

PREFACE

At a time when more and more class action securities fraud cases settle for hundreds of millions—and in some cases billions—of dollars, a monograph published by the National Legal Center more than eleven years ago has become one of our most requested and most valuable: *The Use of Trading Models to Estimate Aggregate Damages in Securities Fraud Litigation: A Proposal for Change* by Dan Fischel and David Ross. In that article, the authors criticized the use of trading models to estimate aggregate damages in securities class actions, arguing that there was little evidence available to assess the accuracy and reliability of the models and that this evidence appeared to demonstrate that the estimates overstated aggregate damages. They also argued that pretrial discovery of class members' actual trading data would provide much more reliable information for litigants to determine the costs of going to trial and for courts to determine the fairness of any settlement. At our request, the authors have updated their previous work.

In this *Briefly*, Dan Fischel, David Ross, and Mike Keable review developments concerning the use of trading models that have emerged since the original monograph was published. They examine recent decisions in which courts found that trading models did not meet the *Daubert* standards for presentation of evidence to a jury. They also critique articles published since 1994 which recommend using various trading models to estimate aggregate damages, and provide additional evidence regarding the reliability of these models. Finally, the authors discuss the implications of their findings, focusing particularly on settlements of securities class actions.

This monograph, like all others published by the National Legal Center, is presented to encourage greater understanding of the law, including how and why it has developed to its present state and where it may be headed in the future. The *Briefly* is intended for educational purposes only and is not a substitute for the advice of counsel as to any particular legal problem or issue faced by the reader. The views expressed herein do not necessarily reflect the opinions of the advisers, officers, or directors of the Center, nor of the authors' firm or clients.

Richard A. Hauser
President
National Legal Center

Volume 10, Number 3
March 2006

THE USE OF TRADING MODELS TO ESTIMATE AGGREGATE DAMAGES IN SECURITIES FRAUD LITIGATION: AN UPDATE

DANIEL R. FISCHEL
DAVID J. ROSS
MICHAEL A. KEABLE

TABLE OF CONTENTS

PREFACE

RICHARD A. HAUSER Inside Front Cover

**THE USE OF TRADING MODELS TO ESTIMATE
AGGREGATE DAMAGES IN SECURITIES FRAUD
LITIGATION: AN UPDATE**

DANIEL R. FISCHER, DAVID J. ROSS,
and MICHAEL A. KEABLE

I. INTRODUCTION 1

II. RECENT COURT DECISIONS 2
Kaufman v. Motorola, Inc. 3
In re Broadcom Corporation Securities Litigation 4

III. RECENT LITERATURE 7
Beaver et al. (1997) 8
Mayer (2000) 10
Bassin (2000) 11
Barclay & Torchio (2001) 12
Murray & Belfi (2004-05) 15

IV. NEW EVIDENCE 18
Table 1 22
Table 2 24
Table 3 26

V. SOME IMPLICATIONS 28

ABOUT THE AUTHORS 31

ABOUT THE NATIONAL LEGAL CENTER

Board of Directors 33
Legal Advisory Council 35
The Mission Inside Back Cover

© 2006 National Legal Center
for the Public Interest
ISSN 1089-9820
ISBN 0-937299-46-4
ISBN 1-930742-76-2
Published March 2006

**NATIONAL LEGAL CENTER
FOR THE PUBLIC INTEREST**
1600 K Street, N.W., Suite 800
Washington, D.C. 20006
Tel: (202) 466-9360
Fax: (202) 466-9366
E-mail: info@nlcpi.org
Please visit our Web site at: www.nlcpi.org

The National Legal Center for the Public Interest is a tax-exempt, nonprofit public interest law and educational foundation, duly incorporated under the law of the District of Columbia to provide nonpartisan legal information and services to the public at large. NLCPI is qualified to receive tax-deductible contributions under I.R.C. Sec. 501(c)(3).

**THE USE OF TRADING MODELS
TO ESTIMATE AGGREGATE
DAMAGES IN SECURITIES
FRAUD LITIGATION:
AN UPDATE**

DANIEL R. FISCHEL
DAVID J. ROSS
MICHAEL A. KEABLE

I. INTRODUCTION

In a 1994 monograph, two of the authors criticized the use of trading models to estimate aggregate damages in open-market class action securities fraud litigation.¹ We argued that trading models often would not provide reliable estimates of aggregate damages, and noted that the then-available empirical evidence suggested that such models would typically overstate damages, sometimes by as much as 74%.² In light of these conclusions, we argued that pretrial discovery of actual trading data would provide litigants and courts with much more reliable information, and that damage awards at trial should be based on actual trading data.³

This monograph assesses the developments that have occurred in the intervening years. In Section II, we examine recent court decisions that have precluded the admission of evidence concerning aggregate damages based on trading models on *Daubert* grounds, and also found that an adequate remedy could be fashioned by having the jury determine a per-share damage amount per day, and then using the

¹ DANIEL R. FISCHEL & DAVID J. ROSS, *The Use of Trading Models to Estimate Aggregate Damages in Securities Fraud Litigation: A Proposal for Change*, in SECURITIES CLASS ACTIONS: ABUSES AND REMEDIES 131 (National Legal Center for the Public Interest 1994) (hereinafter referred to as "Fischel & Ross").

² *Id.* at 133-42.

³ *Id.* at 142-44.

claims administration process to calculate an accurate, reliable total damage figure and payout.⁴ In Section III, we review and critique articles published after 1994 that advocate the use of trading models. In Section IV, we present some powerful new evidence demonstrating the unreliability of trading models as estimators of aggregate damage claims. Finally, in Section V, we discuss some of the implications of our conclusions.

II. RECENT COURT DECISIONS

As we noted in our prior monograph, “out-of-pocket loss” is the basic measure of damages in open-market securities cases. Under this measure, a defrauded buyer can recover as damages economic losses that were caused by the fraud.⁵ For buyers who bought and sold shares during the class period, the amount of damages will generally depend on, among other things, the number of shares traded and the dates of the transactions. In principle, aggregate damages are the sum of each class member’s damages. However, the information necessary to determine the dates and amounts of the security bought and sold by all potential class members is not generally publicly available. For this reason, litigants sometimes suggest using a trading model to prove aggregate damages at trial or, more often, to estimate aggregate damages for settlement purposes.

In two recent cases—*Kaufman v. Motorola, Inc.*⁶ and *In re Broadcom Corporation Securities Litigation*⁷—courts conducted evidentiary hearings concerning the use of trading models in cases in which plaintiffs (and their experts) advocated the use of a trading model to

prove aggregate damages, while defendants advocated that the prove-up of aggregate damages through the claims administration process would be more appropriate. As we explain below, both courts concluded that the trading models at issue did not satisfy the *Daubert* test for submission to the jury. Moreover, both courts concluded that it was not necessary to use a trading model to assess aggregate damages because a jury could determine per-share damages, and the court could easily use the claims administration process to supply the remaining information to calculate an accurate, reliable total damage figure.

Kaufman v. Motorola, Inc.

In *Kaufman v. Motorola, Inc.*, plaintiff’s expert employed a proportional trading model (“PTM”) to determine aggregate damages to the class by multiplying the alleged inflation per share during the class period by the aggregate number of shares that were “damaged” by the alleged fraud (i.e., purchased during the class period and sold after the disclosure of the “truth”).⁸ Defendants filed a motion *in limine* to preclude plaintiff’s expert from testifying at trial concerning his application of the PTM to determine aggregate damages.⁹ The court conducted several evidentiary hearings, heard extensive argument, and considered extensive briefing by the parties on this issue.

The court reached two principal findings. First, the court found that “[t]he proportional trading model does not meet any of the *Daubert* standards.”¹⁰ In reaching this finding, the court concluded that “the

⁴ Persons affiliated with Lexecon served as expert witnesses in several of the cases discussed herein.

⁵ The Securities Exchange Act of 1934 also allows an open-market seller of securities to claim damages if the alleged fraud caused the subject security’s price to trade below its “true value” at the time of sale. For ease of presentation, we will refer solely to buyers of common stock throughout this monograph.

⁶ 2000 U.S. Dist. LEXIS 14627 (N.D. Ill. 2000).

⁷ 2005 U.S. Dist. LEXIS 12118 (C.D. Cal. 2005).

⁸ *Kaufman*, *supra* note 6, at *3-*4.

⁹ *Id.* at *2.

