Daniel L. Rubinfeld, *Econometrics in the Courtroom*, 85 COLUM. L. REV. 1048, 1048 (1985) (hereinafter "Rubinfeld, *Econometrics*").

[5] Rubinfeld, *Multiple Regression*, *supra* note 4, at 182; Fisher, *supra* note 4, at 702.

[6] Daniel L. Rubinfeld & Peter O. Steiner, *Quantitative Methods in Antitrust Litigation*, 46 L. & CONTEMP. PROBS. 69, 140 (1983).

[7] GAUGHAN, *supra* note 3, at 144.

[8] David Scott Davis & Ross Laguzza, *Communicating with a Jury*, *in* LITIGATION SERVICES HANDBOOK: THE ROLE OF THE FINANCIAL EXPERT 15.7 (3d ed. 2001).

proving the fact of damages. As the Supreme Court has stated, "[i]f the damage is certain, the fact that its extent is uncertain does not prevent a recovery."[9] Courts often apply a threshold of "reasonable certainty."[10] As the Third Circuit has explained, "reasonable certainty embraces a rough calculation that is not 'too speculative, vague or contingent' upon some unknown factor."[11]

Courts may exclude the damages testimony of lay persons or expert witnesses if the testimony does not meet the standards of proper case law (such as "reasonable certainty"). If an expert witness presents the damages testimony in a federal case, the testimony must meet the requirements of Rule 702 of the Federal Rules of Evidence.[12] The Supreme Court's decisions in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*[13] and *Kumho Tire Co. v. Carmichael*[14] prompted a revision of Rule 702 in order to clarify the standards developed in these decisions.[15] *Daubert* listed a non-exclusive four-part test for federal judges to use in evaluating the admissibility of expert testimony.[16] In *Kumho Tire*, the Supreme Court explained that *Daubert* applied not only to scientific testimony but also to testimony based on "technical" and "other specialized" knowledge.[17] Many states have adopted standards similar to the

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[9] Story Parchment Co. v. Patterson Parchment Paper Co., 282 U.S. 555, 566 (1931).

[10] *See supra* note 1 and accompanying text.

[11] ATACS Corp. v. Trans World Communications, Inc., 155 F.3d 659, 669 (3d Cir. 1998) (quoting Spang & Co. v. United States Steel Corp., 545 A.2d 861, 866 (Pa. 1988)).

[12] *See* Charles W. Gerdts III & Carol E. Dixon, *The Federal Law Governing Expert Witness Testimony*, *in* LITIGATION SERVICES HANDBOOK: THE ROLE OF THE FINANCIAL EXPERT 2.1 (3d ed. 2001); GLICK ET AL., *supra* note 1, at 27; Robert G. Badal & Edward J. Slizewski, *Economic Testimony Under Fire*, 87 A.B.A.J. 56, 56 (Nov. 2001); Christopher B. Hockett et al., *Revisiting the Admissibility of Expert Testimony in Antitrust Cases*, 15 ANTITRUST 7, 7-11 (Summer 2001).

[13] 509 U.S. 579 (1993).

[14] 526 U.S. 137 (1999).

[15] GLICK ET AL., *supra* note 1, at 27.

[16] *Daubert*, 509 U.S. at 594.

[17] *Kumho Tire,* 526 U.S. at 141.

federal standards for assessing expert evidence, although the approach varies between states.[18]

This paper focuses on assessing the reliability and manipulability of simple implementations of the "before and after" method of calculating damages. Federal and state courts across the country have utilized and accepted various implementations of the "before and after" approach.[19] Often, the period before the defendant's allegedly harmful act is used as a benchmark against which to measure the plaintiff's damages incurred during a period in which the harmful act was expected to impact the plaintiff.[20] Other times, however, courts use the plaintiff's subsequent experience as the benchmark.[21] Courts have evaluated the reliability of utilizing a "before" period of as little as one week as a benchmark for damages.[22] In many cases, courts have found time periods of a few years or less to be a reliable basis for calculating the plaintiff's damages.[23]

Nearly eighty years ago, the Supreme Court addressed the reliability of a simple application of the "before and after" approach in *Eastman Kodak Co. v. Southern Photo Materials Co.*[24] In that antitrust case, the plaintiff alleged that, as a result of the defendant's anticompetitive acts, it was unable to obtain goods important to

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[18] *See* Joseph A. Keierleber & Thomas L. Bohan, *Ten Years After* Daubert: *the Status of the States*, 50 J. FORENSIC SCI. 1, 3 (2005).

[19] *See, e.g.,* Eastman Kodak Co. v. S. Photo Materials Co., 273 U.S. 359, 379 (1927); DUNN, *supra* note 3, at § 5.1.

[20] DUNN, *supra* note 3, at §§ 5.1, 5.5.

[21] *See*, *e.g.,* Milgard Tempering, Inc. v. Selas Corp., 902 F.2d 703, 710 (9th Cir. 1990); *see also* DUNN, *supra* note 3, at § 5.6.

[22] *See* UST Corp. v. Gen. Rd. Trucking Corp.*,* 783 A.2d 931, 943 (R.I. 2001) ("only one week of data for profit projections simply does not rise to the requisite level of reasonable certainty necessary to recover future lost profits").

[23] *See, e.g., Eastman Kodak*, 273 U.S. at 376, 379 (four year "before" period); Tingley Sys., Inc. v. Norse Sys., Inc., 49 F.3d 93, 97-98 (2d Cir. 1995) (one and a half year "before" period); Swierczynski v. Arnold Foods Co., Inc., 265 F. Supp. 2d 802, 810 (E.D. Mich. 2003) (four year "before" period used to calculate damages for 20 year damages period); Shade Foods, Inc. v. Innovative Prods. Sales & Mktg., Inc., 93 Cal. Rptr. 2d 364, 393-94 (Cal. Ct. App. 2000) (3 month "before" period used to calculate damages for 3 year damages period).

