Estimating Aggregate Damages in Class-Action Litigation Under Rule 10b-5 for Purposes of Settlement

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NOTES

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INTRODUCTION

Courts and commentators have increasingly accepted the application of financial theory to damages calculations[1] in litigation[2] brought by shareholders under Rule 10b-5.[3] A small body of legal and financial literature describes and advocates the use of damages computation models and procedures. The damages models are designed to estimate the "per-share damages" for each day in which purchases or sales of a security are affected by a fraud. These models, however, generally fail to confront the problems posed in estimating "aggregate damages" for a class. An accurate estimation of aggregate damages for class actions is particularly important for purposes of settlement because few Rule 10b-5 cases go to judgment.[4]

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1. *See, e.g.*, Basic Inc. v. Levinson, 485 U.S. 224, 246-47 nn.24-26 (1988)(citing articles and cases supporting application of financial theory and fraud-on-the-market theory); Rolf v. Blyth, Eastman Dillon & Co., 570 F.2d 38, 49 & n.22 (2d Cir.)(technical computations "may be used in" computing damages)(citing cases), *cert. denied* 439 U.S. 1039 (1978); Mills v. Electric Auto-Lite Co., 552 F.2d 1239, 1248-49 (7th Cir.) (technical damages formula adopted), *cert. denied*, 434 U.S. 922 (1977); Fischel, *Use of Modern Finance Theory in Securities Fraud Cases Involving Actively Traded Securities*, 38 Bus. Law. 1 *passim* (1982)(discussing general precepts applied in per-share calculations); Cornell & Morgan, *Using Finance Theory to Measure Damages in Fraud on the Market Cases*, 37 UCLA L. Rev. 883 *passim* (1990)(discussing problems arising in application of financial theory to per-share damage calculations); Note, *The Fraud on the Market Theory and the Efficient Markets Hypothesis: Applying a Consistent Standard*, 14 J. Corp. L. 443, 477-83 (1988)(application of market model to quantification of damages).

2. Damages analysis is primarily relevant to private Rule 10b-5 litigation. It is accepted that the key to enforcing Rule 10b-5 is the availability of a private cause of action to shareholders who have relied on a fraud, generally a misrepresentation or omission of a material fact, that has distorted the market price of a security. *See, e.g.*, Basic Inc. v. Levinson, 485 U.S. 224, 231-32 (1988)(a private cause of action certainly exists under Rule 10b-5 and is key to enforcing 1934 Act); Comment, *The Fraud on the Market Theory: The Debate Rages On*, 27 Duq. L. Rev. 277, 277 n.2 (1988)(citing Kardon v. National Gypsum Co., 69 F. Supp. 512 (E.D. Pa. 1946) as first federal court case which implied private cause of action under Rule 10b-5).

An increasing number of private Rule 10b-5 cases have been class actions brought on behalf of all shareholders affected by the fraud. *See, e.g.*, Basic Inc. v. Levinson, 485 U.S. 224 (1988); Mills v. Electric Auto-Lite Co., 396 U.S. 375 (1970); Sharp v. Coopers & Lybrand, 649 F.2d 175 (3d Cir. 1981), *cert. denied*, 455 U.S. 938 (1982); Sirota v. Solitron Devices, Inc., 673 F.2d 566 (2d Cir.), *cert. denied*, 459 U.S. 838 (1982); *In re* Warner Communications Sec. Litig., 618 F. Supp. 735 (S.D.N.Y. 1985).

3. 17 C.F.R. § 240.10b-5 (1990).

4. *See* Alexander, *Do the Merits Matter? A Study of Settlements in Securities Class Actions*,43 Stan. L. Rev. 497, 524-26; Reder, *Measuring Buyers' Damages in 10b-5 Cases*, 31 Bus. Law. 1839, 1852-54 (1976); Note, *Rule 10b-5 Damage Computation: Application of Financial Theory to Determine Net Economic Loss*, 51 Fordham L. Rev. 838, 838 n.2 (1983).

Litigants must know the total sum of money at stake in order accurately to determine the risks of further litigation. They also rely on estimates of total potential damages to negotiate the size of any pool of money to settle claims.[5] An assessment of total actual damages is likewise essential to judges who must ultimately approve class-action settlements and fees.[6] Finally, damages estimates may be critical in cases that actually go to trial. In bifurcated trials, for example, which determine liability before examining the issue of damages, courts may hesitate to recognize liability if subsequent exorbitant damages awards threaten the defendant with inappropriate harm.[7]

While the traditional per-share models aid judges and class-action litigants in estimating per-share damages under Rule 10b-5, these financial models are subject to a number of limitations and complications. The models also fail to analyze all the relevant factors necessary to establish a methodology for estimating aggregate damages for class actions under Rule 10b-5. Specifically, they don't determine the number of shares affected by the fraud. In an effort to bridge this gap, this Note presents a practical model for estimating aggregate damages of defrauded shareholders in Rule 10b-5 class-action litigation.

Part I of this Note briefly reviews the elements of Rule 10b-5 liability and the implications for calculating damages, and surveys general theories of damages under Rule 10b-5. Part II discusses the application of financial theory to damages calculations and reviews the employment of the market model, which is based on the capital asset pricing model ("CAPM"),[8] in calculations of damages on a per-share basis. Part II also discusses certain modifications and limitations of the per-share model. Part III proposes expanding the per-share model in order to present a practical method of estimating aggregate class-wide damages and dis-

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5. *See* Reder, *supra* note 4, at 1852. *Cf.* Mullaney, *Theories of Measuring Damages in Security Cases and the Effects of Damages on Liability*, 46 Fordham L. Rev. 277, 277-78 (1977)(because few decisions on measure of damages and potential of "ruinous" damages, litigants often settle securities fraud cases rather than proceed to trial).

6. *See* Reder, *supra* note 4, at 1839 ("[j]udicial confusion over the appropriate measure of damages against fraudulent sellers has hindered settlement discussions because neither party can accurately view the ultimate potential recovery"); *see also* Bonime v. Doyle, 416 F. Supp. 1372, 1382-86 (S.D.N.Y. 1976)(settlement of class action reasonable in light of difficulties of computing true value of stock as of transaction date), *aff'd* 556 F.2d 554 (2d Cir.), *cert. denied* 434 U.S. 924 (1977).

7. *See, e.g.,* Fridrich v. Bradford, 542 F.2d 307, 320-21 (6th Cir. 1976)(finding of liability would present situation without natural limitations on damages), *cert. denied,* 429 U.S. 1053 (1977); Kohn v. American Metal Climax, Inc., 458 F.2d 255, 269 (3d Cir.) (in class action suits with massive potential damages, courts may increase plaintiff's burden of proof), *cert. denied,* 409 U.S. 874 (1972); Mullaney, *supra* note 5, at 290-93 (discussing impact of damages on findings of liability).

For an interesting discussion of the problems of ruinous damage awards, see Note, *The Measure of Damages in Rule 10b-5 Cases Involving Actively Traded Securities*, 26 Stan. L. Rev. 371, 377 n.35 and accompanying text (1974).

8. The capital asset pricing model analyzes the relationship between risk and rate of return and is based on the theory that an investor will demand a higher return if he takes a higher risk. *See infra* note 39.

cusses this proposed model's key variables. Two approaches that may be used to compute the number of shares affected by the fraud, the Proportional Trading Model ("PTM") and the Accelerated Trading Model ("ATM"), are presented and considered. Part III also discusses the employment of aggregate-damages analyses in settlement. This Note concludes that while there are variables that are difficult to reflect formulaically in the proposed model, the model should provide an adequate framework for estimating aggregate class-wide damages in Rule 10b-5 actions to guide litigators and courts for purposes of settlement.

I.   BACKGROUND AND THEORIES OF DAMAGES IN RULE 10b-5 CASES

A.   *Rule 10b-5 Actions: Elements and Damages*

The basic elements of a Rule 10b-5 action are well-established. As set forth by the Supreme Court, in *Basic v. Levinson*[9] and its predecessors, the six basic elements of a Rule 10b-5 action are: 1) a sale or purchase of any security; 2) a misrepresentation, misstatement or nondisclosure 3) of a material fact; 4) scienter or intention to deceive or defraud; 5) reliance on the misstatement or nondisclosure; and 6) causation by the violation of the transaction and the injury.[10] These elements set parameters for determining whether plaintiffs have been injured by a defendant and roughly define how these injuries should be measured.

A threshold requirement in private actions under Rule 10b-5, sometimes called the *Birnbaum* rule,[11] limits liability to those damages occurring "in connection with the purchase or sale of any security."[12] Accordingly, stockholders will not receive compensation for losses on shares merely owned and not traded during the period of fraud, even though owners of these shares may suffer from fraud-related market distortion.[13] The damages model therefore seeks to measure the fraud-re-

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9. 485 U.S. 224 (1988).

10. *See* Basic Inc. v. Levinson, 485 U.S. 224, 226, 231, 242-45, 260 (1988); TSC Indus., Inc. v. Northway, Inc., 426 U.S. 438, 445-47 (1976); Blue Chip Stamps v. Manor Drug Stores, 421 U.S. 723, 747 (1975). *See generally* Cobine, *Elements of Liability and Actual Damages in Rule 10b-5 Actions*, 1972 U. Ill. L. F. 651, 651-67, 683-90 (describing some parameters of liability); Note, *supra* note 1, at 456-57 n.114 (listing elements and supporting cases).

11. *See* Birnbaum v. Newport Steel Corp., 193 F.2d 461 (2d Cir.), *cert. denied* 343 U.S. 956 (1952).

12. *See id.* at 463; Blue Chip Stamps v. Manor Drug Stores, 421 U.S. 723, 734-35 (1975); Cobine, *supra* note 10, at 652; Note, *supra* note 1, at 456.

13. For example, a stockholder who owns 100 shares of stock prior to the date of a proven misrepresentation, and buys 100 shares thereafter, will only recover for losses as to the 100 newly purchased shares. Yet his investment decision to retain the previously purchased shares, and their ultimate value, may also be affected by the fraud (e.g. "I would have sold if I had known the truth"). To the extent that payments of damages are made by the errant corporation directly, rather than by officers, directors or other wrongdoers, trading shareholders are effectively compensated at the expense of non-trading shareholders.

lated losses only as to shares that were traded during the period when fraud distorted the market price.

Assuming there has been a misrepresentation, the element of materiality precludes recovery where the defendant's wrongdoing is minimal and not considered the cause of plaintiff's injury.[14] In applying the materiality element, the federal courts employ a "reasonable investor" standard, looking to whether a reasonable investor would place significance on the withheld or misrepresented information.[15] In cases involving actively traded securities, the significance of such information and its impact on the total mix of available data is best reflected in the actual effect of the information, if any, on the market prices of the securities.[16] Through market analysis, the damages model must distinguish between fraud-based market price distortion and changes in market prices caused by other factors, such as general market or economic conditions. The question of materiality thus straddles issues of law and financial analysis.

The reliance element of Rule 10b-5, rooted in the common-law tort of fraud,[17] requires a plaintiff to show that he relied on defendant's fraudu-

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14. *See* Basic Inc. v. Levinson, 485 U.S. 224, 240-41 (1988); TSC Indus., Inc. v. Northway, Inc., 426 U.S. 438, 449 (1976); Affiliated Ute Citizens of Utah v. United States, 406 U.S. 128, 153-54 (1972); *see also* SEC v. Texas Gulf Sulphur Co. 446 F.2d 1301, 1305 (2d Cir.)(expanding the application of Rule 10b-5 to material disclosures in public documents), *cert. denied,* 404 U.S. 1005 (1971).