¹⁰ *Id.* at *5. As the court described, in *Daubert*, the Supreme Court directed district courts to consider four factors in determining the reliability of expert testimony offered under Federal Rule of Evidence 702: “(1) whether the theory or technique can be and has been tested; (2) whether the technique or theory has been subjected to peer review and publication; (3) the known or potential rate of error; and (4) the ‘general acceptance’ of the theory.” *Id.* at *3 (citing *Bradley v. Brown*, 42 F.3d 434, 437 (7th Cir. 1994)). We note that, although some courts have admitted some trading models post-*Kumho*, their

proportional decay model has never been tested against reality” and “has never been accepted by professional economists.”¹¹ The court concluded that “in absence of such testing and in absence of any acceptance by the professional economists of the theory, it simply does not pass *Daubert* muster.”¹²

Second, the court found that an aggregate damage computation was not necessary because “an adequate remedy may be fashioned by having the jury determine a per share damage loss and requiring the filing of claims by each shareholder who claims that he, she, or it has been damaged.”¹³

In reaching this conclusion, the court noted that under applicable case law, “only ‘actual damages’ may be awarded to each shareholder.”¹⁴

In re Broadcom Corporation Securities Litigation

In the *In re Broadcom Corporation Securities Litigation*, plaintiffs’ expert employed a “two-trader model” to determine aggregate damages to the class.¹⁵ Defendants then moved to exclude plaintiffs’ expert’s aggregate damages testimony, and plaintiffs filed a cross-motion to permit aggregate damages evidence.¹⁶ The court held a two-day evidentiary hearing on the *Daubert* issue concerning the trading model

decisions do not reflect an application of the *Daubert* factors to the models. See, e.g., *RMED International, Inc. v. Sloan’s Supermarkets, Inc.*, 2000 WL 420548 (S.D.N.Y. Apr. 18, 2000) (affirming 2000 WL 310352 (S.D.N.Y. Mar. 24, 2000)) (recognizing that “aggregate damages in securities fraud cases are generally incapable of mathematical precision” but applying the *Daubert* factors only to the expert’s “true value” estimate, not her trading model).

¹¹ *Kaufman*, at *5.

¹² *Id.* at *7.

¹³ *Id.* at *6.

¹⁴ *Id.* (citing *Affiliated Ute Citizens of Utah v. United States*, 406 U.S. 128, 155, 92 S. Ct. 1456, 31 L. Ed. 2d 741 (1972); *Rowe v. Maremont Corp.*, 850 F.2d 1226, 1240 (7th Cir. 1988); and 15 U.S.C. § 78bb(a)).

¹⁵ *Broadcom*, *supra* note 7, at *3-*4.

¹⁶ *Id.* at *3.

and reviewed all of the parties’ evidentiary showing and extensive briefing.¹⁷

The court’s principal findings parallel those of the court in *Kaufman v. Motorola, Inc.* First, the court found that “the proposed trading model probably does not satisfy the *Daubert* test for submission to the jury.”¹⁸ In reaching this conclusion, the court noted:

The technique has not been tested against “real world” conditions, and probably cannot be so tested unless a different set of test protocols is established. It has not been subjected to the sort of critical peer review and publication that one would expect as a prerequisite for jury acceptance. The potential error rate is highly questionable, and is based on a set of criteria that undermines the claimed error rate as being truly representative of the facts sought to be proved. Although held out by litigation professionals as useful in securities litigation, most notably as a settlement aid, the technique is not generally accepted in what is the relevant scientific community—professional economists.¹⁹

Second, the court found that it did “not need to finally decide whether the trading model technique passes the *Daubert* test” because “an alternative, completely reliable method is available through the claims administration process.”²⁰ The court found that “the jury can determine per share damage per day, and the Court can easily use the claims administration process to supply the remaining information to calculate an accurate, reliable total damage figure and payout.”²¹

The court also considered “the suggested disadvantages of using the claims administration technique.”²² First, the court rejected plaintiffs’ argument that “the public is entitled to know the full amount of the

¹⁷ *Id.*

¹⁸ *Id.* at *8.

¹⁹ *Id.*

²⁰ *Id.* at *9-*10.

²¹ *Id.* at *10.

²² *Id.*

harm,” finding that “the lawsuit’s purpose is to compensate claims lawfully made, not to declare a degree of harm.”²³ The court accepted plaintiffs’ argument that “they have a possessory right in a common fund,” but found that “this would only apply to the amount for which defendants are lawfully liable after receipt of claims.”²⁴ The court rejected plaintiffs’ argument that, “without an adjudged aggregate amount, there is nothing for the class ‘to look to or hang onto,’ and fewer claims will be submitted,” finding that “it is not the function of the lawsuit to provide that comfort to the class, and the ‘ballpark’ of the total recovery will probably be known.”²⁵ The court also rejected plaintiffs’ argument that “an aggregate award would provide a source for fees and expenses during the claims process,” finding that “the Court can order an unsuccessful defendant to deposit a reasonable sum for fees and expenses pending that process.”²⁶ Finally, the court considered the argument that “an aggregate award might permit earlier appellate review” but concluded that “appellate review of an unreliable determination is not productive and, in any event, an interlocutory appeal can be sought under 28 U.S.C. § 1292(b).”²⁷

After review of the Private Securities Litigation Reform Act of 1995 (“PSLRA”), the court concluded that “the statute neither requires nor prohibits proof of aggregate damages” but instead “leaves it open for

²³ *Id.* Moreover, while the court did not state this, the public could know the full amount of the harm when the claims administration technique is used, that is, after claims are submitted.

²⁴ *Id.*

²⁵ *Id.* The court failed to recognize that a per-share award provides greater certainty to class members because each class member knows exactly what amount he or she will receive per share if he or she submits a claim. With an aggregate award, the amount any class member will receive depends on something he or she cannot know—what claims will be made by other class members. For example, in most settlements, each class member is eligible for a *pro rata* portion of the total settlement amount; therefore, the more potential claimants who file valid claims, the lower the amount received by each claimant.

²⁶ *Id.* at *10-*11.

²⁷ *Id.* at *11.

a court to select the most reliable method of damages proof that is available.”²⁸ Still, the court did not find that a trading model could not be used to establish aggregate damages in any case, finding only that “under the unique facts of this particular case, the advantage of certainty in the claims process outweighs the disadvantages.”²⁹ The court’s limitation on its ruling is curious because the claims administration technique will always provide the most reliable method of damages proof in any open-market class action securities case. Moreover, the claims administration technique guarantees that class members will not be awarded more than their actual damages; aggregate damages estimates calculated using trading models may not satisfy this requirement.

Furthermore, in relevant respects, the trading models that were ruled inadmissible on *Daubert* grounds in *Kaufman* and *Broadcom* are no different from other trading models that have been used by litigation professionals: no tests have demonstrated that the models produce consistently reliable results and the models have not been accepted by professional economists.

III. RECENT LITERATURE

Several articles have been published since 1994 advocating the use of trading models to estimate aggregate damages in open-market class action securities fraud cases.³⁰ Two of these articles—Barclay &

²⁸ *Id.* at *6. The court also reviewed the small body of case law the parties cited concerning the issue and concluded that none of the cases was controlling or dispositive. *Id.*

²⁹ *Id.* at *11.

³⁰ These include: William H. Beaver et al., *Stock Trading Behavior and Damage Estimation in Securities Cases* (Cornerstone Research 1997); Marcia K. Mayer, *Best-Fit Estimation of Damaged Volume in Shareholder Class Actions: The Multi-Sector, Multi-Trader Model of Investor Behavior*, (National Economic Research Associates, 3d ed. Oct. 2000); William M. Bassin, *A Two Trader Population Share Retention Model for Estimating Damages in Shareholder Class Action Litigations*, 6 STAN. J. L. BUS. & FIN. 49 (2000); Michael Barclay & Frank C. Torchio, *A Comparison of Trading*

Torchio (2001) and Murray & Belfi (2004-05)—also criticize certain aspects of Fischel & Ross. We review these articles and respond to these criticisms in this section.

Beaver et al. (1997)

Beaver et al. (1997) describe a “one-trader” trading model and a “two-trader” trading model for estimating damages in securities cases. The “one-trader” model “assumes that stock is held by only one type of investor, and that all investors are equally likely to trade their shares on any given day.”³¹ The “two-trader” model assumes that there are two types of investors: active investors or “traders,” and passive investors or “holders.”³² Traders have a higher probability of trading during any given time period than holders.³³ In order to implement the two-trader model, one has to specify the percentage of outstanding shares held by “traders” and what fraction of the aggregate trading volume is attributable to “traders.”³⁴

In addition to describing these two models, Beaver et al. compare the aggregate damage estimates of the two models with the aggregate damages estimated using actual depository record data for a single

Models Used for Calculating Aggregate Damages in Securities Litigation, 64 LAW & CONTEMP. PROBS. 105 (2001); and Brian P. Murray & Eric J. Belfi, *The Proportionate Trading Model: Real Science or Junk Science?*, 52 CLEV. ST. L. REV. 391 (2004-05). Another article, John Finnerty & George Pushner, *An Improved Two-Trader Model for Measuring Damages in Securities Fraud Class Actions*, 8 STAN. J. L. BUS. & FIN. 213 (2003), advocates the use of a two-trader model based on the authors’ assessment of the evidence presented by Beaver et al. (1997), Mayer (2000), and Bassin (2000-01) but fails to provide any additional evidence. We discuss the studies they rely upon below.

