Proper Event Study Analysis in Securities Litigation

Frank Torchio*

I. INTRODUCTION

For over two decades, event studies have been prominently used as a valuation technique in various litigation matters including securities litigation. An event study is an empirical technique that measures the effect of new information on the market prices of a company's publicly traded securities. In securities litigation, event study methodology has been widely used in fraud-on-the-market cases as economic evidence of materiality, loss causation, and artificial inflation.

The focus of event studies in securities class actions has been predominantly on disclosures that correct prior misrepresentations. It has become commonplace in securities class actions, however, for defendants' experts to focus event study analyses on days in which the alleged misleading disclosures were made (as opposed to corrective disclosure) for purposes of materiality and loss causation. These event study analyses are generally performed for dates identified in a complaint for which plaintiffs allege that defendants have made false and misleading statements. More often than not, however, such uses of event studies are plainly incorrect and at odds with accepted economic literature regarding the appropriate and proper use of event studies. That is, these event studies of days that misleading information is disclosed are generally not conducted with the level of intellectual rigor that would be expected of a professional economist and the conclusions from such analyses can be improper and erroneous.

Many of the disclosures in a complaint identify dates in which defendants omitted

* Frank Torchio is president of Forensic Economics, Inc. and teaches finance and economics at the William E. Simon Graduate School of Business Administration at the University of Rochester.

material information. But, an event study is designed to quantify the effect of disclosed information, not undisclosed information. Such use of an event study is completely improper.

Complaints by their nature contain every instance in which defendants reiterate a misstated fact. Consequently, it is improper and a misapplication of event study methodology to draw any conclusion from the lack of statistically significant price reactions on days that merely reiterate the first instance of a misrepresentation. Moreover, a misstatement that confirms prior market expectations would not be expected to result in a price movement. Failure to account for these factors in an event study is incorrect and can result in serious errors and wrong conclusions. The failure of an economist to have engaged in an event study and formulated conclusions about loss causation and materiality without any consideration as to whether the events being studied contain new information versus events that merely repeat prior disclosures is a serious methodological error in event study analyses and should fail under *Daubert.*[1]

II. EVENT STUDY METHODOLOGY

As a general proposition, modern finance theory holds that the market price of a stock reflects the expected discounted value of future cash flows to equity holders.[2] Thus, new information that causes the market to significantly alter its expectation of future cash flows will cause a prompt repricing of the stock to reflect the new expectations.[3] Since the publication in 1969 of a classic paper by Fama, Fisher, Jensen, and Roll,[4] financial economists have used event study methodology to measure the effect on market prices of new information relevant to a company's equity valuation. New information may include earnings reports, dividend changes, stock splits, company press releases on current or projected revenues, regulatory rulings, acquisition bids, asset sales, tax legislation, or any other information that is relevant to investors' assessments of future cash flows.[5]

Event study analysis compares the day-to-day percentage change in the market price of a company's common stock (known as a "return") to the return predicted by a market model that uses a market index, such as the S&P 500 Index or the NASDAQ Composite Index, and possibly an industry index.[6] The market model describes the normal relation between the return on the company's common stock and the return on the market and industry indexes.[7] When significant new information about the company (e.g., corrective disclosures, earnings reports, dividend changes, stock splits, regulatory rulings, acquisition bids, asset sales, or tax legislation) is disclosed to the market, the market

1. *See* Linda Allen, *Meeting Daubert Standards in Calculating Damages for Shareholder Class Action Litigation*, 62 BUS. LAW. 955, 955 (2007) (arguing that economic trading models fail to produce a damages computation that meets *Daubert* standards); Daubert v. Merrell Dow Pharms., Inc., 509 U.S. 579 (1993).

2. *See* RICHARD A. BREALEY ET AL., PRINCIPLES OF CORPORATE FINANCE 61–62 (McGraw-Hill Irwin 8th ed. 1996).