The Court in *Basic,* following the language of Rule 10b-5, noted that technically, "in order to prevail on a Rule 10b-5 claim, a plaintiff must show that the statements were *misleading* as to a *material* fact." *Basic,* 485 U.S., at 238 (emphasis in original). In practice, however, this tends to mean "*materially misleading* as to a material fact." *Cf. id.* at 240 (information must be significant to a reasonable investor).

15. *See Basic,* 485 U.S. 224, 240. A misrepresentation is not considered material and will not trigger Rule 10b-5 liability unless it *significantly* alters the "total mix" of market data. *See id.* at 231-32 (emphasis added).

16. Examining the effect on market prices of the fraud's disclosure or correction is one objective test of materiality that courts and analysts use to assess whether the market believed and responded to the misrepresentation. *See e.g.,* James v. Nico Energy Corp., 838 F.2d 1365, 1371 (5th Cir. 1988)(market value for calculating out-of-pocket injury is measured at reasonable time after concealed information has been disclosed to general public and stock is at its true value); Sirota v. Solitron Devices, Inc. 673 F.2d 566, 576-78 (2d. Cir.)(where market declined by 11% after disclosure, finding that stock was over-valued by 52.2% would not stand), *cert. denied,* 459 U.S. 838 (1982); Note, *The Fraud on the Market Theory: Efficient Markets and the Defenses to an Implied 10b-5 Action,* 70 Iowa L. Rev. 975, 985, 991-92 (1985)(if misrepresentation is material, there will be effect on market price after disclosure).

A fraud that has no effect on market prices is presumably immaterial. This application of the materiality standard reflects the courts' general tendency to consider the market price of a publicly traded security as the best indication of its value. *See, e.g., In re* LTV Sec. Litig., 88 F.R.D. 134, 144 (N.D. Tex 1980)(investors rely on the market to evaluate information for them); Amerada Hess Corp. v. Commissioner of Internal Revenue, 517 F.2d 75, 83 (3d Cir.)(exchange price is most accurate measure of fair market value), *cert. denied,* 423 U.S. 1037 (1975); Mills v. Electric Auto-Lite Co., 552 F.2d 1239, 1247-48 (7th Cir.)(when market value is available and reliable, other factors should not be used), *cert. denied,* 434 U.S. 922 (1977).

17. While the elements of a Rule 10b-5 action are derived from common-law fraud, they are not co-extensive with their common-law predecessors and courts have variously interpreted them to achieve the overriding purpose of disclosure and enforcement of fed-

lent activity to his detriment. The reliance element establishes the neces-
sary link between defendant's wrongdoing and plaintiff's injury.[18]

Recent court decisions accepting the application of the fraud-on-the-
market theory[19] have made easier the plaintiff's burden of proving sub-
jective reliance on the misinformation. The theory posits that in open
and developed markets, the price of a security efficiently incorporates all
available material information regarding the security— a form of the effi-
cient market hypothesis[20]—and that, accordingly, material *misinforma-
tion* distorts the market equilibrium and defrauds purchasers even if they
do not actually and specifically rely on the misstatements.[21] The fraud-
on-the-market theory creates a rebuttable presumption of reliance in
transactions involving securities that are actively traded in well-devel-

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eral securities laws. *See* Blackie v. Barrack, 524 F.2d 891, 907 (9th Cir. 1975)(citing
cases), *cert. denied* 429 U.S. 816 (1976); *see also* Kardon v. National Gypsum Co., 69
F.Supp 512, 513 (E.D. Pa. 1946)(creating a private right of action under Rule 10b-5
traceable to tort principles); Comment, *supra* note 2, at 278 (private right of action rooted
in common-law deceit); M.Kaufman, Securities Lit: Damages, § 5:04 (1989)(discussing
Rule 10b-5 damages under tort model).

18. *See* Cobine, *supra* note 10, at 656. As the Supreme Court has indicated, however,
reliance should not be equated with causation. *See* Basic Inc. v. Levinson, 485 U.S. 224,
251 (1988)(White, J. concurring in part and dissenting in part).

19. *See e.g., Basic*, 485 U.S. at 241-45 (summarizing the fraud-on-the-market theory
and sustaining the presumption of reliance); *Blackie*, 524 F.2d at 907 (first decision
adopting the theory).

20. *See infra* note 21.

21. *See Basic*, 485 U.S. at 241-42.

Three major premises underly the fraud-on-the-market theory. *See* Note, *supra* note
16, at 978-80. The first is the "efficient market hypothesis" ("EMH"), which, in its
"semi-strong" form, posits that the market price of a stock does in fact accurately and
efficiently reflect all available public information, true or false, about a company. *See* J.
Cohen, E. Zinbarg, & A. Zeikel, Investment Analysis and Portfolio Management 145-52
(5th ed. 1987); *see also* Note, *supra* note 16, at 978 (all available information reflected in
market price). *But see* Wang, *Some Arguments that the Stock Market Is Not Efficient*, 19
U. C. Davis L. Rev. 341 *passim* (1986)(presenting considerable data and "anomalies"
demonstrating that the stock markets may not in fact be efficient). The Supreme Court in
Basic implicitly accepted the "semi-strong" form of the efficient-market hypothesis. *See*
Macey & Miller, *Good Finance, Bad Economics: An Analysis of the Fraud-on-the-Market
Theory*, 42 Stan. L. Rev. 1059, 1077-78 (1990); *see also* Fama, *Efficient Capital Markets:
A Review of Theory and Empirical Work*, 25 J. Fin. 383, 383 (1970)(first suggesting the
now-accepted trichotomy of the EMH into strong, semi-strong, and weak forms). The
"weak form" of EMH holds that current stock prices reflect only the information in
historical market prices. The "semi-strong form" goes further and posits that stock
prices also rapidly incorporate all publicly available information. The "strong form"
holds that stock prices fully reflect most privately held information as well. *See* J. Cohen,
E. Zinbarg, & A. Zeikel, at 145.

The second major premise of the fraud-on-the-market theory is the "market model of
investment decision making, which holds that individual investors do not need personal
access to information to make sound investment decisions. The third premise, and per-
haps the most important for purposes of financial analysis, is that damages stemming
from fraud or misrepresentation can be quantified. *See* Note, *supra* note 16, at 978-79.
Cf. Comment, *supra* note 2, at 277-78, 283-84 (discussing assumptions behind fraud-on-
the-market theory).

oped and efficient markets.[22]

Recent studies indicate that the concept of market efficiency, a major premise of the fraud-on-the-market theory, is a relative one.[23] These studies suggest that there are degrees of efficiency in securities markets, and that efficiency is affected by a number of variables, including the type of information being assimilated, the market in which the security is being traded and the type of security being traded.[24] These studies imply that, for the purposes of damages analysis, calculations should be based not on whether the market was efficient or inefficient, but rather on whether the fraud was sufficiently material to have a statistically significant impact on the market price, given the degree of market efficiency.

Closely connected to the element of reliance, the element of causation limits plaintiff's damages to those actually caused by defendant's fraudulent activity.[25] When the foregoing Rule 10b-5 elements are proved, together with misrepresentation and intent, reliance will ordinarily establish the nexus necessary to establish causation.[26] Most important

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22. *See Basic*, 485 U.S. at 241-47.

The presumption may be rebutted by attacking the proof of the elements giving rise to the presumption. A defendant, for example, may show that the misinformation did not distort the market price of the stock, or that the plaintiff would have traded the security despite his knowledge that the information was false. *See id.* at 248-49.

The presumption of reliance promotes general goals of fairness and public policy applying to Rule 10b-5. *See id.*, at 245. It relieves plaintiffs of a difficult evidentiary burden and advances Congressional policy by facilitating an investor's reliance on the integrity of the securities markets. *See id.* at 245-46. The presumption also greatly facilitates class certification in Rule 10b-5 litigation. By focusing on class members' common reliance on the integrity of the market, rather than on each individual's reliance on defendant's misrepresentation, courts can more easily find that common questions predominate over individual questions, as required by Federal Rule of Civil Procedure 23(a)(2) and (b)(3). *See id.* at 242.

23. *See* Macey & Miller, *supra* note 21, at 1086 (listing variables affecting efficiency); *see also* Ho & Michaely, *Information Quality and Market Efficiency*, 23 J. Fin & Quant. Anal. 53, 53 (1988)(market efficiency should vary according to a cost-benefit analysis weighing costs of processing information against prospective returns); Heinkel & Kraus, *Measuring Event Impacts in Thinly Traded Stocks*, 23 J. Fin & Quant. Anal. 71, 86 (1988)(suggesting empirical method for measuring impact of firm-specific events on the prices of thinly traded stocks); Gilson & Kraakman, *The Mechanisms of Market Efficiency*, 70 Va. L. Rev. 549, 556-57 (1984)(proposing concept of "relative efficiency" and suggesting that different kinds of information are reflected with varying degrees of market efficiency).

24. *See infra* notes 21 & 23.

25. *See* Cobine, *supra* note 10, at 656.

26. *See Basic*, at 243 ("Reliance provides the requisite causal connection between a defendant's misrepresentation and a plaintiff's injury.").

If one adopts the fraud-on-the-market theory and the efficient-market hypothesis, it follows that a material omission or misrepresentation, one that distorts the market-equilibrium price, causes an injury to any investor who trades in the security relying solely on the general integrity and efficiency of the market. *See* Note, *supra* note 1, at 472-73. This "pure causation" approach focuses inquiry on whether the fraudulent act in fact had a distorting effect on the security's market price. If the nexus between the misinformation and the stock-price distortion can be demonstrated, causation is established. *See id.* at 467. This approach contrasts with traditional notions of "loss causation" and "transaction causation," inherited from common-law fraud. These may be deemed subjective in

for purposes of damages analysis, the connected elements of materiality, reliance and causation require that damages calculations under Rule 10b-5 exclude the effects of market fluctuations unrelated to the fraud or misrepresentation.[27] Plaintiff must always prove a residual market effect stemming solely from the fraud for damages to be awarded.[28]

B.   *Theories of Damages in Rule 10b-5* CASES

Courts award only actual damages for Rule 10b-5 violations.[29] Because federal securities laws are to be construed flexibly, however, in order to accomplish their remedial purpose, courts may fashion any remedy or accept any measure of damages to make good the wrong.[30] The burden generally remains on the plaintiff to prove damages.[31]

The basic measure of damages in Rule 10b-5 litigation is the "out-of-pocket," or injury, measure.[32] The out-of-pocket measure looks to the plaintiff's loss. For a defrauded buyer, this measure of recovery is the

that they focus on establishing a factual chain of causation between the fraudulent act and the investor's decision to transact and consequent harm. *See id.* at 469-71; *see also* Merritt, *A Consistent Model of Loss Causation in Securities Fraud Litigation: Suiting the Remedy to the Wrong,* 66 Tex. L. Rev. 469, 471-72 (1988)(transaction causation analyzes whether, but for the fraud, plaintiff would have entered into transaction; loss causation focuses on relationship between fraud and damages).

27. The causal nexus is also broken, for example, by applying principles of mitigation. Damages cannot be recovered for losses incurred beyond a reasonable time, after which the plaintiff no longer relies on the misrepresentation, has a chance to make a "second investment decision," or should know of the fraud. *See* Nye v. Blyth Eastman Dillon & Co., 588 F.2d 1189, 1198 (8th Cir. 1978); Foster v. Financial Technology, Inc., 517 F.2d 1068, 1072 (9th Cir. 1975). For purposes of damages calculations, this restriction sets a limit on the class period of securities purchases and sales that will be entitled to damages.

28. *See, e.g.,* Note, *supra* note 1, at 467-69 (outlining means for proving and disproving causal nexus); Reder, *supra* note 4, at 1846-50 (discussing causation and intervening factors).