³¹ Beaver et al. (1997), *supra* note 30, at 2. This model is the same as the “proportional decay model” discussed in Fischel & Ross, *supra* note 1, at 135-36, and the PTM used by plaintiff’s expert in *Kaufman*.

³² Beaver et al. at 4.

³³ *Id.* The “two-trader” model is an example of the “generalized proportional decay” or “multiple investor” trading model described in Fischel & Ross at 141-42.

³⁴ *Id.*

security.³⁵ In order to perform this comparison, they chose parameters for the two-trader model that best fit the data; thus, they assumed that “traders” held 15.3% of the shares and accounted for 84% of the total shares traded.³⁶ Because the parameters of the two-trader model were chosen to fit the data, the estimated damages using the two-trader model were essentially the same as the estimated damages using the depository records.³⁷ However, the estimated damages using the one-trader model exceeded the estimated damages using depository records by approximately 90%-98%, depending on what assumption was made about the extent to which the security’s price was artificially inflated.³⁸ The authors conclude that these results “demonstrate[] damage estimates in securities fraud cases are sensitive to assumptions regarding share trading behavior,” “[t]he commonly used one-trader model is biased,” and that “the two-trader model is a much better representation of reality than the one-trader model.”³⁹

Beaver et al. do not establish that the two-trader model is reliable for two reasons. First, because the parameters they estimated were chosen to fit the data for a single case, there is no way to know whether these parameters and the model they used would reliably estimate trading patterns in other cases. Second, the parameters they estimated were chosen to fit depository record data concerning transactions, not to predict the actual claims made by class members

³⁵ Beaver et al. do not identify the security but note that it “was the subject of litigation in which Cornerstone Research helped prepare expert testimony.” *Id.* at 6. They also do not provide any description of the “depository record data.” If they are referring to data obtained from the transfer agent, such data would not allow one to identify intradealer transactions of shares held in “street name.”

³⁶ *Id.* at 7.

³⁷ *Id.*

³⁸ *Id.*

³⁹ *Id.* at 8. Barclay & Torchio (2001) criticize Beaver et al.’s implementation of the single-trader model for failing to exclude nontraded shares from the float and for failing to adjust reported volume for the trading of intermediaries. Barclay & Torchio (2001) at 109-10. These adjustments, they claim, would reduce the discrepancy between the predictions. *Id.*

in the litigation. Even a trading model that accurately reflects trading patterns will overstate the damages of investors who make claims when some eligible investors do not file claims.⁴⁰ We discuss additional evidence regarding such “No-Shows” below. *See infra* pages 15-16 & Section IV.

Mayer (2000)

Mayer (2000) also describes a one-trader model and what is essentially a three-trader model of investor behavior, which assumes, among other things, that “High Activity Investors are more inclined to trade, relative to their holdings, than Low Activity Investors” and some of the trading volume is attributable to “Intraday Traders” who “never carry a position overnight.”⁴¹ She then describes how these assumptions were used to estimate parameters for the three-trader model from brokerage firm data that were obtained through discovery in 12 shareholder class actions.⁴² In the pooled sample, the observed intraday trading rate was 33.7%, the initial ownership of High Activity Investors was 37.1%, and the fraction of purchases attributable to High Activity Investors was 83.4%.⁴³

Mayer states that the multi-trader approach can be “implemented in rough-and-ready fashion” using the parameters from the pooled data set.⁴⁴ However, there is no reason to believe that aggregate damage estimates derived using the parameters from the pooled sample would be reliable in any particular case. Mayer found that the best-fit

⁴⁰ *See* Fischel & Ross at 139. We refer to eligible investors who do not file claims as “No-Shows.”

⁴¹ Mayer (2000), *supra* note 30, at 8. Mayer calls her model a “multi-sector, multi-trader model.” It is “multi-sector” because she advocates using actual data to calculate the damages of market participants (such as institutions) for which holder-specific data are available, and using the “multi-trader model” to calculate the damages of the other sector—“unidentified investors.” *Id.* at 7-8.

⁴² *Id.* at 9-10.

⁴³ *Id.* tbl. 5.

⁴⁴ *Id.* at 11.

parameters varied widely from case to case: the observed intraday trading rate ranged from 0.2% to 58.3%, the initial ownership of High Activity Investors ranged from 2.9% to 90.5%, and the fraction of purchases attributable to High Activity Investors ranged from 29.8% to 100% in her sample of 12 cases.⁴⁵ Moreover, even the best-fit parameters explained only about 64% of the variation in retention rates in her sample.⁴⁶ Therefore, Mayer’s results imply that even a three-trader model based on some additional data is unlikely to reliably estimate trading patterns, let alone aggregate damage claims in open-market securities class actions.

Bassin (2000)

Bassin (2000) describes a two-trader model and reports estimates of the parameters of the model based on an analysis of claimant share retention data from a sample of seven settled class actions. According to Bassin, the estimated parameters for the average of the seven cases are as follows: active traders hold 30.51% of the float and account for 89.94% of the reported volume, whereas inactive traders hold 69.49% of the float and account for 10.06% of the reported volume.⁴⁷ These estimates are somewhat different from the estimates reported by Mayer for her pooled 12-firm sample (her estimates imply that active traders hold more shares, but are responsible for less volume). Bassin does not report estimated parameters for the seven cases separately, making it impossible to evaluate how the estimated parameters would vary from case to case. As discussed above, Mayer found substantial case-to-case variation in the parameters of a two-trader model. Therefore, there is no reason to believe that a two-trader model with the parameters reported by Bassin would reliably estimate trading patterns in other cases.

⁴⁵ *Id.* tbl. 5.

⁴⁶ *Id.*

⁴⁷ Bassin (2000), *supra* note 30, fig. 3.

Barclay & Torchio (2001)

Barclay & Torchio (2001) purport to critically analyze certain previously published research concerning trading models and conclude that the evidence is not sufficient to reject the proportional single-trader model “as a scientific method to estimate the number of damaged shares in securities litigation.”⁴⁸ For the reasons discussed below, their analysis is invalid and, in any event, does not establish that the proportional single-trader model is reliable.

Among other things, Barclay & Torchio criticize the indirect empirical test proposed by Fischel & Ross. Fischel & Ross noted that the proportional decay model often would predict that more shares were bought and held to the end of a class period than is possible in light of the data on insider and institutional holdings and provided an example of this phenomenon.⁴⁹ Barclay & Torchio argue that “Fischel and Ross predetermine the results of their indirect test by . . . failing to adjust the float properly in their model for the institutional trading data.”⁵⁰ This argument is wrong. The results of the indirect test are not predetermined—if all outstanding shares were equally likely to trade, then the proportional decay model would not fail the indirect test. The observed failure establishes that all shares are not equally likely to trade. This finding casts doubt on the validity of the assumption of the proportional decay model that shares in the float are equally likely to trade.⁵¹

Barclay & Torchio also criticize Cone & Laurence.⁵² The authors of that study (two of our former colleagues) used actual claims data that had been made available in two different securities fraud cases—one

involving Storage Technology Corp. and the other involving Midwestern Companies, Inc. Among other things, Cone & Laurence showed that the actual damage claims in both cases were a fraction of the claims that would have been predicted using the proportional decay model (26% in the case involving Storage Technology and 64% in the case involving Midwestern Companies).⁵³ Barclay & Torchio use institutional holdings data to show that at least 40% of the investors who bought shares during the Storage Technology class period and held those shares until the end of the class period did *not* make claims.⁵⁴ They then argue that Cone & Laurence’s findings may be attributable to the failure of these investors to make claims, rather than any shortcoming of the trading model.⁵⁵ But, this is a *non sequitur*. If the trading model does not reliably predict claims that are made, then it cannot be used to estimate the aggregate damages of the claimants, which, as the *Kaufman* court noted, are all that courts can award as damages.⁵⁶

Barclay & Torchio’s criticism of Cone & Laurence is also disingenuous. Cone & Laurence recognized that the prediction errors they observed could stem from both biases in the model and No-Shows.⁵⁷ For this reason, they considered several tests to distinguish

⁵³ *Id.* tbl. 1.