[24] 273 U.S. 359 (1927).

its business from the defendant for a four year period.[25] The plaintiff calculated its damages as the gross profits on its sale of the defendant's goods for the four years preceding the suit (after subtracting additional expenses that would have been incurred in selling these goods).[26] Thus, the damages methodology simply assumed that during the period of presumed harm gross profits would have been equal to those in prior years and made no other adjustments. In addressing the defendant's claim that "the plaintiff's damages were purely speculative," the Court opined that "plaintiff's evidence as to the amount of damages, while mainly circumstantial, was competent; and that it sufficiently showed the extent of the damages, as a matter of just and reasonable inference, to warrant the submission of this question to the jury."[27]

Since *Eastman Kodak*, simple implementations of the "before and after" method have been employed numerous times and have continued to be employed after *Daubert*.[28] In *Tingley Systems, Inc. v. Norse Systems, Inc.*,[29] for example, Norse alleged, *inter alia*, tortious interference with its business relations.[30] Norse calculated its lost profits for a three year period as the difference between its profits during that period and average profits (projected over three years) for an eighteen month period preceding the alleged interference.[31] Thus, the "before" benchmark was simply the average profits for the previous eighteen months, and the method assumed that the proper "but-for" scenario was one in which Norse would have earned the same profits during the damages period as it did during the eighteen month period had the allegedly harmful conduct by Tingley not occurred. In reviewing Tingley's claim that the method failed to prove a connection between its actions and lost profits, the

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[25] *Id.* at 368-69.

[26] *Id.* at 376.

[27] *Id.* at 378-79.

[28] *See, e.g., Tingley Sys., Inc.*, 49 F.3d at 97-98; *Swierczynski*, 265 F. Supp. 2d at 811; *Shade Foods, Inc.*, 93 Cal. Rptr. 2d at 393.

[29] 49 F.3d 93 (2d Cir. 1995).

[30] *Id.* at 95.

[31] *Id.* at 97-98.

Second Circuit concluded that "[t]he jury could reasonably have accepted Norse's calculations of the profits lost due to Tingley's interference…."[32]

C. Overview of Our Approach

When presented with a calculation of lost profits damages, when should the trier of fact be "reasonably certain" of its accuracy?[33] For example, if the sales for a particular business decline 20% during the period of harmful behavior, is this an unusual occurrence and therefore solid evidence of the harmful behavior's effect on profits? Or are such fluctuations in sales quite typical and, therefore, of little or no useful guidance on the issue? In addition, not only might the choice of calculation method lead to uncertain results, but the data or the model may have been "cherry picked" and therefore subject to manipulation by the presenter.

This article focuses on the "before and after" model in addressing these questions for four reasons. First, simple methods are often employed in litigation, and the conventional wisdom is that simple models may be more persuasive to the trier of fact. Second, courts have accepted the "before and after" method on numerous occasions. Third, the "before and after" approach allows application of the same method to a large sample of firms, unlike other methods, such as the yardstick approach, which typically involve the use of data that is specific to a particular case. Finally, the results from application of simple damages methods are more widely applicable to other methods.

III. SOURCES OF UNCERTAINTY IN LOST PROFITS CALCULATIONS

Inaccuracies in proffered lost profits calculations can result from inaccuracies inherent in the method and data employed. They can also result from manipulation of the method, inappropriate use of the method, or both.

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[32] *Id.* at 98.

[33] Some commentators have discussed whether a standard of "reasonable certainty" is a desirable standard. *See, e.g.*, Doug Carleton, Note: *Averting the New Business' Battle to Prove Lost Profits: A Reintroduction of the Traditional Reasonable Certainty Rule as Penalty Default*, 67 S. CAL. L. REV. 1573, 1575-76 (1994). This issue is beyond the scope of this paper, as it focuses not on whether the standard is appropriate but on the ability of damages models to meet this standard.

A. Inaccuracies Inherent in the Method

Proper calculation of lost profits entails determining the profits that the plaintiff would have earned in a hypothetical scenario in which the defendant's harmful act or acts did not occur. At the most basic level, the profits of a firm are determined by the demand factors and the supply conditions for that firm. In the economic model of perfect competition, a firm can sell an unlimited amount of products and services at the perfectly competitive market price.[34] The firm cannot sell any goods or services above this price, and it has no hopes of changing this price.[35] However, few industries in the real world correspond to the perfectly competitive model.[36] Thus, the relevant demand for a firm is usually the demand that is specific to that firm (the "firm specific" demand) and not simply a market demand curve in which a firm can sell unlimited goods or services at the market price. Supply factors refer to the cost conditions faced by the firm.

Accuracy in calculating profits in the "but-for" scenario results from accurately projecting the firm specific demand and cost conditions that the plaintiff would have faced had the harmful act or acts at issue not occurred. On the demand side, a harmful act may eliminate demand entirely (e.g., when the harmful act puts the plaintiff out of business), or it may shift demand. Demand may shift for a variety of reasons, including changed perceptions on the part of consumers (e.g., false advertising), changes in the products offered by competitors (e.g., intellectual property infringement), or the loss of a particular customer (e.g., breach of contract or tortious interference). On the supply side, costs may change due to changes in input costs (e.g., antitrust allegations of price fixing or price discrimination) or changes in the way inputs are processed (e.g., breach of contract causing the loss of a key employee).

Thus, a harmful act may impact firm specific demand and cost conditions in multiple ways, including shifting the demand curve or changing the responsiveness of demand to price changes (the "elasticity" of demand).[37] Damages methods

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[34] *See* Benjamin Klein, *Market Power in Antitrust: Economic Analysis After* Kodak, 3 SUP. CT. ECON. REV. 43, 47 (1993).