29. *See* § 28(a) of the Securities Exchange Act of 1934, 15 U.S.C. § 78bb(a); Affiliated Ute Citizens v. United States, 406 U.S. 128, 155 (1972)(applying § 28 to determine the "correct measure of damages"); Osofsky v. Zipf, 645 F.2d 107, 111 (2d Cir. 1981); Green v. Wolf Corp., 406 F.2d 291, 303 (2d Cir. 1968), *cert. denied,* 395 U.S. 977 (1969); 5C A. Jacobs, Litigation and Practice Under Rule 10b-5, § 260.03(a), 11-17 to 11-20 (2d rev. ed. 1990).

30. *See, e.g.,* Pelletier v. Stuart-James Co., 863 F.2d 1550, 1558-59 (11th Cir. 1989)(court's function is to fashion remedy best suited to harm)(quoting Garnatz v. Stifel, Nicolaus & Co., 559 F.2d 1357, 1360 (8th Cir. 1977)); Arrington v. Merrill Lynch, Pierce, Fenner & Smith, Inc., 651 F.2d 615, 621 (9th Cir. 1981)(same); Nye v. Blyth Eastman Dillon & Co., 588 F.2d 1189, 1198 (8th Cir. 1978)(same).

31. *See* Harmsen v. Smith, 693 F.2d 932, 945 (9th Cir. 1982), *cert. denied,* 464 U.S. 822 (1983). *But see* Cornell & Morgan, *supra* note 1, at 913-17 (analyzing how courts allocate burden of proof between plaintiff and defendant).

32. *See Affiliated Ute Citzens,* 406 U.S. at 155; *see also* Note, *supra* note 7, at 383-84 ("If anything is currently the rule of damages under 10b-5, it is the out-of-pocket award."); Note, *supra* note 4, at 844-50 (comparing out-of-pocket measure with proximate cause measure); Mullaney, *supra* note 5, at 281 ("basic rule on damages for a defrauded purchaser under rule 10b-5 . . . is the 'out-of-pocket' rule").

Some cases may warrant alternative measures of damages. Courts have at times employed a benefit-of-the-bargain theory for measuring actual damages. *See Osofsky,* 645 F.2d at 111-14; Quintel Corp. v. Citibank, N.A., 596 F. Supp. 797, 802-03 (S.D.N.Y.

difference on the date of purchase between the price paid for the stock and its "true value."[33] For a defrauded seller, the recovery is the difference between the true value of the security sold and the price received at the time of the sale.[34] Generally, the date for valuation of the loss is the date of the transaction in question.[35] While damages should be measured as of the transaction date, subsequent events may provide useful information for measuring the damages.[36]

As a measure of net economic loss, the out-of-pocket measure excludes losses unrelated to the fraud, notably those pertaining to general market or economic forces or non-fraudulent, company-specific events.[37] Removing non-fraud factors generally requires the analysis of an expert,

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1984). *But see* Harris v. American Inv. Co., 523 F.2d 220, 225 (8th Cir. 1975)(specifically rejecting benefit-of-bargain measure), *cert. denied*, 423 U.S. 1054 (1976).

Defrauded plaintiffs may also seek rescission as an alternative to damages, particularly when privity exists. *See generally*, Thompson, *The Measure of Damages Under Rule 10b-5: A Restitution Alternative to Tort Damages*, 37 Vand. L. Rev. 349, 365-81 (1984)(discussing restitution and rescission under Rule 10b-5); Matheson, *Corporate Disclosure Obligations and the Parameters of Rule 10b-5: Basic Inc. v. Levinson and Beyond*, 14 J. Corp. Law 1, 31 & n.212 (1988)(citing cases accepting and rejecting this measure).

33. The "true value" is the price at which the stock would have traded absent the fraud.

34. *See* Arrington v. Merrill Lynch, Pierce, Fenner & Smith, 651 F.2d 615, 621 (9th Cir. 1981); Blackie v. Barrack, 524 F.2d 891, 908-09 (9th Cir. 1975), *cert. denied* 429 U.S. 816 (1976); 5C A. Jacobs, *supra* note 29, § 260.03(c)(ii) at 11-34; *see also* Estate Counseling Serv. v. Merrill Lynch, Pierce, Fenner & Smith, 303 F.2d 527, 533 (10th Cir. 1962)(out-of-pocket measure is "the difference between the contract price, or the price paid, and the real or actual value at the date of the sale, together with such outlays as are attributable to the defendant's conduct").

35. *See* 5C A. Jacobs, *supra* note 29, § 260.03(c)(ii) at 11-35-37 n.12 (citing cases).

36. *See* 5C A. Jacobs, *supra* note 29, § 260.03(c)(ii) at 11-37 to 11-38; M. Kaufman, Securities Lit: Damages, § 9:43 (1989). *Cf. Harris*, 523 F.2d at 226 (market value measured as of date of discovery of the fraud).

Because the investor is presumed to have assumed the risk of general market fluctuations and can be compensated only for losses proximately caused by the fraud, the out-of-pocket measure excludes losses arising from subsequent events unrelated to the fraud. *See* Sharp v. Coopers & Lybrand, 649 F.2d 175, 190 (3d Cir. 1981), *cert. denied* 455 U.S. 938 (1982)(compensate only for damages "directly resulting from the appellant's wrongful acts"); Huddleston v. Herman & MacLean, 640 F.2d 534, 549 (5th Cir. 1981), *aff'd in part and rev'd in part*, 459 U.S. 375 (1983).

Some courts have applied a modified out-of-pocket measure where it is difficult to measure the true value of the security at the time of the transaction. These courts look to the value measured on some date later than the transaction date, such as the date of public discovery of the fraud or the date when the plaintiff discovered or should have discovered the fraud. *See, e.g.*, Austin v. Loftsgaarden, 675 F.2d 168, 180 n.24 (8th Cir. 1982)(plaintiff's discovery); Shapiro v. Midwest Rubber Reclaiming Co., 626 F.2d 63, 68 (8th Cir. 1980)(public discovery), *cert. denied*, 449 U.S. 1079 (1981); Nye v. Blyth Eastman Dillon & Co., 588 F.2d 1189, 1200 (8th cir. 1978)(plaintiff's discovery); *Harris*, 523 F.2d at 226 (public discovery).

This measure, however, has been criticized because it may create a windfall recovery to the plaintiff in contravention of the compensatory aim of Rule 10b-5. *See* Bonime v. Doyle, 416 F. Supp. 1372, 1384 (S.D.N.Y. 1976), *aff'd* 556 F.2d 554 (2d Cir.), *cert. denied* 434 U.S. 924 (1977).

37. *See* Merritt, *supra* note 26, at 471-84 (comparing gross loss and net loss measures of damages); Note, *supra* note 4, at 838-41 & 841 n.17 (reviewing the net loss measure).

whose testimony is admitted to demonstrate the actual value of a security on the date of the challenged transaction.[38]

II. PER-SHARE CALCULATION OF DAMAGES IN 10b-5 ACTIONS

The most common procedure used by courts and practitioners to determine damages for each share affected by fraud or misrepresentation ("per-share damages") applies a "value-line" framework.[39] This procedure is based on widely accepted financial and market theories and assumes the applicability of the fraud-on-the-market theory.

In the value-line approach, actual market prices of the security are placed along a "price line" for the period affected by the fraud. These are matched with the values of the security absent the fraud, or the true values, which are calculated for each day during the period affected by the fraud and placed on a "value line." The difference between the two values represents the affect of the fraud, and thus the estimated damages, during the period (hereinafter referred to herein as the "class period").

Chart 1 illustrates this approach in the case of a simple fraud, where a single misrepresentation inflates the price of the stock[40] by a constant amount during the class period and is corrected by a single disclosure. The price line and value line meet at the point where disclosure "cures" the fraud, or more specifically, at the point where the fraud has zero effect on the market price.

It is important that any damages model eliminate all factors affecting stock price other than the fraud, because plaintiffs are entitled to compensation only for the "residual" price effect attributable only to the fraud.[41] To calculate this residual impact, the effects of at least three major factors that influence stock price must be identified and removed: (i) economy-wide information; (ii) industry information; and (iii) firm-specific information not related to the fraud.[42]

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38. *See* Sirota v. Solitron Devices, Inc., 673 F.2d 566, 576-77 (2d Cir.), *cert. denied*, 459 U.S. 838 (1982); *In re* Warner Communications Sec. Litig., 618 F. Supp. 735, 744 (S.D.N.Y. 1985), *aff'd* 798 F.2d 35 (2d Cir. 1986); Beissinger v. Rockwood Computer Corp., 529 F. Supp. 770, 787-90 (E.D. Pa. 1981). The expert's testimony must set out actual dollar values for the true value of the securities affected by the fraud. *See Beissinger*, 529 F. Supp. at 790.

39. *See* Green v. Occidental Petroleum Corp., 541 F.2d 1335, 1341-44 (9th Cir. 1976)(Sneed, J., concurring)(Judge Sneed's oft-cited outline of basic value-line and price-line procedure); Cornell & Morgan, *supra* note 1, at 885-86; Note, *supra* note 4, at 858-70; Note, *supra* note 7, at 383-98.

40. A misrepresentation can also cause a stock to be artificially deflated, as in SEC v. Texas Gulf Sulphur Co., 401 F.2d 833 (2d Cir. 1968), *cert. denied* 394 U.S. 976 (1969), which involved false information about a mineral ore discovery. The analysis is similar. For the sake of simplicity, the examples used throughout this Note involve misinformation that artificially inflates the stock price.

41. *See* Easterbrook & Fischel, *Optimal Damages in Securities Cases*, 52 U. Chi. L. Rev. 611, 627 (1985); Note, *supra* note 4, at 867-68; Note, *supra* note 7, at 386.

42. *See* Beaver & Malernee, Estimating Damages in Securities Fraud Cases 1 (Cornerstone Research, Cambridge, MA)(private publication)(available at Fordham Law Review); Easterbrook & Fischel, *supra* note 41, at 627-28; *see also* Cornell & Morgan, *supra*

Chart 1

Value Line Approach for Simple Fraud

Dollars

Market
Price

Date of
Corrective
Disclosure

Inflation

True
Value

Fraud begins   Time
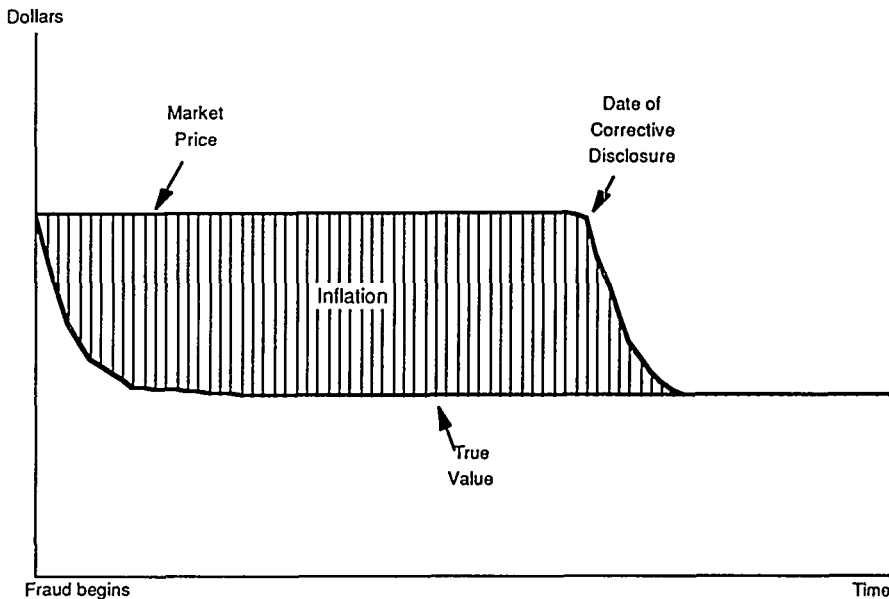
One method for constructing the value line is the use of the "market model" of financial theory, a model based on the capital asset pricing model ("CAPM").[43] The market model uses a linear- or multiple-regression analysis that tracks the effect of non-fraud factors on market price to calculate the price of the stock absent the fraud on the value line. This analysis, sometimes referred to as the "comparable-index approach,"[44] estimates the true value of the subject security based on the historical relation of the security's market prices to one or more indices of market or industry behavior.