⁵⁴ Barclay & Torchio at 114.

⁵⁵ *Id.*

⁵⁶ Barclay & Torchio argue that this is “bad public policy” because the number of expected claims is likely to be a function of the predicted damages and a lower damage estimate will therefore result in lower claims. *Id.* at 116. This argument incorrectly assumes that the court must make an aggregate damage award. As discussed previously, both the *Kaufman* and *Broadcom* courts recognized that an adequate remedy could be fashioned by having the jury determine a per-share damage amount per day, and then using the claims administration process to calculate an accurate, reliable total damage figure and payout. Under these circumstances, claims likely would be a function of the per-share damage award, not the predicted aggregate damage award.

⁵⁷ Cone & Laurence, *supra* note 52, at 517.

⁴⁸ Barclay & Torchio (2001), *supra* note 30, at 105. They refer to the proportional single-trader model as the “General Trading Model (1x)” or the “GTM (1x).” *Id.*

⁴⁹ Fischel & Ross at 139.

⁵⁰ Barclay & Torchio at 110.

⁵¹ Fischel & Ross, n.22.

⁵² Kenneth R. Cone & James E. Laurence, *How Accurate Are Estimates of Aggregate Damages in Securities Fraud Cases?*, 49 BUS. LAW. 505 (1994).

the two sources of prediction error; these tests provided further evidence of biases in the model.⁵⁸

Barclay & Torchio also dismiss the evidence presented in Cone & Laurence because it is “now quite old” and does not reflect the results of current claims administration practices.⁵⁹ They cite a report and deposition testimony provided in 1999 by John B. Torkelsen, plaintiffs’ expert in the *In re Health Management, Inc. Securities Litigation*, who estimated that submitted claims accounted for 89% of the predicted number of damaged shares based on a PTM.⁶⁰ Torkelsen’s estimates are of questionable veracity.⁶¹ In Section IV, we present data for 46 cases that show that trading models typically vastly overstate actual claims.

Moreover, data from other more recent cases do not support the use of trading models. In a case involving Clearly Canadian Beverage Corp., application of the proposed plan of allocation to submitted claims revealed actual claimed damages of approximately \$5.84 million, about 23% of the \$25.3 million implied by the proportional decay model.⁶² The difference was attributable to two factors: “(1) the existence of eligible claimants who did not file claims” (after claims were submitted, the claimed purchases of 7,398,180 accounted for only 15.5% of the actual reported trading volume during the class period); and (2) “the . . . marked difference between the actual trading patterns and the trading patterns assumed by the proportional decay model used to estimate damages shares.”⁶³

A more recent case still is *In re WorldCom, Inc. Securities Litigation*. This was a massive securities fraud case that arose from the

collapse of telecommunications giant WorldCom, Inc. (“WorldCom”).⁶⁴ The class in this case consisted of all persons and entities who purchased or otherwise acquired publicly traded securities of WorldCom during the period beginning April 29, 1999, through and including June 25, 2002, and who were injured thereby.⁶⁵ Lead plaintiff entered into settlement agreements with various defendants in 2004 and the first few months of 2005, which, in the aggregate, provided that the class will recover \$6.133 billion, plus interest.⁶⁶ Putative class members received a December 11, 2003, Notice of Class Action, an August 2, 2004, Notice that gave them instructions on how to submit proofs of claim, and a supplementary notice on or prior to July 1, 2005, which included a proposed Supplemental Plan of Allocation and extended the deadline by which class members could file proofs of claim from March 4, 2005, to August 26, 2005.⁶⁷ As a result of this process, approximately 834,000 class members ultimately filed proofs of claim, even though more than four million putative class members were notified of the settlements.⁶⁸ This implies that 79% of the class members were No-Shows. We provide additional evidence regarding No-Shows in Section IV of this monograph.⁶⁹

Murray & Belfi (2004-05)

Murray & Belfi (2004-05) criticize Fischel & Ross, as well as the court’s analysis in *Kaufman*, and contend that the PTM meets the

⁵⁸ *Id.* at 517-21.

⁵⁹ Barclay & Torchio at 115 & 116.

⁶⁰ *Id.* at 117.

⁶¹ Torkelsen is now an admitted felon. *See, e.g., Former Expert Witness for Milberg Weiss Gets Plea Deal*, THE RECORDER, Nov. 7, 2005.

⁶² *See In re Clearly Canadian Securities Litigation and In re Borland Securities Litigation*, 1999 U.S. Dist. LEXIS 14273, Fed. Sec. L. Rep. (CCH) ¶ 90,664, at *9 (1999).

⁶³ *Id.* at *10-*11.

⁶⁴ 2005 U.S. Dist. LEXIS 20630, at *2 (S.D.N.Y. 2005).

⁶⁵ *Id.* at *7.

⁶⁶ *Id.* at *2-*3.

⁶⁷ *Id.* at *7-*8 & *34.

⁶⁸ *Id.* at *43.

⁶⁹ Also, *see* James D. Cox & Randall S. Thomas *Letting Billions Slip Through Your Fingers: Empirical Evidence and Legal Implications of the Failure of Financial Institutions to Participate in Securities Class Action Settlements*, 58 STAN. L. REV. 411-54. These authors analyzed data for 118 recent securities fraud class action settlements between 1995 and 2002 and found that less than 30% of institutional investors with provable losses perfect their claims in these settlements. *Id.* at 412-13.

Daubert standards for admissible expert testimony.⁷⁰ These criticisms are invalid for the reasons discussed herein.

Among other things, Fischel & Ross explain that trading by intermediaries (such as specialists and market-makers) causes reported volume to exceed the number of shares purchased by investors who are not acting as intermediaries.⁷¹ Murray & Belfi counter that this is “not truly a criticism of the PTM” because experts using a version of the PTM can “reduce reported volume to account for market makers and specialists.”⁷² However, Fischel & Ross explained that “because the activities of intermediaries vary from day to day, there is no simple way to adjust reported volume figures to remove trades by intermediaries.”⁷³ Murray & Belfi also assert that such adjustments to reported volume have “no direct bearing on the accuracy or inaccuracy of the PTM.”⁷⁴ This is surely wrong: the amount of estimated aggregate damages necessarily depends on the size of the adjustment.⁷⁵

Fischel & Ross also explain that the PTM does not provide any mechanism for quantifying the extent to which investors who bought shares during the class period avoided injury due to an alleged fraud because they were “out-and-in” during the class period (first selling shares at the inflated price that they had purchased *prior* to the beginning of the class period when the price was not inflated, and then buying shares at inflated prices during the class period).⁷⁶ In addition,

⁷⁰ Murray & Belfi (2004-05), *supra* note 30. They also reiterate the critique of Cone & Laurence made by Barclay & Torchio. This critique was discussed above. *See supra* pages 13-14.

⁷¹ Fischel & Ross at 136-38.

⁷² Murray & Belfi at 405.

⁷³ Fischel & Ross at 138.

⁷⁴ Murray & Belfi at 405.

⁷⁵ *See* Cone & Laurence at 511-13.

⁷⁶ Fischel & Ross at 138. Accounting for these benefits from the fraud is consistent with the calculation that many experts employ to estimate per-share damages. For example, Barclay & Torchio state that “[i]n general, damages per share are calculated as the artificial inflation when the shares were purchased minus the artificial inflation when the shares were sold.” Barclay & Torchio at 106. For the same reason that “in-and-out” class members benefit from the fraud at the time of sale and at least partially offset their per-share damages,

the PTM does not offset the losses that class members incurred by virtue of their purchases of a security at artificially inflated prices with any benefits these investors might have received as a result of their transactions in other securities of the same issuer, or related derivative securities.⁷⁷ Murray & Belfi do not dispute that “the damages a purchaser suffers from buying a stock at a fraudulently inflated price are mitigated if he has sold stock or options at an inflated price” but nevertheless assert that this “has no bearing on the accuracy of the PTM.”⁷⁸ This assertion is obviously wrong—the PTM will overstate the damages of such purchasers because it does not account for the offsetting benefits such purchasers received from sales of pre-class period holdings and transactions in related securities.

Fischel & Ross also explain that the PTM does not provide any information about the extent to which class members will file claims.⁷⁹ Murray & Belfi assert that this criticism “appears to be based on the premise that if you do not submit a proof of claim, you have not suffered any damages.”⁸⁰ Not so. Investors who do not submit a claim may have damages, but they cannot recover them. Moreover, the damages of such No-Shows cannot be awarded to other class members who do file claims because courts cannot award these investors more than their actual damages.⁸¹ Even a trading model that reliably estimates trading patterns will not reliably estimate aggregate damage claims when there are substantial No-Shows.