[35] *Id.*

[36] *See id.* at 48.

[37] *See, e.g.,* WALTER NICHOLSON, MICROECONOMIC THEORY: BASIC PRINCIPLES AND EXTENSIONS 193-97 (1992).

accurately measure damages only if they accurately account for these changes. Whether a simple damages method can adequately perform this task depends on the circumstances.

B. Manipulation of the Method or the Data

In addition to questions of reliability resulting from potential inadequacies of the damages method itself, the possibility of manipulation of the data or method used also exists.[38] When the presenter of damages is an employee of the plaintiff company, the incentives to present a biased estimate are clear. Obviously, a large damage award increases the profits of the firm. Such incentives may exist for financial experts testifying on damages as well. Financial experts may perceive that they will obtain increased business from the party that retains them if they provide results that are favorable to their clients.[39] In addition, a bias in the analysis can result from the "slippery slope," as the attorney retaining the expert may persuade the expert to testify in a certain way.[40] An appealing witness, in turn, may also be able to prevail with "shoddy data or shoddy methods."[41]

The possible sources for inaccurate and misleading calculations of damages include the choice of the data set to use, the choice of variables to include in the damages model (i.e., the factors for which to adjust in assessing the "but-for" scenario), and the choice of "functional form" of the model (i.e., how the model is set up).[42] Because this article addresses simple damages methods, its focus is on the potential for manipulation through data choice and model choice.

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[38] Of course, inaccuracies can also result from errors in implementation (such as a mathematical error), but such errors will often be discovered in the litigation environment. Thus, we focus on manipulation of the data and the methods used.

[39] *See* Richard A. Posner, *The Law and Economics of the Economic Expert Witness*, 13 J. ECON. PERSP. 91, 93 (1999); Robert Thornton & John Ward, *The Economist in Tort Litigation*, 13 J. ECON. PERSP. 101, 104 (1999).

[40] *See* Michael J. Mandel, *Going for the Gold: Economists as Expert Witnesses*, 13 J. ECON. PERSP. 113, 119 (1999).

[41] Rubinfeld & Steiner, *supra* note 6, at 140.

[42] *See* Rubinfeld, *Multiple Regression*, *supra* note 4, at 185.

The choice of data used to forecast revenues or profits in the "but-for" scenario is capable of heavily influencing the results. For example, a firm that experiences high variability in its sales and profits may show very different results if its profits in the "before" period are averaged over a three year period instead of a four year period. A three year period may show substantial profits while the inclusion of a fourth very unprofitable year may reduce profits, and therefore calculated damages, to zero.

In *Eastman Kodak*, the plaintiff used profits over a four year "before" period as the benchmark comparison for the damages period.[43] As the defendant pointed out, however, using only the two most recent years for comparison yielded a loss for the plaintiff (and presumably no damages).[44] In *Tingley*, the plaintiff used average revenues over an eighteen month "before" period as a benchmark for calculating damages.[45] However, when calculating costs, the plaintiff used only a six month "before" period and explained that its revenues needed to be calculated over a longer period as they "came in chunks."[46] It is natural to wonder whether calculated average revenues would have been substantially lower if only a six month period were used.

Another potential source of manipulation in lost profits calculations is the choice of the method itself. For example, a firm may not have obtained any profits averaged over a well defined "before" period. However, if one were to look at the growth rate of the firm's revenues and assume that costs would not increase substantially, one may well develop a method that yields damages. Various econometric models might also yield different damages calculations and therefore more opportunities to "find" a method that generates damages.

Ex-post model selection in an attempt to find favorable results obviously biases damages calculations in favor of the party presenting them. The process also renders invalid standard statistical tests used to assess the reliability of statistical models.[47] The realm of academic research has long recognized that researchers have

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[43] Eastman Kodak Co. v. S. Photo Materials Co., 273 U.S. 359, 379 (1927).

[44] *Id.* at 378.

[45] Tingley Sys., Inc. v. Norse Sys., Inc., 49 F.3d 93, 97-98 (2d Cir. 1995).

[46] *Id.* at 98.

[47] *See* David H. Kaye & David A. Freedman, *Reference Guide on Statistics*, *in* REFERENCE MANUAL ON SCIENTIFIC EVIDENCE 85, 88 (2d ed. 2000).

an incentive to find results that are more likely to generate publishable research and that they may engage in "ex-post model selection" to generate such results.[48] Because of this, academics often report the results from various specifications of the models they considered. The concern that a researcher has generated biased results through ex-post model selection in academia should exist in the litigation context as well.[49]

IV. ASSESSING THE ACCURACY AND MANIPULABILITY OF METHODS FOR CALCULATING LOST PROFITS

The damages sustained by a plaintiff are typically a matter of dispute in litigation. Thus, finding a sample of firms that can be used to compare the actual damages sustained with the damages calculated by a particular method (and therefore assessing the accuracy of the damages measured by that method) would seem to be a difficult task. However, there is at least one group of firms in which the amount of damages may be calculated with certainty: for those firms suffering no damages, damages are known to be equal to zero. After obtaining such a sample of firms, we assume a fictional harmful event and date on which this fictional event occurred. Any damages calculated for the sample are "phantom" damages and are a result of inaccuracies resulting from the method, inappropriate data choice, or both.[50] This sample allows an assessment of both the accuracy and the manipulability of lost profits methods. This assessment focuses on several implementations of the "before and after" approach.

A. The Data Used

We obtained annual (fiscal year) revenue data for the period 1995-2004 for all United States firms contained in Standard and Poor's Compustat North America database. Compustat compiles detailed financial information for publicly traded

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[48] *See* Edward E. Leamer, *False Models and Post-Data Model Construction*, 69 J. AM. STAT. ASS'N 122, 126 (1974); Edward Leamer & Herman Leonard, *Reporting the Fragility of Regression Estimates*, 65 REV. ECON & STAT. 306, 306 (1983).