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note 1, at 888, 903 (pointing out that comparable-index approach inadequately accounts for company-specific information); Reder, *supra* note 4, at 1847-50 (treating other factors as "intervening" factors that break causal link between fraud and plaintiff's injury).

43. *See* Cornell & Morgan, *supra* note 1, at 886-88; Fischel, *supra* note 1, at 17-19, 17 n.45; Note, *supra* note 4, at 858-69; Note, *supra* note 7, at 386-89. For general discussion of the underpinnings and use of CAPM and the market model, see Schwert, *Using Financial Data to Measure Effects of Regulation*, 24 J. L. & Econ. 121 (1981); Myers & Turnbull, *Capital Budgeting and the Capital Asset Pricing Model: Good News and Bad News*, 32 J. Fin. 321 (1977); Sharpe, *Capital Asset Prices: A Theory of Market Equilibrium Under Conditions of Risk*, 19 J. Fin. 425 (1964); Markowitz, *Portfolio Selection*, 7 J. Fin. 77 (1952).

44. *See* Cornell & Morgan, *supra* note 1, at 897-98; Note, *supra* note 4, at 859-67; Note, *supra* note 7, at 397-98. A chart illustrating this approach appears in Elkind v. Liggett & Myers, Inc., 472 F. Supp. 123, 129-35 (S.D.N.Y. 1978)(awarding damages based on this formula, but amending the award on other grounds), *modified*, 635 F.2d 156 (2d Cir. 1980). For a detailed discussion of the use of multiple regression analysis in a related context, see Fisher, *Multiple Regression in Legal Proceedings*, 80 Colum. L. Rev. 702, 702-21, 726-29 (1980).

The comparable-index approach uses a formula that accounts for market-price movement during a given period as the sum of market-related and industry-related factors.[45] The following equation is employed: $r = a + bRm + cRx + e$, where "r" is the total return on the stock, "a" (or "alpha") is the firm-specific constant representing the average total return not captured by "Rm" and "Rx", "bRm" is the company-market relation "b" (or "beta") multiplied by the market return "Rm", "cRx" is the company-industry relation "c" times the industry return, and "e" is the unexplained change in the price of the stock attributed to unsystematic firm-specific factors. As the formula indicates, "Rm" and "Rx" are explanatory variables, while "b" and "c" are numerical estimates of the partial relationships between "r" and "Rm" and "Rx". In practice, "e" (the error of the regression) is often assumed to have a mean of zero and is disregarded in the summation.[46]

The procedure for calculating the residual impact of fraud on market prices may be reduced to the following steps:[47]

1.   Determine the period of the suspected fraud (the class period).

2.   Assemble data for the class period regarding the price of the stock, the market and any relevant industry group. Assemble this data as well for a period where the price of the stock was determined in the absence of fraud, for example just prior to the class period. This is the "control" or "clean" period. There should be enough observations in this period to permit the calculation of statistically valid estimates of the coefficients of "Rm" and "Rx". Typically, an index, such as the S&P 500 or the Wilshire Index, serves as a surrogate for overall market performance to calculate market returns. Industry indexes may be constructed by assembling a group of comparable public companies or by employing available indexes prepared by financial institutions such as Standard & Poor's or Value Line.

3.   Determine the daily returns on the stock, the market index, and any industry indexes employed for the class and control periods.

4.   Using a regression model, derive returns for the stock (the dependent variable) based on the comparable-index formula. To do this, insert into the formula the observed returns on the market and the industry indexes (the independent variables). Use a regression analysis on the control period to calculate the coefficients "a", "b" and "c". Then use

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45. *See* Easterbrook & Fischel, *supra* note 41, at 627; Cornell & Morgan, *supra* note 1, at 898.

46. *See* Fischel, *supra* note 1, at 18 n.47; Note, *supra* note 4, at 861-62 & n.110.

47. In practice, a number of simplifying assumptions are sometimes made. In some situations, it is assumed that, absent the fraud, the price of the stock would track its historical relation to the market, so that beta is held constant, and a and c = 0. Alternatively, it is sometimes assumed that the stock price will track industry returns, so that a and b = 0 and c = 1. Beta is often held constant during the class period at the level that existed prior to the fraud. *See* Note, *supra* note 4, at 859 & n.104. It is also assumed that the industry and market indexes collectively represent all systematic factors affecting the price of the stock. *See* Cornell & Morgan, *supra* note 1, at 898 n.41 & 42.

control-period values for "a", "b" and "c" and class-period values for "Rm" and "Rx" to compute "r-true," the estimated returns of the stock during the class period assuming the relationship in the control period between "Rm," "Rx" and "r".

A number of brokerage and other firms, such as Value Line and Merrill Lynch, calculate and publish the company-market coefficient, or "beta",[48] for many companies. These published betas do not factor in industry or firm specific effects, but may be used in a simple CAPM model to calculate a rough approximation of true stock returns.

5. Construct a value line backwards from the date when the market price of the stock fully reflects disclosure of the fraud, using the predicted returns to derive true values for the stock on a daily basis.[49] In other words, use the stock returns calculated using the comparable-index formula, "r-true", to calculate the stock price in the absence of fraud.

The "event-study approach," an alternative to the "comparable-index approach," may more accurately reflect the impact of company-specific information. This approach assumes that the price and value of the security move in tandem except during days when disclosures of fraudulent activity influence the price of the stock.[50] This approach also uses a regression analysis. Using "dummy variables", one tries to identify the statistically significant abnormal returns due to the fraud. Here, one estimates "a", "b", and "c" over some combination of both the class and control periods. One also estimates "d", the direct effect on "r" of the disclosure of the fraud.

The calculation of damages both by the comparable-index approach and the event-study approach is subject to a number of limitations and complications. Some of these are implicit in the simplifying assumptions that underlie the models[51] and further refinements of each model may ameliorate them. Other problems require additional financial analysis and point to the fact that there are subjective or speculative components in the calculation of damages.[52] Some of the problems faced in adapting the damages models to a specific fact pattern include:

1. *Estimating the "beta"[53] coefficient*: The comparable-index approach assumes that a particular calculation of historical beta (during the

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48. *See infra* note 53.

49. *See* Cornell & Morgan, *supra* note 1, at 889. Theoretically, the value line could also be calculated by running the regression analysis forward from a date before the fraud affected the market price. The two lines may differ owing to discrepancies between actual returns and predicted returns resulting from firm-specific events unrelated to the fraud and its disclosure. If the fraud changed the nature of the firm (or covered up the existence of such a change), you may get substantial differences from using the before-class-period "a,b,c" as compared to the after-class-period "a,b,c" to calculate "r-true". Which is right? Probably neither but rather some combination of both.

50. *See* Cornell & Morgan, *supra* Note 1, at 899.

51. *See infra* note 47.

52. *See id.* at 900-911; Note, *supra* note 4, at 867-68; Note, *supra* note 7, at 393-95.

53. Beta measures the return on the stock associated with the market return. *See* J. Cohen, E. Zinbarg & A. Zeikel, *supra* note 21, at 140-41, 156-57.

control period) remains constant throughout the class period. Yet beta calculations may vary by a considerable margin depending on the method of calculation and the control periods used for measurement.[54] A stock's beta may also change over time. During a prolonged class period, particularly when other major changes in company operations accompany the fraud, the beta may change suddenly and by a significant amount,[55] so that the historical beta used in the comparable-index approach is a practical oversimplification.

2. *Estimating the "alpha" variable*: Per-share damages calculations often fail to consider the "alpha" component of stock market return, or the return of the stock independent of its sensitivity to market and industry forces.[56] The development of CAPM in connection with diversified-portfolio analysis suggests that the aggregate alpha of a diversified portfolio may approach zero.[57] Therefore damages calculations may sometimes also assume a zero-level alpha. If there is a zero-level alpha, the alpha component would have no effect on the damages calculation. The alpha component, however, can be a much larger factor in analyzing the returns of a particular stock, as in securities litigation damages calculations.

3. *Leakages of information involving disclosure of the fraud*: If all the information about the fraud is revealed at the same time, then the change in the price of the stock at the time of disclosure, less the change in the market and industry factors, is reasonably attributed to the fraud unless, of course, there is simultaneously another major factor affecting the stock's price. If, on the other hand, disclosures seep out over an extended period, it is more difficult to determine when corrective disclosures occur[58] and the impact of such disclosures on the market. In addition, there is a greater likelihood over a long time period that intervening market, industry, and company-specific factors will distort the analysis.[59] If the event-study approach is used, a value line that substitutes predicted returns in place of actual returns only on dates of known disclosures will understate true damages.[60]

A related problem is determining whether the market has in fact been fooled by the fraud or whether the information has in some other way credibly entered the market. As the Court emphasized in *Basic*, defendants are only liable for misrepresentations that in fact influence the market price.[61]

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54. *See id.* at 140-41, 156-62.
55. *See* Easterbrook & Fischel, *supra* note 41, at 628.
56. For a description of the alpha component and its relation to CAPM, see J. Cohen, E. Zinbarg & A. Zeikel, *supra* note 21, at 136-43.
57. *See id.* at 142.
58. *See* Cornell & Morgan, *supra* note 1, at 891-92; Note, *supra* note 7, at 394-95.
59. *See* Easterbrook & Fischel, *supra* note 41, at 626-27.
60. Cornell & Morgan, *supra* note 1, at 903.
61. *See* Basic, Inc. v. Levinson, 485 U.S. 224, 248-49 (1988); *see also In re* Apple Sec. Litig., 886 F.2d 1109, 1115 (9th Cir. 1989)(misrepresentation credibly entered market by

4. *Attributing the effects of multiple interrelated misrepresentations*: A fraud may consist of a series of misrepresentations, so that the mix of information available to investors varies during the class period. This may not inhibit plaintiff class certification where there is a continual, unchanging scheme of fraud throughout the class period.[62] In other instances, there may be discrete but related frauds involving the same stock but different defendants. For example, a company may misrepresent its financial statements and also issue related misstatements regarding the status of a company project. The plaintiff may include the company's accountants as defendant in one fraud but not the other. Subsequent disclosures may partially cure one fraud without curing the other. In such situations, it may be difficult or impossible to disentangle damages or create separate value lines, and thus financial theory may not aid the apportionment of damages.[63]

5. *A lack of direct correlation between the initial fraud and subsequent disclosures*: Frequently, frauds are cured by corrective statements that also contain additional information, leading to problems of "over-disclosure" and "under-disclosure."[64] It does not follow then that the market's reaction to a curative statement is attributable purely to fraud-related information. Cornell and Morgan provide an example of over-disclosure taken from *Basic*,[65] where a denial of merger talks was corrected by disclosure of an actual transaction. As Cornell and Morgan suggest, one solution to this problem is the determination of an "equivalent disclosure" price, the price at which the security would have traded at the beginning of the class period if the fraudulent information alone had been disclosed. The authors nonetheless concede that this calculation is difficult to support with objective analysis.[66]

6. *Defining the efficiency of the market*: As discussed earlier,[67] the efficiency of the market for different securities may vary widely and depends largely on the cost and difficulty of processing new information.[68] The analyst's determination of the degree of market efficiency affects his assessment of both the accuracy and the timing of the market's reaction

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means other than defendant's disclosure), *cert. denied*, 110 S. Ct. 3229 (1990); *In re* Convergent Technologies Sec. Litig., 721 F. Supp. 1133, 1139 (N.D. Cal. 1988)(same); Cornell & Morgan, *supra* note 1, at 919 (whether fraud has been cured by third party information is key factual issue in rebutting fraud-on-the market claims); Macey & Miller, *supra* note 21, at 1087-89 (quoting *Basic* but expressing doubt about court's ability to determine whether market fooled or not).