The *Kaufman* court noted that “the reliability of an economic theory is tested by comparing it to reality” and found that the PTM had never been tested against reality.⁸² Murray & Belfi argue that the requirement

“out-and-in” class members benefit from the fraud at the time of sale and at least partially offset their total damages.

⁷⁷ Fischel & Ross at 138-39.

⁷⁸ Murray & Belfi at 405.

⁷⁹ Fischel & Ross at 139.

⁸⁰ Murray & Belfi at 406.

⁸¹ *See Kaufman, supra* note 6, at *6. Murray & Belfi also adopt Barclay & Torchio’s criticism of the indirect empirical tests described by Fischel & Ross. This criticism was discussed previously. *See supra* pages 12-13.

⁸² *Id.* at *5.

that a theory be tested against reality is too stringent because “some theories are impossible to test against reality.”⁸³ However, Murray & Belfi do not explain why expert testimony based on untestable theories should be admitted (especially when there is an accurate and reliable alternative to the untestable theory), or how courts should choose between competing theories in the absence of reliable tests.⁸⁴

IV. NEW EVIDENCE

Cone & Laurence (1994) is the only published article that we are aware of that provides any data concerning actual claims made in securities cases, and they analyzed data for only two cases. In this section, we supplement their findings by analyzing the actual individual and aggregate claims made in 46-open market securities fraud cases.⁸⁵

Table 1 (*see* pages 22 and 23 of this monograph) presents summary statistics regarding our sample. Twenty-three of the 45 stocks traded on the NASDAQ, 15 traded on the NYSE, and six traded on the AMEX. The class periods range in length from 13 to 835 days. The earliest class period ended in 1989, and the most recent ended in 1998. The trading volume during the class periods ranged from approximately three million shares to approximately 1.4 billion shares. The market capitalization of the companies on the first day of their respective class periods ranged from \$57 million to \$14 billion. Finally, the sample

⁸³ Murray & Belfi at 404.

⁸⁴ Fischel & Ross explain that there are many trading models that can be used (including multi-trader models and the accelerated trading model) that are constructed to be consistent with the available data, but produce very different estimated trading patterns. Fischel & Ross at 140-42. Without tests of reliability, courts have no reasonable basis for preferring one model to another. *Id.* at 142.

⁸⁵ We obtained the data for 45 of these cases from a claims administrator and obtained the data for the 46th case from defendant’s counsel. All of these cases were resolved by settlement. The sample includes two different cases involving the same issuer (Ferrofluidics Corp.) and one settlement that covered two separate cases brought against one issuer; consequently, the sample of 46 cases comprises 44 stocks and 45 settlements.

covers companies that operated in 21 different industries, as measured by their 2-digit Standard Industrial Classification codes.

We estimated aggregate damages for the 46 cases using two of the models discussed in Section III, *supra*: the PTM (which is the same model as the GTM(1x) advocated by Barclay & Torchio), and the multi-sector, multi-trader model (“MTM”) advocated by Mayer.⁸⁶ We prepared the inputs to the models, including adjusted volume and estimated float, in the manner suggested by these authors’ articles. Our calculations also use the “true values” reported in the settlement notices for each of the respective cases. Therefore, we can assess the reliability of the aggregate damage estimates generated by the trading models by comparing these estimates with the aggregate claimed losses reported by the settlement administrators.

We define “Estimation Error” as the difference between the aggregate damage estimate produced by a trading model and the aggregate claimed losses, expressed as a percentage of the aggregate claimed losses. In other words, Estimation Error measures the percentage by which the trading models over- or underestimate the actual claims made; positive numbers indicate overestimates, and negative numbers indicate underestimates. Table 2 (*see* pages 24 and 25) reports the Estimation Error in each case for both trading models. The table shows that the aggregate damage estimates generated by the PTM exceed aggregate claimed losses in every case. The Estimation Error ranges from 8% to 637% with a mean of 172% and a median of 143%.⁸⁷

The MTM’s performance is not significantly better. Table 2 shows that the aggregate damage estimates generated by the MTM also exceed the aggregate losses claimed in each case; the Estimation Error ranges from 22% to 752% with a mean of 151% and a median of

⁸⁶ In calculating aggregate damages, we applied the 90-day bounce-back provision of the PSLRA to the cases that had class periods that ended after implementation of the PSLRA in December 1995.

⁸⁷ For NYSE and AMEX stocks, the PTM’s mean Estimation Error is 187%, while the median Estimation Error is 157%; for NASDAQ stocks, the mean and median Estimation Errors are 159% and 121%, respectively.

124%.⁸⁸ These wide ranges demonstrate that there is no reason to believe that a trading model with fixed parameters will reliably estimate aggregate damages for any particular stock. Also, note that the Estimation Error in Ferrofluidics II was more than twice that for Ferrofluidics I using the PTM and more than 50% greater using the MTM. These results imply that even if an individual identified parameters for a trading model that accurately predicted claims in one period, these parameters would not accurately predict claims in another period. Therefore, this information casts further doubt on the reliability of any trading model that uses fixed parameters based on actual trading data for other firms or even the same firm in a different period.

Table 2 also establishes that neither model is consistently better or worse in estimating actual claimed losses than the other; in some cases the PTM's Estimation Error is greater than the MTM's, while in other cases the opposite is true. Moreover, the results from the MTM demonstrate that using more of the limited publicly available data does not dramatically increase the ability of a trading model to estimate actual claimed losses.

These data demonstrate that neither the PTM nor the MTM reliably estimates aggregate claimed losses and that both models can substantially overestimate actual claimed losses in any specific case. These Estimation Errors are attributable to some combination of (1) modeling error (i.e., the failure of the models to accurately simulate actual trading patterns), and (2) No-Shows (i.e., the failure of class members to assert claims).

We also used the claims data and quarterly institutional holdings data to provide some additional evidence on the extent of No-Shows. One can use institutional holdings data to calculate a lower bound on the number of shares bought during the class period and held to the end of the class period. For institutions whose holdings increased during the class period, the increase in holdings measures the number of shares that the institution bought during the class period and held

⁸⁸ For NYSE and AMEX stocks, the MTM's mean Estimation Error is 151%, while the median mean Estimation Error is 136%; for NASDAQ stocks, the mean and median Estimation Errors are 151% and 109%, respectively.

until the end of the class period ("Institutional Buys"). For institutions whose holdings decreased during the class period, the decrease in holdings ("Institutional Sells") represents shares that other investors must have bought during the class period and held until the end of the class period. Therefore, the total number of shares bought and held until the end of the class period by all investors is necessarily at least as large as the greater of aggregate Institutional Buys and aggregate Institutional Sells. We refer to this as the "Lower Bound on Retained Shares."⁸⁹

Table 3 (*see* pages 26 and 27) compares the Lower Bound on Retained Shares with retained shares reflected in the claims data ("Claimed Retained Shares") for each case.⁹⁰ The table shows that for eight of the 45 settlements, the Claimed Retained Shares were less than the Lower Bound on Retained Shares.

⁸⁹ Because the class periods for the 46 cases begin and end between the quarter-end periods at which the institutional holdings are reported, we interpolated the number of shares held at each class period's beginning and end by allocating quarterly changes daily on a *pro rata* basis using reported volume. Consequently, the Lower Bound on Retained Shares figures reflect estimates of the true lower bound.

⁹⁰ Claimed Retained Shares were calculated on the Last-In-First-Out ("LIFO") basis.