[49] *See* Richard Lempert, *Statistics in the Courtroom: Building on Rubinfeld*, 85 COLUM. L. REV. 1098, 1102-03 (1985).

[50] Economic damages are equal to lost revenues minus the incremental costs that would have been incurred to produce the goods or services necessary to generate the lost revenues. As long as profit margins are positive, lost revenues lead to lost profits damages. We focus solely on lost revenues and do not take the subsequent step of subtracting out incremental costs as the calculation of incremental costs is likely to be firm specific and it is unnecessary to address the issues of concern in this article.

companies. We attempted to screen out firms that experienced highly unusual changes in revenues. Accordingly, we deleted all firms which experienced an increase of over ten times prior year revenues in any single year.[51] We applied several different damages methodologies to the sample firms. To be included in the analysis of a particular method, a firm must have had complete annual revenue data throughout the period under consideration. The final number of firms in our sample ranged from 3,739 to 5,544, depending on the date range and method considered.

Because the sample only includes firms with data throughout the periods under consideration, firms that performed so poorly that they ceased business operations are necessarily excluded. Thus, there may be a "survivorship bias" that influences the data set in the direction of including more successful firms. Any such survivorship bias, however, should tend to make the finding of non-existent damages less likely (and therefore makes a finding of such damages even stronger evidence of an innacuracy).

B. Results from Using Simple Averages to Forecast "Lost" Sales

In order to apply the damages methodologies we examine, we will create a fictional lawsuit for each firm in our sample that specifies a non-existent harmful event to that firm allegedly occurring in the year 2000. Our fictional lawsuit seeks lost profits damages for the year 2000 for this non-existent harmful act. In actuality, we have not examined actual events occurring in the year 2000 for any of the firms in our sample and have no *a priori* reason to believe that there was any particular damaging event occurring in 2000 for any firm in the sample. The year 2000 is chosen because it allows us to average several years of data both before and after the hypothetical damage year. It is also chosen so as to avoid the year 2001, which was a recessionary year according to the dating conventions used by the National Bureau of Economic Research. Because our harmful event is non-existent, any calculated damages are non-existent as well and represent an inaccurate calculation of damages. True damages are equal to zero.[52]

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[51] We also deleted the firm "Pittsburgh and West Virginia Railroad" as it showed extremely small revenues and no change in revenues for numerous quarters.

[52] It is certainly possible that some of the firms in our sample experienced an event in 2000 that caused their profits to decline in this year (and perhaps to decline substantially). However, these lost profits would not be attributable to the fictional harmful event that we assume. Any calculated damages resulting from this event would still be inaccurate as they would be attributed to our fictional event (and not to the actual event causing the lost profits).

An obvious way to forecast the sales that a defendant firm would have received in a "but-for" scenario in which the alleged harmful act did not occur is simply to suppose that the plaintiff would have received the same revenues during the period of harm as it did on average over some benchmark period. Under this approach, lost revenues equal the difference between the average revenues over the benchmark period and the actual revenues during the period of perceived harm. As noted above, this simple approach has been used in litigation and accepted by the courts on several occasions.[53] It has also been advanced as a potentially acceptable approach by at least one practitioner text on the calculation of lost profits.[54]

"Lost" revenues for the year 2000 are calculated as a percentage of actual revenues that year. One may question whether any particular level of phantom "lost" revenues constitutes a substantial inaccuracy as opposed to an inconsequential amount that should be of little concern in litigation. This amounts to a consideration of what can be labeled the "practical significance" of our results as opposed to any statistical significance found. For example, in theory, a damages method could yield a statistically significant result that damages were equal to $1. However, the $1 in damages could hardly be considered practically significant.

Unfortunately, there is no particular threshold for "practical significance" as opposed to statistical significance and, thus, no particular threshold to guide us in examining "lost" revenue percentages in this instance.[55] Therefore, we present the percentage of firms for which the simple use of average revenues to forecast "but-for" revenues exceeds certain thresholds. As Table 1 below shows, for over 20% of the firms in our sample, this method generates "lost" revenues that do not exist for each of four different "before" periods (ranging from two years to five years).[56] For approximately 10% of the firms, these phantom "lost" revenues exceed 30% of year 2000 revenues.

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[53] *See supra* note 19 and accompanying text.

[54] GAUGHAN, *supra* note 3, at 145 ("When the plaintiff has experienced both positive and negative growth, the expert needs to apply judgment in selecting the appropriate base. One possible alternative is the use of average revenues computed over prior years, such as the past three years").

[55] Rubinfeld, *Multiple Regression*, *supra* note 4, at 191-92 & n.34.

[56] Using 2001 as the hypothetical damage year led to larger phantom "lost" profits and shows the particular pitfalls that may be present in overlooking important economic factors (in this case a recession). The number of firms with calculated "lost" revenues exceeding each threshold level were higher for 2001 than for 2000.

Table 1:

Percentage of Firms for Which Calculated "Lost" Revenues Exceed Given Thresholds For a Fictional Year 2000 Damage Date Based on Average "Before" Period Revenues

	Percentage of Firms Exceeding Selected Thresholds						
	>0%	>10%	>20%	>30%	>40%	>50%	Sample Size
Before Period:							
1995 - 1999	22%	16%	13%	10%	9%	8%	3,739
1996 - 1999	22%	16%	12%	10%	8%	7%	4,077
1997 - 1999	23%	16%	12%	10%	8%	7%	4,344
1998 - 1999	24%	16%	12%	9%	8%	6%	4,719
Mean	23%	16%	12%	10%	8%	7%	4,220

Notes: Annual revenue data obtained for publicly traded firms from Compustat. "Lost" revenues are calculated as (average revenue over the applicable before period - year 2000 revenue)/year 2000 revenue.