62. *See* Harman v. Lymphomed, Inc., 122 F.R.D. 522, 526 (N.D. Ill. 1988)(discussing impact of multiple misrepresentation on materiality and class certification)(citing cases).

63. *See* Cornell & Morgan, *supra* note 1, at 907-09.

64. *See* Cornell & Morgan, *supra* note 1, at 889-94. This article also analyzes some of the other problems with using the market model to calculate damages. *See id.* at 900-11.

65. *See id.* at 894-97.

66. *See id.*

67. *See supra* note 23 and accompanying text.

68. *See* Note, *supra* note 7, at 387-88, 394-95.

to corrective information.[69] Assume a company whose stock is trading at $100 makes a corrective disclosure at the start of trading on Monday. At the end of the day, the stock closes at $75. Over the next four days, the market price continues to drop, and on Friday the stock closes at $65. On what day did the market fully assimilate the new information? If the stock is thinly traded, how reliable is the market price as a measure of the market reaction to the new information? These determinations will establish the cut-off date and the possible margin of error for calculating damages.

7. *Accounting for non-fraud-related company-specific events:*[70] Perhaps the greatest challenge faced by financial analysts in applying a market model to compute damages is distinguishing between fraud-related and non-fraud-related factors. The comparable-index approach predicts the return on a security based on market and industry returns, but does not separately account for the effects on returns of company-specific events, such as an acquisition that occurs during the class period.[71] These events may have significant impact on stock returns, particularly during a fraud of long duration. Use of the event-study approach does not entirely solve this problem. The event-study approach also uses predicted returns on trading days affected by fraud disclosures, even though significant non-fraud company information may also be revealed on these days. Performing a micro-analysis of trading patterns to try to correlate abrupt and abnormal price movements with a carefully prepared time-line of public information releases may provide a partial solution. The market reaction to certain significant company events, such as the announcement of an acquisition, is often almost instantaneous.[72] This analysis, however, obviously injects another subjective component into the calculation of damages.

8. *Accounting for the effects of information not required to be disclosed:* This problem has been raised in the context of preliminary merger discussions, where insiders may have no fiduciary duty to disclose and where "strategic misrepresentations" arguably protect the interests of the corporation.[73] In such instances, perhaps there should be no liability for damages at all.[74] Even if the courts accepted the validity of strate-

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69. *See infra* notes 21 & 23 and accompanying text.

70. *See generally* Note, *supra* note 4, at 867-68 (discussing this problem).

71. *See* Note, *supra* note 7, at 393-94 (acknowleging that the comparable index approach "is incapable of allocating separate values to separate bits of information released within the same time period" as the fraud).

72. *See infra* notes 21 & 23 and accompanying text.

73. *Cf.* Macey & Miller, *supra* note 21, at 1063-76 (discussing fraud-on-the-market theory and property rights in information).

74. *Cf. Basic Inc. v Levinson*, 485 U.S. at 232-41 (declining judgment whether secrecy maximizes shareholder wealth but rejecting agreement-in-principle test for merger discussion disclosure and finding liability if any material misrepresentation); Flamm v. Eberstadt, 814 F.2d 1169, 1180 (7th Cir.)(no damages awarded because company not required to disclose merger discussions until price and structure of deal determined), *cert. denied,* 484 U.S. 853 (1987).

gic misrepresentations, however, it would still be difficult to analyze the effects of a corporate statement that combines misinformation requiring disclosure with other misinformation allegedly entitled to corporate secrecy. An "equivalent-disclosure" analysis such as the one discussed above might provide the only means to separate out the effects of these two pieces of information on market price.

9. *Prolonged periods of fraud:* The problems introduced by frauds of long duration have already been discussed in the context of information leakages and intervening company-specific events.[75] Prolonged frauds merit separate mention here because additional problems relating to such frauds arise in estimating aggregate damages. Moreover, prolonged frauds introduce market variables that may affect the way the market reacts to the fraud itself and to disclosures during the class period.[76]

The following procedures may mitigate at least some of these problems: a careful combination of the comparable-index and event-study approaches;[77] an analysis of the market effects of an "equivalent disclosure," namely the disclosure of only the omitted or misrepresented information required to be disclosed;[78] and thorough factual analysis.

Ultimately, the market-model approach remains a useful procedure for measuring damages in connection with many securities transactions. Because the damages calculation need only be an estimate, however, an indication of the reliability of the estimate might aid courts and litigators to make more informed damages assessments. The indication of reliability would include a margin of error reflecting degrees of market efficiency and the inexactitude involved in measuring the impact of other factors on the stock's price.[79]

III. CALCULATING AGGREGATE DAMAGES IN RULE 10b-5 CLASS-ACTION LITIGATION

A. *The Variables in Aggregate Damages Computation*

The general procedure described below provides a means for establishing an estimate of aggregate class-wide damages[80] for purposes of settlement rather than proof of damages to a mathematical certainty. This is

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75. *See infra* notes 58 & 59 and accompanying text.

76. *See* Blackie v. Barrack, 524 F.2d 891, 909 n.25 (9th Cir. 1975), *cert. denied* 429 U.S. 816 (1976); Reder, *supra* note 4, at 1850; *see also* Green v. Occidental Petroleum Corp., 541 F.2d 1335, 1345 & n.6 (9th Cir. 1976)(discussing market variable affecting fraud).

77. *See* Cornell & Morgan, *supra* note 1, at 900-11.

78. *See id.* at 894-97.

79. *See* Bonime v. Doyle, 416 F. Supp. 1372, 1386 (S.D.N.Y. 1976)(approving settlement based on expert's range of potential recovery), *aff'd,* 556 F.2d 554 (2d Cir.), *cert. denied* 434 U.S. 924 (1977).

80. It is well established that damages may be proven as a threshold matter on a class-wide basis. *See* Sirota v. Solitron Devices, Inc., 673 F.2d 566, 576-77 (2d Cir.), *cert. denied,* 459 U.S. 838 (1982); *In re* Texas Int'l Sec. Litig., 114 F.R.D. 33, 43 (W.D. Okla. 1987).

in line with established precedent articulating the standard of proof that courts require when Rule 10b-5 cases go to trial.[81]

The calculation of aggregate damages during a class period introduces new variables into the market-model approach and amplifies the effect of certain factors in the per-share calculation. The new variables are introduced primarily to determine the number shares affected by the fraud. The final estimation of damages also depends on matters related to the claims process itself.[82]

Four major factors affect the estimation of the number of shares in the class: (1) the duration of the class period; (2) the size of the initial "float"; (3) the daily trading volumes;[83] and (4) the pattern of trading, or turnover of shares, during the class period. That not all shares bought in the period are held to the end of the period, but are re-traded during the period, complicates the determination of the number of shares affected by the fraud. While these so-called "in-and-out" traders may be entitled to damages under certain circumstances, their losses are generally much less than if they had held the shares until the fraud was corrected.[84]

The major variables in the formula for calculating aggregate damages are discussed and analyzed below in the context of an overall model for estimating total class-wide damages.

1. *Duration of the class period*: The duration of the class period (which may or may not be the same as the duration of the fraud), is one of the most critical factors in establishing aggregate damages. The longer the class period, the greater the opportunity for market transactions to occur that will be affected by the fraud and thus be subject to damages.

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81. As a rule, when there is sufficient evidence of damages presented at trial, proof of these damages to a mathematical certainty is unnecessary; an intelligent estimate of damages is acceptable. *See, e.g.,* Harmsen v. Smith, 693 F.2d 932, 945 (9th Cir. 1982), *cert. denied,* 464 U.S. 822 (1983); Rochez Bros. v. Rhoades, 527 F.2d 891, 895 (3d Cir. 1975), *cert. denied,* 425 U.S. 993 (1976); *see also* Chris-Craft Indus., Inc. v. Piper Aircraft Corp., 516 F.2d 172, 189-90 (2d Cir. 1975)(inherent uncertainties in computing price will be resolved against defendant for purposes of determining damages), *rev'd,* 430 U.S. 1 (1977); Feit v. Leasco Data Processing Equip. Corp., 332 F. Supp. 544, 587 (E.D.N.Y. 1971)(damages computed by comparing market price paid with value on day of sale).

On the other hand, federal courts have declined to award damages to defrauded private parties where losses are too speculative. *See* Pelletier v. Stuart James Co., 863 F.2d 1550, 1557-58 (11th Cir. 1989); *In re* Letterman Bros. Energy Sec. Litig., 799 F.2d 967, 973-74 (5th Cir.), *cert. denied,* 480 U.S. 918 (1986); Miley v. Oppenheimer & Co., 637 F.2d 318, 328 (5th Cir. 1981).

82. *See generally* Heitz, Kolber, & Schink, *Settlement of Security Class Actions,* in Securities Litigation - Prosecution and Defense Strategies 523-49 (Practicing Law Institute 1985) [hereinafter "PLI Securities Litigation"] (outlining details of claims settlement process); Fischel, *The Use of Economics in Securities Fraud Cases,* in PLI Securities Litigation, *supra,* at 468-69 (other step required to calculate damages is estimation of number of shares in class).

83. *See, e.g.,* Elkind v. Liggett & Myers, Inc., 472 F. Supp 123, 129 (S.D.N.Y. 1978)(accepting estimate based on daily volume of shares sold during one-week class period); Fischel, *supra* note 82, at 468-69 (noting limitations in using trading volume alone).

84. *See infra* notes 99-103 and accompanying text.

In a simple fraud, the class period will extend from the date of the initial misrepresentation until the date of disclosure, or until the market has fully assimilated the curative information. As noted earlier,[85] however, a series of misrepresentations and multiple disclosures that only partially cure the fraud or contain significant additional information may complicate the fraud. Appropriate delineation of the class period may require factual and legal inquiries by both lawyers and financial experts, as well as analyses of market responses to information.

2. *Float*: Float is a measure of the number of shares of a publicly traded corporation that are both issued and outstanding, and assumed likely to trade in the market with some degree of probability.[86] The concept recognizes that in any given corporation, certain shares will typically not participate in the trading market over certain periods of time. In other words, these shares will have a zero probability of trading during the class period.[87] Because a Rule 10b-5 action concerns only shareholders who have bought or sold a security,[88] shares excluded from the float will not be affected by the fraud for purposes of Rule 10b-5 litigation.[89]

Determining the float helps separate out the shares that were bought during the class period and retained until the end of the period from those shares disposed of before the fraud was disclosed. Such a distinction is particularly important during frauds of long duration.

Since buyers and sellers are recorded in the daily records of the major exchanges, it is theoretically possible to ascertain which shares actually traded during the class period by studying the records of transfer agents.[90] In Rule 10b-5 actions involving large companies whose shares trade daily in large volumes, and where the class period extends for many days, analysis of transfer agents' records may not be feasible. Moreover, such records are typically incomplete because some securities are held and traded in "street name"—in the name of a broker or another nominee instead of the customer—or through other depository institutions that obscure the identity of the individual security owner.[91]

Float may instead be estimated by determining the groups of shares that are known to be off the market or to have little probability of trading.[92] By determining the number of shares insiders held before and after

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85. *See infra* notes 62-66 and accompanying text.