Table 1
Summary Statistics

N	Stock/Case	Primary SIC Code	Market on Which the Stock Traded	Class Period		Number of Trading Days During C.P.	Total Trading Volume During C.P.	Market Cap. on First Day of C.P.
				Begin	End			
1	3DO Company	36	NASDAQ	05/03/93	05/19/94	265	66,766,081	\$405,060,750
2	Aura Systems	36	NASDAQ	01/18/95	04/25/97	575	339,852,557	\$180,219,375
3	Avid Technology	36	NASDAQ	07/26/95	12/20/95	104	44,098,047	\$843,925,625
4	Bay Financial	67	NYSE	08/11/87	10/17/89	554	3,180,200	\$75,465,000
5	Caremark International	80	NYSE	01/25/93	11/17/94	461	171,063,900	\$1,058,750,000
6	ComFed Bancorp	61	AMEX	06/30/86	06/29/89	760	17,874,200	\$118,381,500
7	Copley Pharmaceutical	28	NASDAQ	10/15/92	12/06/94	542	54,343,907	\$263,927,500
8	Diagnostek	80	NYSE	04/28/94	03/24/95	230	89,619,700	\$391,208,625
9	Ferrofuidics Corp I	36	NASDAQ	06/30/91	01/31/94	656	17,483,279	\$272,936,250
10	Ferrofuidics Corp II	36	NASDAQ	08/17/92	09/07/93	268	7,618,972	\$58,896,250
11	First Constitution Financial	67	NASDAQ	01/25/89	04/05/90	303	19,023,891	\$190,273,625
12	Fuehauf Trailer	37	NYSE	06/28/91	12/04/92	365	10,766,700	\$378,448,875
13	IDM Environmental	17	NASDAQ	03/08/96	06/05/97	315	39,381,893	\$49,600,000
14	JWP Inc	17	NYSE	05/01/91	10/02/92	362	81,917,400	\$726,080,625
15	Knart Corp	53	NYSE	04/10/95	11/03/95	146	366,389,405	\$6,768,598,000
16	Kurzweil Applied Intelligence	73	NASDAQ	08/17/93	04/28/94	177	13,593,276	\$59,434,375
17	Lotus Development	73	NASDAQ	04/20/94	06/20/94	42	74,945,399	\$2,606,584,250
18	Marcam Corp	73	NASDAQ	10/23/91	10/07/93	496	50,416,905	\$145,532,250
19	Martin Color-Fi	28	NASDAQ	04/21/93	02/28/95	470	5,865,622	\$65,600,000
20	Mercury Savings & Loan	61	NYSE	04/03/87	01/19/90	708	7,011,123	\$65,874,997
21	Mesa Airlines	45	NASDAQ	01/28/93	08/05/94	385	148,474,805	\$500,487,750
22	Mid-Atlantic Medical Services	80	NYSE	03/01/95	06/15/95	75	38,180,500	\$928,325,750
23	MTI Technology	35	NASDAQ	05/21/98	06/09/98	13	4,960,897	\$382,914,000
24	NTN Communications	73	AMEX	11/09/94	03/28/95	96	12,662,800	\$120,646,875
25	Octagon	89	NASDAQ	07/12/94	09/09/94	43	15,832,800	\$54,018,750
26	Open Environment	73	NASDAQ	04/13/95	10/10/96	379	35,326,509	\$151,569,625
27	Orange and Rockland Utilities	49	NYSE	01/01/93	12/31/93	253	3,882,600	\$290,873,500
28	Pepsi-Cola Puerto Rico Bottling	20	NYSE	09/19/95	08/12/96	227	17,794,600	\$231,000,000
29	Plains Resources (Moroson)†	13	AMEX	05/11/92	08/14/92	68	9,903,600	\$145,656,250
30	Plains Resources (Rubinstein)†	13	AMEX	10/23/91	04/13/92	120	17,431,600	\$228,631,250
31	Porta Systems	36	AMEX	08/14/92	04/01/93	160	8,234,200	\$116,672,625
32	Positive Response Television	78	NASDAQ	11/07/94	04/28/95	120	5,655,744	\$62,568,750
33	PS Group	67	NYSE	02/25/91	02/20/92	251	6,389,600	\$223,950,200
34	Reuters Holdings PLC	73	NASDAQ	12/01/88	12/04/90	508	315,333,599	\$1,205,537,750
35	Rexene Corp	30	NYSE	10/23/89	12/27/89	46	2,976,600	\$173,812,500
36	Riddell Sports	39	NASDAQ	12/19/91	10/09/92	205	10,787,948	\$57,486,000
37	Standard Microsystems	36	NASDAQ	09/19/94	06/02/95	179	59,708,592	\$278,088,750
38	Stevens Graphics	27	AMEX	10/18/89	10/31/90	263	5,221,000	\$128,317,000
39	Stewart & Stevenson Services	50	NASDAQ	05/02/94	05/03/95	255	79,548,282	\$1,424,871,250
40	Sulcus Computer Corp	35	AMEX	10/22/92	04/07/94	369	44,855,300	\$88,602,250
41	Timberland Company	31	NYSE	05/12/94	12/09/94	148	10,422,300	\$299,722,500
42	Topps Company	20	NASDAQ	06/16/92	01/25/93	155	59,730,735	\$806,531,000
43	Uniroyal Chemical	28	NASDAQ	03/16/95	09/20/95	130	28,812,404	\$289,236,000
44	US Diagnostic	80	NASDAQ	03/15/96	03/31/97	263	120,037,921	\$58,901,375
45	Waste Management I	49	NYSE	11/03/94	02/24/98	835	1,378,471,611	\$13,971,746,250
46	Woolworth Corp	53	NYSE	05/12/93	03/29/94	224	114,876,800	\$3,802,857,000

† The two Plains Resources cases were settled at the same time; the settlement amounts for the two cases were not disclosed separately. Source: Center for Research in Security Prices (CRSP).

Table 2

Trading Model Estimation Error

N	Stock	Modeled Aggregate Losses		Claimed Losses (C)	Estimation Error	
		PTM (A)	MTM (B)		PTM (A/C-1)	MTM (B/C-1)
1	3DO Company	\$199,431,267	\$158,448,569	\$37,762,251	428.1%	319.6%
2	Aura Systems	\$187,126,200	\$151,782,115	\$81,308,906	130.1%	86.7%
3	Avid technology	\$179,647,896	\$210,349,273	\$108,053,080	66.3%	94.7%
4	Bay Financial	\$18,532,346	\$15,036,996	\$6,046,493	206.5%	148.7%
5	Caremark International	\$135,219,111	\$119,932,789	\$31,228,453	333.0%	284.0%
6	ComFEd BarCorp	\$65,623,832	\$56,570,771	\$20,384,133	221.9%	177.5%
7	Copley Pharmaceutical	\$48,609,172	\$33,517,354	\$20,985,731	131.6%	59.7%
8	Diagnostek	\$91,984,068	\$85,522,134	\$36,269,755	153.6%	135.8%
9	Ferrofluidics Corp I	\$37,461,714	\$34,814,486	\$27,194,519	37.8%	28.0%
10	Ferrofluidics Corp II	\$18,455,027	\$14,804,124	\$9,880,829	86.8%	49.8%
11	First Constitution Financial	\$52,712,223	\$54,368,801	\$21,671,128	143.2%	150.9%
12	Fruehauf Trailer	\$53,993,389	\$55,151,390	\$21,067,136	156.3%	161.8%
13	IDM Environmental	\$26,300,191	\$22,064,953	\$7,112,266	269.8%	210.2%
14	JWP Inc	\$333,581,084	\$337,707,928	\$192,451,210	73.3%	75.5%
15	Kmart Corp	\$70,840,959	\$65,416,955	\$29,263,256	142.1%	123.5%
16	Kurzweil Applied Intelligence	\$32,747,222	\$38,840,061	\$15,941,855	105.4%	143.6%
17	Lotus Development	\$156,915,347	\$139,465,361	\$51,020,830	207.6%	173.3%
18	Marcam Corp	\$23,721,908	\$28,301,239	\$16,869,524	40.6%	67.8%
19	Martin Color-Fi	\$9,956,355	\$11,081,066	\$6,083,735	63.7%	82.1%
20	Mercury Savings & Loan	\$14,187,604	\$10,660,060	\$4,960,508	186.0%	114.9%
21	Mesa Airlines	\$304,212,180	\$400,216,783	\$196,610,437	54.7%	103.6%
22	Mid-Atlantic Medical Services	\$9,499,496	\$8,993,015	\$3,753,617	153.1%	139.6%
23	MTI Technology	\$3,918,314	\$4,132,965	\$1,007,814	288.8%	310.1%
24	NTN Communications	\$10,810,469	\$7,891,788	\$1,585,500	581.8%	397.7%
25	Octagon	\$13,552,198	\$9,313,250	\$6,685,330	102.7%	39.3%
26	Open Environment	\$81,305,481	\$79,862,359	\$34,578,943	135.1%	131.0%
27	Orange and Rockland Utilities	\$9,052,588	\$8,283,340	\$3,013,348	200.4%	174.9%
28	Pepsi-Cola Puerto Rico Bottling	\$81,599,875	\$87,842,426	\$40,688,676	100.5%	115.9%
29	Plains Resources	\$95,945,374	\$76,857,695	\$35,226,170	172.4%	118.2%
30	Porta Systems	\$23,492,844	\$20,125,257	\$13,026,191	80.4%	54.5%
31	Positive Response Television	\$10,671,227	\$8,071,859	\$5,018,772	112.6%	60.8%
32	PS Group	\$61,705,791	\$64,962,977	\$39,904,087	54.6%	62.8%
33	Reuters Holdings PLC	\$748,985,405	\$856,034,725	\$242,413,444	209.0%	253.1%
34	Rexene Corp	\$5,440,106	\$4,159,411	\$1,067,514	409.6%	289.6%
35	Riddell Sports	\$18,558,395	\$14,942,824	\$6,123,420	203.1%	144.0%
36	Standard Microsystems	\$73,095,158	\$67,608,487	\$23,159,035	215.6%	191.9%
37	Stevens Graphics†	\$29,008,187	\$39,911,868	\$26,841,808	8.1%	48.7%
38	Stewart & Stevenson Services	\$69,515,824	\$76,000,263	\$35,511,900	95.8%	114.0%
39	Sulcus Computer Corp	\$79,919,024	\$58,647,422	\$31,065,464	157.3%	88.8%
40	Timberland Company	\$83,895,436	\$67,694,167	\$21,742,388	285.9%	211.3%
41	Topps Company	\$80,111,231	\$94,387,856	\$51,079,041	56.8%	84.8%
42	Uniroyal Chemical	\$56,737,041	\$65,562,371	\$7,696,459	637.2%	751.9%
43	US Diagnostic	\$69,218,581	\$57,703,860	\$41,820,521	65.5%	38.0%
44	Waste Management I	\$1,221,236,749	\$1,148,447,621	\$411,491,595	196.8%	179.1%
45	Woolworth Corp	\$84,685,401	\$96,510,650	\$54,274,914	56.0%	77.8%
	Mean				173.7%	152.7%
	Median				143.2%	123.5%