Table 2 below shows the results using the five year period over 2000-2004 to calculate lost revenues. As shown, the phantom damages calculated are equally persistent over the longer time period. Of course, because the damages period is longer, the total calculated "lost" revenues (and therefore the total amount by which damages were inaccurately calculated) would be commensurately larger.

Table 2:

Percentage of Firms for Which Calculated "Lost" Revenues Exceed Given Thresholds For a Fictional 2000-2004 Damage Period Based on Average "Before" Period Revenues

	Percentage of Firms Exceeding Selected Thresholds						
	>0%	>10%	>20%	>30%	>40%	>50%	Sample Size
Before Period:							
1995 - 1999	23%	18%	14%	12%	10%	9%	3,423
1996 - 1999	24%	19%	15%	12%	10%	9%	3,725
1997 - 1999	25%	20%	15%	12%	10%	9%	3,950
1998 - 1999	26%	20%	15%	13%	10%	9%	4,260
Mean	25%	19%	15%	12%	10%	9%	3,840

Notes: Annual revenue data obtained for publicly traded firms from Compustat. "Lost" revenues are calculated as (average revenue over the applicable before period multiplied by five - total revenues 2000-2004)/total revenues 2000-2004.

Another potential "benchmark" period for consideration is the use of the period *after* the period in which the harmful act allegedly occurred. This approach has been used in litigation and accepted by the courts in numerous cases.[57] A plaintiff may use such an approach where it has no prior operating history before the harmful event at issue or when the plaintiff believes that the period after the harmful event better reflects the market conditions in the "but-for" scenario than that in the period preceding the event. Table 3 below shows the percentage of firms exceeding particular "lost" revenue thresholds when the average revenues for various periods after 2000 are used to forecast revenues during the fictional damage year of 2000.

[57] *See, e.g.,* Milgard Tempering, Inc. v. Selas Corp., 902 F.2d 703, 710 (9th Cir. 1990); DUNN, *supra* note 3, at §5.8. *But see* DUNN, *supra* note 3, at §5.9.

Table 3:

Percentage of Firms for Which Calculated "Lost" Revenues Exceed Given Thresholds for a Fictional Damage Date Of 2000 Based on Average Revenues Subsequent to Damage Date

	Percentage of Firms Exceeding Selected Thresholds						
	>0%	>10%	>20%	>30%	>40%	>50%	Sample Size
Subsequent Period:							
2001-2004	61%	50%	39%	32%	26%	22%	4,954
2001-2003	60%	48%	38%	31%	26%	21%	5,155
2001-2002	57%	46%	37%	30%	25%	21%	5,544
Mean	60%	49%	38%	31%	26%	22%	5,218

Notes: Annual revenue data obtained for publicly traded firms from Compustat. "Lost" revenues are calculated as (average revenue over the applicable subsequent period - year 2000 revenue)/year 2000 revenue.

As shown in Table 3, this method yields "lost" revenues that do not exist for more than half of the firms in our sample. This result should be expected, as the method uses the simple average revenues following our fictional damage date, and, on average, one would expect that firm revenues would increase for our sample. Of more interest is the frequency with which this method generates substantial phantom "lost" revenues. For about one quarter of the firms, these phantom "lost" revenues exceed 40% of actual revenues. Thus, for our sample, the method of using simple averages *following* the damage period yields non-existent damages with even greater frequency and at a higher level than the method of using "before" period averages.

C. Results from Applying Past Growth in Revenues to Project Sales

The analysis above applied the simple approach used in litigation in which revenues of the plaintiff "but-for" the harmful act of the defendant were calculated under the assumption that they would have been equal to the average revenues obtained by the plaintiff during some benchmark period. Damages are also

commonly calculated in litigation by assuming that the revenues of the plaintiff would have grown during the period in which it was harmed.[58]

One way of projecting the plaintiff firm's revenue growth is through regression analysis. Regression analysis is a statistical method for estimating the relationship between a "dependent" variable that one seeks to explain (in this case revenues) and one or more "independent" variables (in this case time) presumed to help explain changes in the dependent variable.[59] Estimating a "linear trend" through regression analysis is one simple way of projecting the growth of a firm by estimating how revenues change over time.[60] Calculation of growth rates using a linear trend has been both illustrated in the texts on damages[61] and utilized in litigation.[62]

Under *Daubert*, one of the standards for evaluating a theory used by an expert is that theory's "general acceptance."[63] In academic research using regression analysis, the typical level at which a result is considered "statistically significant" is at a five percent level.[64] Using regression analysis properly, statistical significance at a five percent threshold means that there is less than a five percent probability that the result obtained was simply due to random chance.[65] Because a five percent threshold

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[58] *See, e.g.*, Swierczynski v. Arnold Foods Co., Inc., 265 F. Supp. 2d 802, 809 (E.D. Mich. 2003); E.J. McKernan Co. v. Gregory, 623 N.E.2d 981, 1000 (1993); DUNN, *supra* note 3, at § 6.26; GAUGHAN, *supra* note 3, at 144-45; GLICK ET AL., *supra* note 1, at 34-35.

[59] *See* GAUGHAN, *supra* note 3, at 150.

[60] *See, e.g.*, ROBERT S. PINDYCK & DANIEL L. RUBINFELD, ECONOMETRIC MODELS AND ECONOMIC FORECASTS 425-28 (1976).

[61] *See, e.g.*, GAUGHAN, *supra* note 3, at 147-51.

[62] *See, e.g., E.J. McKernan Co.*, 623 N.E.2d at 1000.

[63] Daubert v. Merrell Dow Pharm., Inc., 509 U.S. 579, 594 (1993).