86. *See* J. Downes & J. Goodman, Dictionary of Finance and Investment Terms 140 (2d ed. 1987).

87. *See* Beaver & Malernee, *supra* note 42, at 11.

88. *See* Rule 10b-5, 17 C.F.R. § 240.10b-5 (1990).

89. *See infra* notes 11-13 and accompanying text.

90. *See, e.g.,* Bonime v. Doyle, 416 F. Supp. 1372, 1378 (S.D.N.Y. 1976)(expert used records of transfer agent to estimate money paid by short-term traders), *aff'd* 556 F.2d 554 (2d Cir.), *cert. denied* 434 U.S. 924 (1977).

91. *See* Beaver & Malernee, *supra* note 42, at 10.

92. *See infra* notes 86 & 87.

the class period (through referral to SEC filings[93] and other public data), one may frequently eliminate insider shares from the float. In addition, insiders are often excluded from the class in the plaintiff's complaint. During any particular class period, one may also determine that other shares are non-trading. For example, it is reasonable to infer that holders who have made a Form 13D[94] filing indicating a shareholding greater than 5% of the class of stock outstanding, and who have filed no amendment to their 13D, have abstained from the market during the class period. Certain large blocks of stock, such as those held by institutions, may also sometimes be eliminated from the float. In other circumstances, it may be possible to estimate the degree to which these large block holdings are available for trading.[95]

Two general concepts that relate the float to damages will be demonstrated below: (i) the float establishes the maximum number of shares that may be estimated to be affected by the fraud; and (ii) a higher estimate of float will also generally lead to a higher aggregate-damages estimate.[96]

The float also impacts damages because it is a variable affecting the efficiency of the market. The cost of processing information about firms with only a small float is high relative to potential benefits. Therefore, markets for these firms will be less efficient,[97] and as a result, damages estimates will contain a higher degree of variance.

3. *Stock volume*: Daily stock volumes indicate the total number of shares transacted during the class period that may be affected by the fraud. Generally, higher daily stock volumes will increase the level of aggregate damages. Together with the float, the trading volumes are used to calculate the stock turnover and to estimate shares retained, rather than re-traded, during the class period.[98]

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93. *See* Securities Exchange Act of 1934, § 16(a), 15 U.S.C. §§ 78a et seq. (1982).

94. *See* Securities Exchange Act of 1934, § 13(d), 15 U.S.C. §§ 78a et seq. (1982).

95. A recent study of pension funds, for example, indicated that these institutions, which held 19% of equity securities in 1980 and are expected to own almost 50% in the year 2000, had annual stock turnovers of between 33% and 84% during the years 1977 through 1983. *See* Ippolito & Turner, *Turnover, Fees and Pension Plan Performance*, Fin. Analysts J., Nov.-Dec. 1987, at 16, 19.

96. As a simple illustration of these two concepts, consider a five-day class period, during each day of which 200,000 shares were traded, or a total of 1,000,000 shares during the class period. (The relative size of volume and float numbers in this example are obviously exaggerated for the purposes of illustration.) If the float is 400,000 shares, the maximum shares bought and retained until the end of the period is 400,000. If the float is 1,000,000 shares, the maximum shares affected by the fraud is also 1,000,000. Of course, in each instance a number of shareholders may have sat on the sidelines during the week and their shares would not be treated in the damages analysis.

Also, higher float leads to a lower probability that any share traded. That, in turn, means fewer "outs" of the "in-and-out" traders and therefore more of the shares traded on a given day remain "in" during the class period.

97. *See* Macey & Miller, *supra* note 21, at 1086.

98. *Cf.* Bonime v. Doyle, 416 F. Supp. 1372, 1378 (S.D.N.Y. 1976)(using trading volume and transfer agent records to estimate number of short-term traders), *aff'd* 556 F.2d 554 (2d Cir.), *cert. denied* 434 U.S. 924 (1977).

4. *Trading Pattern*: Trading pattern refers to the identity of buyers and sellers of a security traded during the class period and to the velocity of trades among them. This concept aids in distinguishing between short-term traders who were "in and out" of the stock before the end of the class period and long-term investors who retained shares until the end of the period when a corrective disclosure was made.[99]

Theoretically, an in-and-out trader does not suffer any injury from a fraud-related market distortion that remains constant during the class period. Where the fraud has caused inflation, for example, any inflation that a purchaser suffers would be recovered on the inflated sale within the class period.[100] Some courts have questioned whether in some circumstances in-and-out traders suffer any damages at all.[101] Courts have nevertheless generally allowed in-and-out traders to claim damages as members of a class on the theory that a fraudulent statement may have a different effect on the price of a security at different times during the class period depending upon market conditions and other events. This effect has been described as the "result of market forces operating on the misrepresentation."[102]

Even if courts award damages to in-and-out traders, they are likely to be low relative to losses suffered by those who hold shares until the end of the period. This is particularly evident in the case of a single corrective disclosure at the end of the class period, in which event the variability of the inflation during the class period is typically minimal.[103]

B. *Models for Calculating Aggregate Damages*

The allocation of damages between the "Ins-and-Outs Damages" of within-the-class-period traders and "Retention Damages" of those who purchased the security during the class period and held it until the end of

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99. In the case of a class of defrauded sellers, this latter group would consist of those shareholders who sold stock and did not repurchase before the end of the class period.

100. *See In re* Warner Communications Sec. Litig., 618 F. Supp. 735, 745 (S.D.N.Y. 1985), *aff'd* 798 F.2d 35 (2d Cir. 1986); *see also* Note, *supra* note 4, at 844-46 (ins-and-outs damages award reduced by amount recovered on resale); Brodsky, *Damages Under the Securities Laws*, N.Y. Law. J., Jan. 6, 1988, at 1, col. 1 (discussing proposition in context of cases).

101. *See* In re *Warner Communications Sec. Litig.*, at 745; *Bonime*, 416 F. Supp. at 1378, 1385 n.8 (approving expert's elimination of in-and-out traders from aggregate damages estimate based on all shares traded during period).

102. *See* Wool v. Tandem Computers Inc., 818 F.2d 1433, 1437 (9th Cir. 1987)(quoting Green v. Occidental Petroleum, 541 F.2d 1335, 1345 (9th Cir. 1976) (Sneed, J., concurring)); *see also* Katz v. Comdisco, Inc., 117 F.R.D. 403, 407-08 (N.D. Ill. 1987)(recognizing damage theory for in-and-out traders but dismissing plaintiff as class representative on other grounds).

103. *See, e.g., In re* Warner Communications Sec. Litig., 618 F. Supp. at 745 (plaintiffs' expert indicates ins-and-outs represent very small portion of total damages); *Green*, 541 F.2d at 1345 (decline in market price after purchase by ins-and-outs not attributable to wrong of defendant if constant price spread); Beaver & Malernee, *supra* note 42, at 10 (large numbers of ins-and-outs usually lower total damages). *But see Green*, at 1345-46 & nn. 6-10 (providing examples where in-and-out traders might suffer significant damages).

the class period has a major effect on total estimated aggregate damages of the class.[104] The following models provide a method for making this allocation in the context of estimating overall class-wide damages.

1. The Proportional Trading Model

One model that may be used to calculate Retention Damages may be termed a Proportional Trading Model (PTM). The PTM assumes that on any given day, the shares that are sold are drawn uniformly and randomly from all the shares in the float, or, in other words, that any share in the float is as likely to be traded as any other share. According to this assumption, a proportional number of shares traded comes from both the pool of shares that have not been traded since the beginning of the class period ("Float Retained") and from the pool of shares purchased during the the class period and still held by those purchasers ("Traded Shares Retained"). On any day during the class period, the sum of the Float Retained and the Traded Shares Retained is equal to the total float. For example, if a given day's trading volume equals one percent of the total float, the PTM assumes that one percent of Float Retained will trade on that day, and that one percent of the Traded Shares Retained from each prior trading day during the class period will trade as well.

The computer analysis based on the PTM calculates how many shares bought on each day during the class period are retained until the end of the period. Multiplying these shares by the per-share damages calculation for each transaction date determines aggregate Retention Damages on that date. The sum of such daily aggregate damages for the entire class period provides an initial estimate of total damages. A further adjustment factors in the Ins-and-Outs Damages, *i.e.* any damages, positive or negative, attributable to shareholders who bought and resold during the period. The sum of Retention Damages and Ins-and-Outs Damages equals the total estimated damages of the shareholder class.

Table 1 illustrates this procedure. This table analyzes a hypothetical fraud over a ten-day class period for XYZ Company. The fraud causes the price of the stock to be inflated throughout the class period until corrective disclosure occurs on the tenth day. The key given variables are that XYZ Company has fifteen million shares outstanding, a beta of 1.25, and constant daily stock volume of 35,000 shares.[105] The key assumption is a float of ten million shares and a proportional number of all shares in the float trading on any given day. In the example in Table 1,

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104. *See Bonime*, 416 F. Supp. at 1378 (court approval of deduction by expert of 50% of gross dollar inflation during class period as owing to in-and-out traders).

105. Given the $50 per share market price, XYZ Company has a market capitalization of $750 million. The relation of stock volume to shares outstanding is similar to companies trading on the New York Stock Exchange ("NYSE"). There are an average of 45 million shares registered per company on the NYSE. The daily stock volume per company approximates 107,000 shares. *See* U.S. Department of Commerce, Bureau of the Census, Statistical Abstract of the United States 1990, Table Nos. 843 & 845, 512-13 (1990).

Table 1

XYZ Company
Damages Analysis
Proportional Trading Model
Total Damages = $1,928,307

Shares outstanding	15,000,000	
Float	10,000,000	
Daily trading volume	35,000	
End-period true value	$50.00	
		Beta 1.25

Day	XYZ Actual Price ($)	XYZ Actual Price Return	S&P 500	S&P 500 Return	XYZ True Value ($)	XYZ True Value Return	Inflation Per Share ($)	Float Retained	Traded Shares Retained Until End Of Period	Daily Retention Damages ($)	Daily In & Out Damages ($)
1	54.50	N/A	332.03	N/A	48.16	N/A	6.34	9,965,000	33,894	214,957	0
2	54.75	0.46%	332.92	0.27%	48.32	0.34%	6.43	9,930,123	34,013	218,711	276
3	55.25	0.91%	329.11	-1.14%	47.64	-1.41%	7.61	9,895,369	34,134	259,813	555
4	54.25	-1.81%	330.80	0.51%	47.95	0.65%	6.30	9,860,739	34,255	215,938	1,052
5	54.50	0.46%	332.25	0.44%	48.21	0.55%	6.29	9,826,234	34,377	216,221	186
6	55.25	1.38%	334.48	0.67%	48.62	0.85%	6.63	9,791,853	34,500	228,796	374
7	55.00	-0.45%	335.57	0.33%	48.82	0.41%	6.18	9,757,597	34,623	214,076	844
8	55.00	0.00%	338.39	0.84%	49.34	1.06%	5.66	9,723,466	34,748	196,839	722
9	54.25	-1.36%	340.53	0.63%	49.73	0.80%	4.52	9,689,461	34,874	157,686	724
10	50.00	-7.83%	342.01	0.43%	50.00	0.55%	0.00	9,655,583	35,000	0	537
Total									344,417	1,923,036	5,271

Table 2

XYZ Company
Damages Analysis
Accelerated Trading Model
Total Damages = $1,809,974