† Calculated for both Series A and Series B common stocks.

Sources: Company SEC filings; CRSP; SunGard Market Data Services; Thomson Financial; Bloomberg LP; claims data.

Table 3

Comparison of Retained Shares Lower Bound and Claimed

N	Stock	Retained Shares		Claimed as a Percent of Lower Bound
		Lower Bound	Claimed	
1	3DO Company	914,113	1,926,644	210.8%
2	Aura Systems	8,595,796	30,996,860	360.6%
3	Avid Technology	3,995,208	6,314,565	158.1%
4	Bay Financial	247,061	507,987	205.6%
5	Caremark International	26,165,330	31,543,982	120.6%
6	ComFed Bancorp	1,701,271	2,824,011	166.0%
7	Copley Pharmaceutical	1,951,273	3,987,013	204.3%
8	Diagnostek	6,506,729	6,811,315	104.7%
9	Ferrofluidics Corp I	725,572	2,361,866	325.5%
10	Ferrofluidics Corp II	390,043	905,301	232.1%
11	First Constitution Financial	2,377,738	2,110,941	88.8%
12	Fruehauf Trailer	1,179,345	3,251,148	275.7%
13	IDM Environmental	1,102,215	1,675,828	152.0%
14	JWP Inc	12,995,547	17,040,164	131.1%
15	Kmart Corp	59,748,554	87,843,926	147.0%
16	Kurzweil Applied Intelligence	1,219,545	1,645,083	134.9%
17	Lotus Development	5,521,442	7,874,927	142.6%
18	Marcam Corp	3,221,086	7,302,136	226.7%
19	Martin Color-Fi	296,996	987,512	332.5%
20	Mercury Savings & Loan	257,109	1,121,106	436.0%
21	Mesa Airlines	15,255,280	16,068,746	105.3%
22	Mid-Atlantic Medical Services	7,865,174	10,221,164	130.0%
23	MTI Technology	359,847	403,206	112.0%
24	NTN Communications	664,726	1,213,242	182.5%
25	Octagon	29,505	1,666,642	5648.7%
26	Open Environment	2,236,038	1,075,585	48.1%
27	Orange and Rockland Utilities	749,836	953,434	127.2%
28	Pepsi-Cola Puerto Rico Bottling	1,880,415	4,321,025	229.8%
29	Plains Resources	3,303,949	4,685,355	141.8%
30	Porta Systems	1,100,191	1,850,173	168.2%
31	Positive Response Television	42,742	315,981	739.3%
32	PS Group	1,175,070	1,581,407	134.6%
33	Reuters Holdings PLC	21,350,507	23,912,579	112.0%
34	Rexene Corp	539,799	418,128	77.5%
35	Riddell Sports	460,881	789,251	171.2%
36	Standard Microsystems	3,517,244	3,103,345	88.2%
37	Stevens Graphics†	2,299,668	2,205,238	95.9%
38	Stewart & Stevenson Services	12,907,458	13,324,568	103.2%
39	Sulcus Computer Corp	581,259	4,907,988	844.4%
40	Timberland Company	965,962	1,489,458	154.2%
41	Topps Company	12,109,260	11,508,402	95.0%
42	Uniroyal Chemical	5,841,162	7,385,976	126.4%
43	US Diagnostic	2,464,011	9,069,568	368.1%
44	Waste Management I	342,600,909	46,982,176	13.7%
45	Woolworth Corp	39,693,243	33,056,689	83.3%

Note: Lower Bound was estimated using quarterly institutional holdings data.

† Calculated for both Series A and Series B common stocks.

Sources: Thomson Financial; claims data.

V. SOME IMPLICATIONS

The courts in both *Kaufman* and *Broadcom* concluded that the trading models at issue in those cases had not been shown to be reliable and were therefore inadmissible. The courts also found that it was not necessary to use a trading model to assess aggregate damages at trial because a jury could determine per-share damages, and the court could easily use the claims administration process to supply the remaining information to calculate an accurate, reliable total damage figure. These rulings are consistent with the proposal made by Fischel & Ross.

However, most securities cases settle before trial. In principle, the parties to any settlement could agree (i) to settle for an aggregate amount prior to the collection of claims data, (ii) to settle for a per-share amount prior to the collection of claims data, or (iii) to settle after claims data have been collected (if the court allows claims data to be collected). Courts must decide whether to approve or disapprove of any proposed settlement. What considerations should guide this inquiry?

From a court's perspective, a settlement for a per-share amount prior to the collection of claims data raises no issues. The court can evaluate whether the per-share award is adequate in light of the merits of the case. Since claimants will know exactly what per-share amount they will receive if they make a claim, a per-share award also makes claimants' recoveries more certain, thereby benefiting them. However, a per-share settlement creates uncertainty for the settling defendants because they will not know the aggregate amount of their ultimate liability. This uncertainty might be a deterrent to such settlements. On the other hand, because the only source of uncertainty is the aggregate claims to be made, defendants may be willing to bear this uncertainty. If not, insurance companies might be willing to insure defendants against this uncertainty.

A per-share settlement also may create uncertainty for plaintiffs' counsel to the extent that their fee award depends on the aggregate

recovery.⁹¹ However, plaintiffs' counsel are typically repeat players, who can bear this risk on a case-to-case basis. Moreover, if their fee award depends on the aggregate recovery, plaintiffs' counsel will have an incentive to locate and identify class members who can assert claims.

Settlements for an aggregate amount prior to the collection of claims data are more troubling from a court's perspective because the court cannot know what per-share payment claimants will receive and, therefore, cannot evaluate whether the payment will adequately compensate claimants. A court properly might give this concern little weight in cases where other considerations dominate (such as defendants' ability to pay). In cases where the adequacy of the settlement depends on the per-share payment, courts still might be willing to approve aggregate awards that appear to be sufficient when evaluated using estimates of aggregate damage estimates that are calculated using methods that likely overstate aggregate claims and high claims rates are assumed.

However, courts can avoid the uncertainty created by trading model-based estimates of aggregate damages by deciding whether to approve settlements for an aggregate amount only after claims data have been submitted. After this has occurred, a court can know precisely what the per-share award will be. We do not know how frequently courts defer the approval of settlements until after the collection of claims data, but courts have adopted this approach in several cases, including *In re Clearly Canadian Securities Litigation*, *In re Borland Securities Litigation*, and *In re WorldCom, Inc. Securities Litigation*. Of course, this is precisely the approach advocated by Fischel & Ross.

⁹¹ This uncertainty could be avoided if defendants agreed to pay plaintiffs' counsel a specified fee as part of the settlement. Of course, an agreement concerning fees presumably would be subject to review by the court.