[64] *See* G.S. MADDALA, ECONOMETRICS 45 (1977). Some econometricians have argued that the five percent threshold is arbitrary, overemphasized, and may be inappropriate in some circumstances. *See, e.g.,* EDWARD LEAMER, SPECIFICATION SEARCHES: AD HOC INFERENCE WITH NON-EXPERIMENTAL DATA 103 (1978); D.V. Lindley, *A Statistical Paradox*, 44 BIOMETRIKA 187, 188 (1957). In addition, commentators have debated whether a five percent threshold is appropriate for the litigation context. *See* Lempert, *supra* note 49, at 1098-1103.

[65] *See* MADDALA, *supra* note 64, at 45.

is commonly applied (and might be labeled "generally accepted"), we also performed calculations that limited calculating "lost" revenues to those instances in which there was a statistically significant coefficient (at five percent) on the time trend variable. Thus, an expert who utilized one of the models we employ would be able to appeal not only to the use of the well established "before and after" approach but also to the statistical significance of his or her results.

Table 4 below shows the percentages of firms for which calculated "lost" revenues exceed the indicated thresholds using a linear trend analysis for our sample firms.[66] As shown, the linear trend model is very capable of generating damages when they do not in fact exist. The frequency and magnitude of these phantom "lost" revenues calculated using the linear trend model is greater than that obtained using the average revenues before the year 2000 but less than that obtained using average revenues after 2000. Limiting the use of the model to statistically significant results improves matters but is hardly a cure-all. With this limitation, the method still results in calculated "lost" revenues exceeding 10% of actual revenues for about one quarter of the undamaged firms in our sample. These results should caution courts to avoid placing excessive weight on the importance of statistical significance.

[66] The simple linear trend model we use is specified as $R_t = \alpha + \beta t$ where R_t represents the revenues of the firm at year t and t is a counter that starts at 1 in 1995 and increases by one for each subsequent year. Appropriate use of regression techniques should consider *a prior*i the appropriate model choice and why it is being used. In addition, proper use of regression techniques entails diagnotics checking for potential problems such as serial correlation and potentially correcting for any problems. However, because our goal is only to assess the accuracy and manipulability of models employed (whether or not they were properly employed) we have not examined these issues for the linear trends we estimated.

Table 4:

Percentage of Firms for Which Calculated "Lost" Revenues Exceed Given Thresholds for a Fictional Damage Date Of 2000 Based on a Linear Trend Growth Model

	Percentage of Firms Exceeding Selected Thresholds						
	>0%	>10%	>20%	>30%	>40%	>50%	No. of Firms
All firms	51%	42%	35%	28%	23%	19%	3739
Firms with a statistically significant "t" statistic	31%	25%	20%	16%	13%	10%	3739

Notes: Linear trend model in which revenues for the year 2000 are projected based on a regression of annual sales on a constant and a yearly time trend using data from 1995-1999. "Lost" revenues calculated as (projected revenues for 2000 - actual revenues in 2000)/actual revenues in 2000. Statistically significant sample restricts "lost" damages to those firms for which there was a statistically significant coefficient on the time trend variable used to project revenues.

D. Manipulability

In addition to the issue of the accuracy of the simple implementations of the before and after approach considered here, another issue of keen interest is the manipulability of these models. As explained above, two sources of potential manipulation are the choice of the data set and the choice of the method. We considered three different methods: 1) the "before" method considered four different "before" period data sets; 2) the method using subsequent period data considered three different data sets; and 3) the linear trend growth model used one data set. This leaves eight different avenues for an ethically challenged witness to "find" lost revenues even when they don't exist.

We examined the potential for finding at least one damage model and data set combination that yielded "lost" revenues at each selected threshold. Calculated lost revenues for the linear trend model are limited to those in which there was a

statistically significant coefficient on the time trend variable. To be sure, there are numerous other methods (e.g., implementations of a yardstick approach) and data sets that could have been used. Thus, the number of avenues for manipulation is much larger than the eight scenarios we consider. This makes a finding of easy manipulability even stronger.

Table 5 below shows the percentage of firms for which at least one of the eight data set/method combinations yields "lost" revenues exceeding a given threshold. As shown, at least one of the damages methodologies we employ yields phantom "lost" revenues for over 70% of the sample firms. For nearly half of the firms, there is at least one method that yields phantom "lost" revenues exceeding 20% of actual revenues.

Table 5:

Percentage of Firms for Which at Least One Damages Method Yields Calculated "Lost" Revenues Exceeding Given Thresholds for a Fictional Year 2000 Damage Date

	>0%	>10%	>20%	>30%	>40%	>50%
Percentage of Firms Exceeding Selected Thresholds	70%	61%	48%	39%	32%	26%

Notes: Annual revenue data obtained for 5541 publicly traded firms from Compustat. "Lost" revenues are calculated as (Projected revenue for year 2000 - year 2000 revenue)/year 2000 revenue. Three methods used for forecasting: 1) average revenues before 2000 (date ranges of 1995-1999, 1996-1999,1997-1999, 1998-1999, 2) average revenues after 2000 (date ranges of 2001-2004, 2001-2003, 2001-2002), 3) Linear trend model (only when statistically significant trend) - date range of 1995-1999.

V. IMPLICATIONS FOR THE TRIER OF FACT

A. The Accuracy and Manipulability of Damages Calculations

As shown above, the simple models that we employ are very capable of generating substantial "lost" revenues when they do not exist. The sample of firms was close to a random sample. When one considers the non-random nature of suits selected for litigation, however, the potential for inaccurate damages calculations (including those in which the expert offering the damage calculations can appeal to the statistical significance of his or her results) increases further.[67]

Firms whose financial performance generates claims for lost profits that are particularly large are more likely to bring lawsuits.[68] Thus, unlike our sample, which includes firms who both performed relatively well during our damage year (relative to other years) and those who performed relatively poorly, the trier of fact may be viewing a sample of firms that is more likely to have been selected from the group of firms performing relatively poorly. For this more limited sample, the probability of the linear trend model generating "lost" revenues exceeding 10%, for example, may be much greater than the calculated probability of 25% in our sample. For example, our sample includes well over 300 publicly traded undamaged firms in the United States for which a linear trend model with a statistically significant "t" statistic generates lost revenues for the year 2000 that exceed 50% of actual revenues. Firms in this group may be much more likely to bring a lawsuit, and lawyers looking for potentially lucrative lawsuits may also be more inclined to focus on this group.