Shares outstanding	15,000,000	Daily trading volume	35,000	Beta	1.25
Float	10,000,000	End-period true value	$50.00	Turnover Likelihood	5x

Day	XYZ Actual Price ($)	XYZ Actual Price Return	S&P 500	S&P 500 Return	XYZ True Value ($)	XYZ True Value Return	Inflation Per Share ($)	Float Retained	Traded Shares Retained Until End Of Period	Daily Retention Damages ($)	Daily In & Out Damages ($)
1	54.50	N/A	332.03	N/A	48.16	N/A	6.34	9,965,000	29,777	188,845	0
2	54.75	0.46%	332.92	0.27%	48.32	0.34%	6.43	9,930,615	30,309	194,890	1,137
3	55.25	0.91%	329.11	-1.14%	47.64	-1.41%	7.61	9,896,837	30,852	234,838	2,487
4	54.25	-1.81%	330.80	0.51%	47.95	0.65%	6.30	9,863,662	31,408	197,991	4,919
5	54.50	0.46%	332.25	0.44%	48.21	0.55%	6.29	9,831,080	31,975	201,115	786
6	55.25	1.38%	334.48	0.67%	48.62	0.85%	6.63	9,799,087	32,555	215,897	1,714
7	55.00	-0.45%	335.57	0.33%	48.82	0.41%	6.18	9,767,675	33,147	204,945	4,055
8	55.00	0.00%	338.39	0.84%	49.34	1.06%	5.66	9,736,838	33,751	191,192	3,506
9	54.25	-1.36%	340.53	0.63%	49.73	0.80%	4.52	9,706,568	34,369	155,404	3,570
10	50.00	-7.83%	342.01	0.43%	50.00	0.55%	0.00	9,676,858	35,000	0	2,682
Total									323,142	1,785,117	24,857

virtually all of the 350,000 shares purchased during the period are retained until the end. This is a typical pattern in frauds involving short class periods.

2. The Accelerated Trading Model

As some analysts have noted, once a share is traded it may have a much greater than equal probability of being re-traded during the period.[106] This seems particularly true in circumstances involving the possible acquisition of the subject company, when arbitrageurs and other short-term traders have increased participation in the market. To reflect this trading pattern, it may be advisable to employ an Accelerated Trading Model ("ATM").

The ATM modifies the assumption of the source of each day's trading volume. This model assigns to the shares a proportional likelihood of having come from either the Float Retained (the shares held prior to the class period that have not traded during the class period) and the Traded Shares Retained (the shares that have already been traded at least once during the class period). This new variable in the ATM may be termed the "Turnover Likelihood." Turnover Likelihood is the weighted proportional probability that Traded Shares Retained will trade on any given day relative to the shares in the Float Retained. A Turnover Likelihood of 1.0x, for example, will yield the same results as the PTM: traded shares are drawn proportionately from among all shares in the float. A Turnover Likelihood of 5.0x, on the other hand, assumes that on any given day during the class period, shares in the pool of Traded Shares Retained are five times more likely to trade as shares in the Float Retained.

There is no simple method for determining the actual turnover of shares during a class period. As noted earlier, actual trading data is generally available to shareholders in the records of the transfer agent, but because of shares held in "street name" or other depository accounts, even these records may be incomplete.[107] While past experience may lead to certain reasonable assumptions, a comprehensive study of trading patterns under different market circumstances has not yet been performed. The best method may be to employ a sampling approach based on information in transfer agent records and to extrapolate a reasonable estimate of Turnover Likelihood based on the results of this analysis.

The number of shares in the Float Retained will trade in the market, and therefore be subject to damages, at a slower rate with a higher Turnover Likelihood. As a result, total Retention Damages decrease as the Turnover Likelihood increases. Table 2, which assumes a 5.0x Turnover Likelihood, illustrates this effect for the fraud involving XYZ Company.

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106. *See* Beaver & Malernee, *supra* note 42, at 11 (positing that share is four to five times more likely to be traded again, but providing no supporting evidence).

107. *See infra* note 91.

3. The Impact of Class Duration, Float, Stock Volume and Turnover
    Likelihood on Aggregate Damages Estimates

Tables 1 and 2 estimate damages for a hypothetical fraud lasting ten days, a relatively short duration. Because the class period is brief, the impact of a greater Turnover Likelihood assumption, indicated in Table 2, is relatively minor. The same holds true for modifications in the assumption about the size of the float: most shares that trade are retained until the end of the period and are subject to Retention Damages.

Class-action suits brought under Rule 10b-5 involve class periods that vary widely in duration, and sometimes extend for several years.[108] Because of space limitations, Tables 3 and 4 analyze the effects of the variables in the PTM and ATM in a fraud of longer duration by multiplying daily stock volume to approximate the volumes that would trade over a more extended period of time. Accordingly, the daily stock volume over the ten-day period is multiplied by ten so that total trading volume in the ten-day scenario approximates the volumes that would occur during a 100-day period.

Table 3(a) illustrates the PTM for a simulated 100-day class period, with other variables held the same as in Table 1. Only 79% of the shares purchased during the period are held until the end, as compared with over 98% during the ten-day period. If the inflation per share were constant throughout the period so that Ins-and-Outs Damages were zero, then aggregate class-wide damages would equal the Retention Damages (Traded Shares Retained x Inflation Per Share) of the 79% of traded shares held until the end of the class period.

Table 3(b) demonstrates the impact of increasing the assumed starting float from ten million shares to fifteen million shares, which is equal to the total shares outstanding in this example. As indicated therein, the number of shares retained until the end of the period increases, and thus so do Retention Damages, as the assumed shares in the float increase.

Tables 4(a) and 4(b) indicate the significant impact of using an ATM in place of a PTM when a fraud extends over a longer period of time. Table 4(a) assumes a Turnover Likelihood of 5.0x, or a high degree of back-and-forth trading of shares during the period. Relative to the comparable PTM analysis in Table 3(a), total estimated damages are reduced

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108. *See, e.g.,* Flamm v. Eberstadt, 814 F.2d 1169, 1172 (7th Cir. 1987)(class period December 5, 1975 to January 23, 1976); Levinson v. Basic Inc., 786 F.2d 741, 742 (6th Cir. 1986)(class period October 21, 1977 to December 15, 1978); Sirota v. Solitron Devices, Inc., 673 F.2d 566, 572 (2d Cir. 1982)(fraud from 1967 to 1970); Huddleston v. Herman & MacLean, 640 F.2d 534, 556 (5th Cir. 1981), *aff'd in part and rev'd in part,* 459 U.S. 375 (1983)(90-day class period); Garfinkel v. Memory Metals, Inc., 695 F. Supp. 1397, 1399 (D. Conn 1988)(class period February 12, 1986 to September 26, 1986); *In re* Apple Computer Sec. Litig., 672 F. Supp. 1552, 1557 (N.D. Cal. 1987)(class period November 12, 1982 to September 23, 1983); *In re* Warner Communications Sec. Litig., 618 F. Supp. 735, 738 (S.D.N.Y. 1985)(class period March 3, 1982 through December 8, 1982); Beissinger v. Rockwood Computer Corp., 529 F. Supp. 770, 775 (E.D. Pa. 1981)(class period July 11, 1971 to June 30, 1972).

Table 3a

XYZ Company
Damages Analysis
Proportional Trading Model
Total Damages = $16,203,806

Shares outstanding	15,000,000	
Float	10,000,000	
Daily trading volume	350,000	
End-period true value	$50.00	
Beta	1.25	

Day	XYZ Actual Price ($)	XYZ Actual Price Return	S&P 500	S&P 500 Return	XYZ True Value ($)	XYZ True Value Return	Inflation Per Share ($)	Float Retained	Traded Shares Retained Until End Of Period	Daily Retention Damages ($)	Daily In & Out Damages ($)
1	54.50	N/A	332.03	N/A	48.16	N/A	6.34	9,650,000	238,195	1,510,651	0
2	54.75	0.46%	332.92	0.27%	48.32	0.34%	6.43	9,312,694	247,160	1,589,279	25,468
3	55.25	0.91%	329.11	-1.14%	47.64	-1.41%	7.61	8,988,525	256,812	1,954,758	55,429
4	54.25	-1.81%	330.80	0.51%	47.95	0.65%	6.30	8,677,911	267,217	1,684,503	111,022
5	54.50	0.46%	332.25	0.44%	48.21	0.55%	6.29	8,381,234	278,447	1,751,358	18,556
6	55.25	1.38%	334.48	0.67%	48.62	0.85%	6.63	8,098,833	290,582	1,927,091	40,902
7	55.00	-0.45%	335.57	0.33%	48.82	0.41%	6.18	7,830,994	303,707	1,877,814	98,688
8	55.00	0.00%	338.39	0.84%	49.34	1.06%	5.66	7,577,936	317,916	1,800,910	87,620
9	54.25	-1.36%	340.53	0.63%	49.73	0.80%	4.52	7,339,803	333,310	1,507,107	91,719
10	50.00	-7.83%	342.01	0.43%	50.00	0.55%	0.00	7,116,655	350,000	0	70,932
Total									2,883,345	15,603,472	600,335

Table 3b

XYZ Company
Damages Analysis
Proportional Trading Model
Total Damages = $17,400,646

| Shares outstanding | 15,000,000 |
| Float | 15,000,000 |

| Daily trading volume | 350,000 |
| End-period true value | $50.00 |

| Beta | 1.25 |

Day	XYZ Actual Price ($)	XYZ Actual Price Return	S&P 500	S&P 500 Return	XYZ True Value ($)	XYZ True Value Return	Inflation Per Share ($)	Float Retained	Traded Shares Retained Until End Of Period	Daily Retention Damages ($)	Daily In & Out Damages ($)
1	54.50	N/A	332.03	N/A	48.16	N/A	6.34	14,650,000	275,402	1,746,618	0
2	54.75	0.46%	332.92	0.27%	48.32	0.34%	6.43	14,308,362	282,143	1,814,224	17,992
3	55.25	0.91%	329.11	-1.14%	47.64	-1.41%	7.61	13,975,280	289,217	2,201,418	37,538
4	54.25	-1.81%	330.80	0.51%	47.95	0.65%	6.30	13,650,943	296,646	1,870,026	73,259
5	54.50	0.46%	332.25	0.44%	48.21	0.55%	6.29	13,335,532	304,452	1,914,925	12,796
6	55.25	1.38%	334.48	0.67%	48.62	0.85%	6.63	13,029,217	312,658	2,073,500	26,823
7	55.00	-0.45%	335.57	0.33%	48.82	0.41%	6.18	12,732,158	321,289	1,986,525	62,627
8	55.00	0.00%	338.39	0.84%	49.34	1.06%	5.66	12,444,500	330,371	1,871,465	54,763
9	54.25	-1.36%	340.53	0.63%	49.73	0.80%	4.52	12,166,373	339,931	1,537,045	56,311
10	50.00	-7.83%	342.01	0.43%	50.00	0.55%	0.00	11,897,890	350,000	0	42,792
Total									3,102,110	17,015,746	384,900

Table 4a

XYZ Company
Damages Analysis
Accelerated Trading Model
Total Damages = $8,524,500

Shares outstanding	15,000,000	
Float	10,000,000	
Daily trading volume	350,000	
End-period true value	$50.00	
Beta	1.25	
Turnover Likelihood	5x	