ABOUT THE AUTHORS

DANIEL R. FISCHEL is President of Lexecon in Chicago, Illinois, a consulting firm that specializes in the application of economics to a variety of legal and regulatory issues. His areas of expertise are securities, corporation law, regulation of financial markets, and the application of the economics of corporate finance to problems in these areas. He has been cited by state and federal courts at all levels, including the United States Supreme Court. Fischel has given expert testimony on numerous occasions in federal courts, before arbitration panels, and in regulatory proceedings in the areas of securities, commodities, corporation law, regulation of financial markets, and the application of the economics of corporate finance. For the past few years, he has been the principal damages witness for the United States Department of Justice in a series of breach of contract cases involving more than \$100 billion, commonly called the “*Winstar* cases.” Fischel has published widely in books and scholarly journals. His article *Use of Modern Finance Theory in Securities Fraud Cases Involving Actively Traded Securities*, *BUS. LAW.* 1 (1982), is the seminal article describing the application of financial economics to securities fraud litigation. He is co-author of *The Economic Structure of Corporate Law*, with Frank H. Easterbrook, and author of *Payback: The Conspiracy to Destroy Michael Milken and His Financial Revolution*. He is Professor of Law and Business at Northwestern University School of Law and Kellogg School of Management and also the Lee and Brena Freeman Professor of Law and Business Emeritus at The University of Chicago Law School.

DAVID J. ROSS is a Senior Vice President at Lexecon in Chicago, Illinois, and specializes in finance, labor economics, and the economic analysis of the law. He has testified and authored expert reports regarding such issues as causation, materiality, damages, and valuation in cases involving allegations of breach of contract, illegal insider trading, investment neglect, misappropriation of business opportunities, stock manipulation, unsuitable trading, securities fraud, and improper tax-avoidance schemes. He has consulted and

directed studies for a wide variety of industries, including banking and communications. Ross is the author of several academic articles on topics in finance and the economic analysis of the law in such scholarly journals as *The Journal of Law and Economics*, *Harvard Law Review*, and *The Journal of Derivatives*.

MICHAEL A. KEABLE is a Vice President at Lexecon in Chicago, Illinois, and specializes in securities markets, damages, corporate finance, and financial statement analysis. He has consulted on and directed numerous studies analyzing a broad range of issues in financial economics, including price movements of many types of securities, accounting restatements, market efficiency, insider trading, and calculation of damages. These studies have involved a wide variety of industries, including health care, technology, and banking.

The authors thank Laona Fleischer, Youngsik Lim, and Gina Vinogradsky for assistance in the preparation of this monograph.

2006 BOARD OF DIRECTORS NATIONAL LEGAL CENTER

The Honorable Fred F. Fielding
Chairman, NLCPI
Wiley Rein & Fielding LLP

The Honorable Joan D. Aikens
Former Chair FEC

Barbara Barrett
President and CEO
Triple Creek Ranch

The Honorable Griffin B. Bell
NLCPI Director Emeritus
King & Spalding

K. David Boyer, Jr.
Chairman & CEO
MacKenzie Associates

Carolyn S. Chambers
Chairman and CEO
Chambers Communications Corp.

Arnaud de Borchgrave
Senior Advisor
Center for Strategic and International
Studies

Vincent A. Gierer, Jr.
Chairman, President and CEO
UST Inc

Ambassador Glen A. Holden
Managing Partner
The Holden Company

Ernest B. Hueter
Past President
National Legal Center

Dean R. Kleckner
Chairman
Truth About Trade

Douglas W. Kmiec
Professor of Constitutional Law
Pepperdine University School of Law

Stephen F. Gates
Vice Chairman, NLCPI
Senior Vice President & General
Counsel ConocoPhillips

Ambassador Charles T. Manatt
Manatt, Phelps & Phillips, LLP

Governor Raymond P. Shafer (Ret.)
Pennsylvania

Jay B. Stephens
Senior Vice President and General
Counsel
Raytheon Co.

John R. Strassburger
President
Ursinus College

N. David Thompson
Chairman and CEO (Ret.)
Swiss Reinsurance America Corp.

John R. Towers
Vice Chairman (Ret.)
State Street Corporation
Chairman (Ret.)
State Street Bank Europe

The Honorable William H. Webster
Milbank, Tweed, Hadley & McCloy
LLP

**The Honorable Caspar W.
Weinberger**
NLCPI Director Emeritus
Chairman
FORBES, Inc.

Professor Walter E. Williams
George Mason University

Wendell L. Willkie II
Senior Vice President
& General Counsel
MeadWestvaco Corporation

**NATIONAL LEGAL CENTER
LEGAL ADVISORY COUNCIL**

The Legal Advisory Council is an important support group of the NLCPI organization. The Council, comprised of well-established practicing lawyers and corporate general counsel, provides the Center with assistance in identifying projects and outside participants, in counseling management on legal issues, and in participating in the Center's activities as speakers and authors.

Jan Amundson
Vice President and General Counsel
National Association of Manufacturers

The Honorable William P. Barr
Executive Vice President and General Counsel
Verizon Communications.

Dr. Edward J. Burger
Director
Institute for Health Policy Analysis

Professor Henry N. Butler
Director
AEI-Brookings Joint Center for Regulatory Studies

James B. Comey
Senior Vice President & General Counsel
Lockheed Martin

Charles J. Cooper
Cooper & Kirk

L. Gordon Crovitz
Senior Vice President
Dow Jones & Company

Walter E. Dellinger, III
O'Melveny & Myers LLP

Joseph E. diGenova
diGenova & Toensing, LLP

Albert W. Driver
Editor
The Metropolitan Corporate Counsel

Hayward D. Fisk
Vice President, General Counsel and Secretary
Computer Sciences Corporation

George S. Frazza
Patterson, Belknap, Webb & Tyler LLP

Stuart M. Gerson
Epstein Becker & Green, P.C.

John L. Howard
Senior Vice President and General Counsel
W.W. Grainger, Inc.

Frank W. Hunger
Covington & Burling

R. William Ide
McKenna Long & Aldridge LLP

William J. Kilberg
Gibson, Dunn & Crutcher LLP

David G. Leitch
Senior Vice President & General Counsel
Ford Motor Company

Bryan A. Liang, M.D., Ph.D., J.D.
Executive Director
Institute of Health Law Studies
California Western School of Law
and University of California
San Diego School of Medicine

Eugene Meyer
Executive Director
The Federalist Society for Law and Public Policy Studies

Tim O'Brien
PBS

Theodore B. Olson
Gibson, Dunn & Crutcher LLP

Victor E. Schwartz
Shook, Hardy & Bacon LLP

Judge Kenneth W. Starr
Dean
Pepperdine University School of Law

General William K. Suter
Clerk of the Court
Supreme Court of the United States

George J. Terwilliger III
White & Case LLP

The Honorable Dick Thornburgh
Kirkpatrick & Lockhart
Nicholson
Graham LLP

Stanley A. Twardy, Jr.
Day, Berry & Howard, LLP

Professor Don Wallace, Jr.
Georgetown University

Roger E. Warin
Steptoe & Johnson LLP

Seth P. Waxman
Wilmer Cutler Pickering Dorr and Hale LLP

Robert N. Weiner
Arnold & Porter

Richard K. Willard
Senior Vice President and General Counsel
Bristol-Myers Squibb Company

Linda A. Willett
Vice President and Deputy General Counsel
Bristol-Myers Squibb Company

David F. Zoll

THE MISSION OF THE THE NATIONAL LEGAL CENTER

The National Legal Center, founded in 1975, is a public interest law and educational foundation committed to fostering knowledge about important issues that have a legal, economic, and regulatory impact on the private sector.

The Center fulfills its mission by bringing top minds in government, academia, the law, and business to bear on the key legal, economic, and policy issues of the day and through research, analysis, and education.

Educational Publications

- ***BRIEFLY . . . Perspectives on Legislation, Regulation, and Litigation***, the monthly series of studies written by experts who address issues of importance to the American taxpayer, both individual and corporate
- the ***Judicial/Legislative Watch Report***, a monthly newsletter that covers key developments in all branches of government
- the **Judicial Series of Monographs**, multi-author collections of essays by scholars, jurists, and top practicing attorneys, who address the most current pressing legal and policy issues
- ***White Papers***, brief studies of legal and regulatory issues

Educational Programs

- ***A Day With Justice*** briefing brings senior top officials of the U.S. Department of Justice with senior corporate executives
- ***The General Counsel Briefing*** comprises panel discussions and keynote speeches that present an in-depth examination of an issue of importance to general counsel
- ***Gauer Distinguished Lecture in Law and Public Policy*** is delivered annually by a national or international leader, the purpose of which is to encourage debate on important legal, constitutional, or other public policy issues of the day
- ***Press Briefings*** on the Supreme Court docket cover important cases that impact business
- ***Intern program*** for law students to learn about the making of law and policy and the nature of American political institutions.