As shown above, damages methods can be highly manipulable. Thus, courts should be very alert to the possibility that data sets or damages methods have been selected to generate a "favorable" result. For the vast majority of publicly traded firms, it is possible to "find" damages (and often substantial damages) where they simply do not exist. Use of a more sophisticated method solves the problem only if it has been used properly. Improper use of more sophisticated methods only provides an additional potential avenue for manipulation. A requirement of statistical significance does not resolve the concerns for inaccuracy and manipulability. For a substantial number of firms in our sample, an expert would

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[67] *See generally* Rubinfeld, *Multiple Regression*, *supra* note 4, at 181-83.

[68] *See generally*, George L. Priest & Benjamin Klein, *The Selection of Disputes for Litigation*, 13 J. LEGAL STUDIES 1, 4 (1984).

have been able to provide a statistically significant result in presenting a calculation for non-existent lost revenues.

In actual litigation, of course, it is likely that a defendant faced with a claim for damages resulting from one of the methods we use would highlight the failure of the method to account for other factors impacting the plaintiff's financial performance.[69] The defendant or an expert retained on behalf of the defendant would also likely question the appropriateness of the method chosen and the date range used. For our sample of undamaged firms, these critiques have merit. This does not mean, however, that they would necessarily be successful. The plaintiff could attempt to support the data set choice by arguing that, during the benchmark period, market conditions were very similar to those during the damage period. It might use company documents or company testimony to support this contention. In addition, the plaintiff or the expert retained on behalf of the plaintiff may argue that demand factors or supply factors were not substantially different during the damage period and therefore did not have to be taken into account.

The models we employ do not explicitly account for demand factors or supply factors unrelated to any harmful act (in our case a fictional harmful act) that have caused firm revenues to change during the year 2000. It is the failure to account for these demand and supply factors that leads to a calculation of phantom "lost" revenues. Nevertheless, we believe that our results are applicable beyond the simple methods that we examine. There is a large range of alternative damages models available that purport to adjust for factors outside of the behavior of the defendant while leaving a large claim for damages intact.

B. The Gatekeeping Role of the Courts

What are the prospects of courts performing a "gatekeeping" role and excluding highly inaccurate and manipulated damages calculations? Before the Supreme Court's decision in *Daubert*, the typical standards for evaluating the admissibility of expert evidence in federal courts were based on "relevance" and "general acceptance."[70] *Daubert* placed federal judges in the role of "gatekeepers" charged with screening out unreliable expert evidence. Many state courts now also follow standards that are similar to federal standards, although the standards differ

[69] Of course, damages methods can be misused by both plaintiffs and defendants. For ease of exposition, we have focused on the possibility of inaccurate calculations by a plaintiff throughout.

[70] *See* Frye v. United States, 293 F. 1013, 1014 (D.C. Cir. 1923); Paul C. Giannelli, Daubert: *Interpreting the Federal Rules of Evidence*, 15 CARDOZO L. REV. 1999, 2009-14 (1994).

between states.[71] Several studies have found that courts are more likely to exclude expert testimony following *Daubert*.[72]

An important inquiry is whether courts have the inclination and the ability to identify and exclude inaccurate or manipulated expert testimony on damages. *Daubert* listed a non-exclusive list of four factors for federal judges to consider in evaluating the admissibility of expert testimony: 1) whether the theory can be (and has been) tested; 2) "whether the theory or technique has been subjected to peer review and publication;" 3) the theory's potential rate of error; and 4) the theory's general acceptance.[73] On their face, these factors would seem to provide little assurance that courts will consistently exclude inaccurate or manipulated damages claims.

Consider the linear trend model used above, which was limited to a statistically significant coefficient on the time trend variable, and each of the four articulated *Daubert* factors. A plaintiff could certainly argue that: 1) testing was done (there was a test for statistical significance); 2) the theory was subject to peer review and publication (it used the "before and after" method and regression analysis, and both have been used many times in published articles); 3) the potential rate of error was known (a five percent significance threshold was used); and 4) the theory was generally accepted (the "before and after" approach and regression analysis has been accepted in published articles on many occasions). Yet, this approach yielded non-existent damages for over 30% of our sample of firms.

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[71] *See* Keierleber & Bohan, *supra* note 18, at 3.

[72] *See* MOLLY TREADWAY JOHNSON ET AL., FEDERAL JUDICIAL CENTER, EXPERT TESTIMONY IN FEDERAL CIVIL TRIALS: A PRELIMINARY ANALYSIS 1 (2000); LLOYD DIXON & BRIAN GILL, RAND INST. FOR CIVIL JUSTICE, CHANGES IN THE STANDARDS FOR ADMITTING EXPERT EVIDENCE IN FEDERAL CIVIL CASES SINCE THE *DAUBERT* DECISION 26 (2002).

[73] Daubert v. Merrell Dow Pharm., 509 U.S. 579, 593-94 (1993). The Committee Note accompanying Rule 702 of the Federal Rules of Evidence added five additional factors for consideration: 1) whether the expert's testimony is the result of research he or she has done independently of the litigation, or whether it was created just for the litigation; 2) "[w]hether the expert has unjustifiably extrapolated from an accepted premise to an unfounded conclusion;" 3) "whether the expert has adequately accounted for obvious alternative explanations;" 4) whether the expert has used as much care as he or she would have in his or her work outside of litigation; and 5) "[w]hether the field of expertise claimed by the expert is known to reach reliable results for the" topic on which the expert is opining. FED. R. EVID. 702 advisory committee's note.