Day	XYZ Actual Price ($)	XYZ Actual Price Return	S&P 500	S&P 500 Return	XYZ True Value ($)	XYZ True Value Return	Inflation Per Share ($)	Float Retained	Traded Shares Retained Until End Of Period	Daily Retention Damages ($)	Daily In & Out Damages ($)
1	54.50	N/A	332.03	N/A	48.16	N/A	6.34	9,650,000	48,745	309,146	0
2	54.75	0.46%	332.92	0.27%	48.32	0.34%	6.43	9,363,472	59,543	382,873	-28,609
3	55.25	0.91%	329.11	-1.14%	47.64	-1.41%	7.61	9,132,436	73,230	557,398	57,051
4	54.25	-1.81%	330.80	0.51%	47.95	0.65%	6.30	8,948,683	90,589	571,061	248,775
5	54.50	0.46%	332.25	0.44%	48.21	0.55%	6.29	8,804,278	112,611	708,292	-34,632
6	55.25	1.38%	334.48	0.67%	48.62	0.85%	6.63	8,691,948	140,547	932,085	37,567
7	55.00	-0.45%	335.57	0.33%	48.82	0.41%	6.18	8,605,306	175,977	1,088,066	269,097
8	55.00	0.00%	338.39	0.84%	49.34	1.06%	5.66	8,538,935	220,900	1,251,344	271,370
9	54.25	-1.36%	340.53	0.63%	49.73	0.80%	4.52	8,488,371	277,842	1,256,302	340,644
10	50.00	-7.83%	342.01	0.43%	50.00	0.55%	0.00	8,450,015	350,000	0	306,670
Total									1,549,985	7,056,568	1,467,932

Table 4b

XYZ Company
Damages Analysis
Accelerated Trading Model
Total Damages = $11,251,409

Shares outstanding	15,000,000	
Float	15,000,000	
Daily trading volume	350,000	
End-period true value	$50.00	
Beta	1.25	
Turnover Likelihood	5x	

Day	XYZ Actual Price ($)	XYZ Actual Price Return	S&P 500	S&P 500 Return	XYZ True Value ($)	XYZ True Value Return	Inflation Per Share ($)	Float Retained	Traded Shares Retained Until End Of Period	Daily Retention Damages ($)	Daily In & Out Damages ($)
1	54.50	N/A	332.03	N/A	48.16	N/A	6.34	14,650,000	102,394	649,387	0
2	54.75	0.46%	332.92	0.27%	48.32	0.34%	6.43	14,341,809	116,284	747,727	3,521
3	55.25	0.91%	329.11	-1.14%	47.64	-1.41%	7.61	14,072,122	132,445	1,008,127	74,297
4	54.25	-1.81%	330.80	0.51%	47.95	0.65%	6.30	13,837,512	151,255	953,497	217,722
5	54.50	0.46%	332.25	0.44%	48.21	0.55%	6.29	13,634,530	173,154	1,089,091	191
6	55.25	1.38%	334.48	0.67%	48.62	0.85%	6.63	13,459,788	198,651	1,317,420	57,098
7	55.00	-0.45%	335.57	0.33%	48.82	0.41%	6.18	13,310,042	228,339	1,411,814	217,671
8	55.00	0.00%	338.39	0.84%	49.34	1.06%	5.66	13,182,237	262,905	1,489,290	206,709
9	54.25	-1.36%	340.53	0.63%	49.73	0.80%	4.52	13,073,553	303,150	1,370,732	238,002
10	50.00	-7.83%	342.01	0.43%	50.00	0.55%	0.00	12,981,424	350,000	0	199,114
Total									2,018,576	10,037,085	1,214,324

by half, and total Retention Damages (which would equal total damages if Ins-and-Outs Damages were zero) are reduced by almost two-thirds.

Table 4(b) demonstrates the additional impact on damages when the float is assumed to equal the shares outstanding, increasing the assumed float by half.

Chart 1 illustrates the impact of varying assumptions regarding Turnover Likelihood in the ATM for an actual, rather than simulated, 100-day class period. As the size of actual daily stock volumes increases, the gap in damages resulting from a high versus low Turnover Likelihood widens significantly.

This pattern would continue if the chart considered even longer class periods. As noted earlier, however, the size of the float ultimately limits total Retention Damages, because this will set an upward limit on the number of shares that may be subject to the fraud. Chart 2, which assumes fixed variables similar to those presented in Table 1, illustrates that cumulative Retention Damages will tend to flatten out as the class period lengthens, given a fixed level of inflation per share.

Courts and commentators considering damages issues under Rule 10b-5 have tended to focus on the inflation in the per-share market price, that is, the difference between actual price and true value.[109] As Tables 1 through 4 indicate, however, total class-wide damages may depend more significantly on the length of the class period, the probable number of shares available for trading during the class period, the trading volume and the trading pattern of shares. In arriving at a lump sum settlement, where damages may not be procedurally limited to those shares held by shareholders filing proof of claim, the treatment of these variables requires special consideration.

C. *The Claims Process and Estimated Damages*

In many instances, members of the plaintiff class are difficult to contact or do not step forward to prove their claims within the requisite time limits.[110] Depending on the form of settlement, this may act as a practical limit on estimated damages. When the litigation extends for a long period of time beyond the initial fraud, this may aggravate the problem of notifying claims holders.[111]

Shareholders may change their addresses so that claims notices are returned as undeliverable. Many shares are held in "street name," and shareholders may become difficult to reach by moving their accounts to a different brokerage firm or other depository institution. In other instances, shareholders simply do not respond to claims notices, either because they find the documentation confusing or perhaps because they

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109. *See infra* notes 1, 39-79 *passim* and accompanying text.
110. *See* 2 H. Newberg, Newberg on Class Actions § 10.14 (2d ed. 1985).
111. Compare, for example, the court decision dates and dates for class periods parenthetically presented, *infra* note 108.

decide the damages award is not worth the bother.[112] The experience of practitioners and information in reported cases indicates that in a number of instances substantially less than one hundred percent of class members file proof of claims in class-action shareholder suits.[113]

In the context of a settlement, the litigants have great flexibility, subject to court approval, in deciding how to handle the distribution of the unclaimed portion of a lump-sum aggregate-damages fund.[114] They may agree, for example, that funds for the benefit of the class should be distributed in a specified manner to class members who file proof of claims. Because counsel for plaintiffs generally seek to maximize the return to class members, this is generally the preferred approach. As a practical matter, therefore, the difficulty in locating all class members will have no depressing effect on the size of the settlement fund. On the other hand, if the litigatants should arrange the settlement on a "claims-made" or "reversionary" basis, any unclaimed portion of a settlement fund may be returned to the defendant, reducing his effective payment.[115] If this approach is followed, estimates of aggregate damages should in some instances be supplemented to allow for the possibility that proof of viable claims will remain unfiled. If the class-action litigation is to be settled on a non-reversionary basis, however—in which case the agreed-upon lump-sum settlement (less reasonable attorney fees and expenses) will be distributed among all available class members—it will generally be unnecessary to make allowance in damages estimates for unfiled claims.[116]

D. *Employment of Estimated Aggregate Damages in Settlement Procedures*

The court must ultimately approve any settlement of a class-action

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112. *See* 2 H. Newberg, *supra* note 110, at § 10.14

113. *See, e.g.*, Boeing Co. v. Van Gemert, 444 U.S. 472, 477 n.4 (1980)(after extensive efforts to locate class members, holders of 47% of affected securities submit claims); Zimmer Paper Products, Inc. v. Berger & Montague, P.C., 758 F.2d 86, 92 (3d Cir.)(upholding notice of settlement by first-class mail where plaintiff failed to prove 12% response rate was unusually low), *cert. denied*, 474 U.S. 902 (1985); Elkind v. Liggett & Myers, Inc., 472 F. Supp. 123, 134 (S.D.N.Y. 1978)(in determining reasonableness of settlement court considers fact that not all class members will come forward to prove claim)(citations omitted), *modified*, 635 F.2d 156 (2d Cir. 1980); Bonime v. Doyle, 416 F. Supp. 1372, 1383 (S.D.N.Y. 1976)(expert reduces damage estimate by 50% to account for class members who won't file claims), *aff'd* 556 F.2d 554 (2d Cir.), *cert. denied* 434 U.S. 924 (1977); *see also In re* Warner Communications Sec. Litig., 618 F. Supp. 735, 746 & n.3 (S.D.N.Y. 1985)(describing process to locate claimholders), *aff'd* 798 F.2d 35 (2d Cir. 1986); report of settlement by Ralston Purina Co., National L. J. (April 23, 1984), at 3, col. 1 (settlement worth $25 to $50 million depending on number of class members who file claims).

114. *See* 2 H. Newberg, *supra* note 110, at § 10.15.

115. *See, e.g., Boeing*, 444 U.S., at 476 (defendant could have right to unclaimed monies, but class members who proved claims should not share in unclaimed portion); *Elkind*, 472 F. Supp., at 134 (unclaimed damages returned to defendant); 2 H. Newberg, *supra* note 110, at § 10.15.

116. *See* 2 H. Newberg, *supra* note 110, at § 11.17.

shareholder litigation.[117] In making this determination, the court must consider whether the proposed settlement fund is reasonable in light of the best possible recovery indicated by aggregate damages analyses and all the attendant risks of litigation.[118]

Courts have found the most important measure of the adequacy of settlement to be a comparison of the settlement consideration with what the class could receive upon successful litigation, discounted for risks and costs of litigation.[119] Hence courts have approved settlements based on even relatively small percentages of potential recovery.[120]

CONCLUSION

The Proportional Trading Model and Accelerated Trading Model proposed in this Note extend the per-share damages calculation methods that have previously been discussed in legal literature. These extended models enable courts and litigators to estimate the potential aggregate out-of-pocket damages in class actions brought under Rule 10b-5 for purposes of settlement. The finance and market theories on which these models are based provide the most objective basis for calculating shareholders' net loss in transactions tainted by securities fraud. But as the fraud-on-the-market theory gains wider acceptance in the courts and among commentators, it is important to recognize the complications and limitations in formulating damages estimates based on market behavior. The inputs and assumptions that underlie the market-based models for calculating per-share or aggregate damages are not obvious or automatic. Different reasonable assumptions may occasionally lead to widely varying results.

Ultimately, there is no formulaic approach that eliminates all subjective factors. Careful factual analysis and informed judgment must leaven computer-driven models.

Jon Koslow

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117. "A class action shall not be dismissed or compromised without the approval of the court, and notice of the proposed dismissal or compromise shall be given to all members of the class in such manner as the court directs." Fed. R. Civ. P. 23(e).

118. *See In re* Warner Communications Sec. Litig., 618 F. Supp. 735, 745 (S.D.N.Y. 1985), *aff'd* 798 F.2d 35 (2d Cir. 1986); 2 H. Newberg, *supra* note 110, at § 11.40 - § 11.49; *see also* City of Detroit v. Grinnell Corp., 495 F.2d 448, 463 (2d Cir. 1974)(listing factors to be considered in approving settlement proposal).

119. *See In re* Corrugated Container Antitrust Litig., 643 F.2d 195, 212 (5th Cir.), *cert. denied*, 456 U.S. 998 (1981); *In re* Warner Communications Sec. Litig., 618 F. Supp. at 745.

120. *See, e.g., In re* Warner Communications Sec. Litig., 618 F. Supp. at 745 (12% of reasonable damage figure is "surely within the range of reasonableness"); Bonime v. Doyle, 416 F. Supp. 1372, 1386 (S.D.N.Y. 1976)(approving $1.3 million settlement where potential recovery is $12.8 million), *aff'd* 556 F.2d 554 (2d Cir.), *cert. denied* 434 U.S. 924 (1977); City of Detroit v. Grinnell Corp., 356 F. Supp. 1380, 1386 (S.D.N.Y. 1972)(3.2% to 3.7% of potential recovery acceptable), *aff'd in part, rev'd on other grounds*, 495 F.2d 448 (2d Cir. 1974).