The *Daubert* factors are non-exclusive, and Rule 702 sets forth a more general standard that expert opinion be "reliable."[74] Moreover, the commentary to Rule 702 added additional criteria for consideration.[75] In an empirical study of *Daubert* decisions in federal court, Dixon and Gill concluded that "[o]ver time…, as judges gained experience in evaluating reliability and as appellate court opinions clarified their authority, they appear to have felt less compelled to address each *Daubert* factor and to have paid increasing attention to more-general issues important to addressing reliability."[76]

Using the more general approach of assessing "reliability," what is the likelihood that courts will consistently exclude highly inaccurate or manipulated damages calculations? With regard to simple methods, the likelihood that the courts will exclude methods that do not properly account for other factors impacting sales and profits is unclear. In *CDM Mfg. Co. v. Complete Sales Representation, Inc.*,[77] for example, the plaintiff's expert relied on "mathematical extrapolation, straight line linear progression and averaging to arrive at his numbers" for calculating lost profits.[78] The methods appear to be similar to the methods we examined. The district court allowed the expert's testimony, and the Ninth Circuit affirmed the district court's opinion.[79] In *Craftsmen Limousine, Inc. v. Ford Motor Co.*,[80] the plaintiff's expert calculated the plaintiff's average annual growth in revenues from 1991 through 1994, applied this growth rate to the plaintiff's past sales to project "but-for" sales, and subtracted actual sales to arrive at lost sales.[81] The plaintiff's expert apparently assumed that all of the difference between his projection and actual sales was due to the defendant's behavior and did not account for other factors such as

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[74] *See* FED. R. EVID. 702.

[75] *See supra* note 73.

[76] DIXON & GILL, *supra* note 72, at 62.

[77] 50 Fed. App'x 348 (9th Cir. 2002).

[78] *Id.* at 350.

[79] *Id.*

[80] 360 F.3d 865 (8th Cir. 2004).

[81] *Id.* at 875.

"general economic conditions or increased competition."[82] The district court allowed the expert's testimony.[83] After listing the four *Daubert* factors, the Eight Circuit disagreed with the district court's decision and instead concluded that an analysis of other factors potentially affecting sales was required.[84]

Even if a court is diligent in requiring that an expert consider other factors that may have impacted the plaintiff's performance, our results indicate that there is ample opportunity for an expert to present an inaccurate damages estimate that purportedly accounts for multiple factors. First, as noted above, improperly applied multiple regression analysis can purport to account for other factors when it has not sufficiently done so. Second, the availability of large phantom "lost" revenues leaves ample room for an expert to account for other factors and subtract their impact while still yielding a substantial remaining damage claim. For example, our sample contains over 300 firms for which a simple linear trend analysis yields damages exceeding 50% of revenues in 2000. An expert could account for multiple other factors that caused, say, 30% of the "lost" revenues and present a damage calculation for the remainder that would leave the plaintiff with a large claim for nonexistent damages.

The evidence on actual judicial decision making should also lead one to question whether the courts are equipped to recognize and exclude inaccurate and manipulated damages calculations. One study found that 48% of state court judges felt that they had not been adequately prepared to handle the range of scientific evidence presented in their courtrooms.[85] Another found that when the reliability of expert evidence was challenged, a court found expert evidence unreliable in only 10% of the sample cases in which the court reflected favorably on whether the expert's analysis met a standard of "general acceptance."[86] A plaintiff's expert using a linear trend model for our sample could note the "general acceptance" of both the "before and after" method and regression analysis.

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[82] *Id.*

[83] *Id.*

[84] *Id.* at 881-82.

[85] *See* Sophia I. Gatowski et al., *Asking the Gatekeepers: A National Survey of Judges on Judging Expert Evidence in a Post-Daubert World*, 25 L. & HUM. BEHAV. 433, 442 (2001).

[86] DIXON & GILL, *supra* note 72, at 44.

In order to properly address the accuracy of a damages study and whether or not it has been subject to manipulation, the court must make several important inquires.[87] Because the choice of data used is important, the expert should be able to provide a good rationale for choosing a particular date range. In addition, due to the potentially severe problem of "ex-post" model selection, the expert should provide an explanation of why a particular method was chosen over other methods. Because damage methods can generate nonexistent damages in many instances, the expert should also provide an economic explanation of the mechanism through which a harmful act impacted the sales and profits of a plaintiff. In the absence of this information, there can be little certainty that proffered damages are accurate and free of manipulation.

VI. CONCLUSION

Our results indicate that simple methods for calculating lost profits that do not take into account demand and supply factors are capable of being highly inaccurate. In addition, this article has shown that damages methodologies in general are highly manipulable. To the extent that accurate damages awards for plaintiff firms promote such goals as just compensation, optimal deterrence, or efficient breach, these goals will not be well served if damages received are highly inaccurate and subject to manipulation. Moreover, this article has indicated a dismal likelihood that courts will consistently screen out such damages calculations. In assessing damages methods, it is highly important that the trier of fact be convinced that the plaintiff has provided adequate explanations regarding the economics of how a harmful act caused damages, why the particular data set was chosen, and why the particular method was used.

[87] Some commentators have opined that a court appointed neutral expert should be used to assess the reliability of proffered damages calculations. *See, e.g.*, Rubinfeld, *Econometrics*, *supra* note 4, at 1095-96. This article does not address the implications of such a choice. Rather, it provides empirical evidence on the extent to which damages models are manipulable and subject to inaccuracy.