3. *See* Eugene F. Fama, *Efficient Capital Markets: II*, 46 J. FIN. 1575, 1575 (1991) (stating that the market reflects all available information, according to the market efficiency hypothesis).

4. *See* Eugene F. Fama et al., *The Adjustment of Stock Prices to New Information*, 10 INT'L ECON. REV. 1, 1–21 (1969).

5. *See* JOHN Y. CAMPBELL ET AL., THE ECONOMETRICS OF FINANCIAL MARKETS 149 (1997).

6. *Id.* at 156.

7. *Id.* at 155–56.

model is used to determine the component of the stock return that would be expected based on the return of the overall market and industry.[8] The remaining component of the stock return (that which cannot be explained by the return on the market and industry) is attributed to the new company-specific information or to chance.[9] If the disclosure of the new information is accompanied by a stock return that is outside of the stock's normal volatility range (as measured by the market model), then the return is said to be "statistically significant."[10] Event studies also assess the probability that a stock price movement was due to news disclosed about a particular event, and not due to chance. Thus, the event study can objectively quantify the market price movements associated with the disclosure of new information to assess the materiality of that information to investors.

The event study methodology used to calculate damages in securities fraud cases relies on two well-accepted principles. First, the price of an actively traded security reflects all publicly available information and responds quickly to new information.[11] Second, the price of an efficiently traded stock is equal to the present value of the expected future stream of free cash flows.[12] Event studies are most useful in determining the effects of new information on security prices when: (i) there is a well-defined public disclosure; (ii) the time that the news item reaches the market is known; (iii) there is no reason to believe that the market anticipated the news item; and (iv) it is possible to isolate the effect of the news item from market, industry, and other issuer-specific factors simultaneously affecting the issuer's security price.[13]

The event study methodology involves the following well-defined steps:

a) A market model is estimated to permit the removal of market and possibly industry-wide effects from the day-to-day security returns;

b) The market model is used to calculate predicted returns for the issuer's security assuming that there was no fraud and, therefore, no corrective disclosures;

c) The predicted returns are then subtracted from the issuer's actual returns to calculate excess returns, which are the price movements in the issuer's security net of market and possibly industry-wide effects; and

d) On the day or days on which significant new information is disclosed to the market, the excess returns are used to quantify the effect of those disclosures on

8. *Id*.

9. *Id*.

10. The determination of a statistically significant return must account for the individual stock's normal volatility. Accordingly, event studies start by computing "excess returns" (the percentage change in the company's stock price including dividends, net of market-wide and industry-wide influences) and the volatility of these excess returns. *See* CAMPBELL ET AL., *supra* note 5, at 168–72.

11. *See* Fama, *supra* note 3, at 1575–1617 (stating that the market reflects all available information, according to the market efficiency hypothesis).

12. *See* BREALEY ET AL., *supra* note 2, at 61–62.

13. DAVID I. TABAK & FREDERICK C. DUNBAR, LITIGATION SERVICES HANDBOOK: THE ROLE OF THE FINANCIAL EXPERT § 19.2 (Roman L. Weil, Michael L. Wagner & Peter B. Frank eds., John Wiley & Sons 3d ed. 2001).

the market price of the security.[14]

Thus, the first step in the event study methodology is to estimate an appropriate market model. This is generally done by first selecting a proxy for the market, customarily the S&P 500 Index, the NASDAQ Composite Index or another broad-based market index, as well as an index to proxy for industry-specific changes that might affect the company's stock return over and above general market-wide factors.[15] Then, the company's return is regressed against the market and net-of-market industry variables (if applicable) to estimate the historical relation between the "independent" index returns and the "dependent" company returns.[16] In essence, the indexes "explain" or account for some portion of the day-to-day movements in the company's gross return.

The regression analysis produces a constant term, also called an intercept term, and one or more slope coefficients, called "betas." The slope coefficients, or betas, quantify the sensitivity of a stock's return to the market index and also the sensitivity of the return to any industry indexes, net of market, if used. A stock with a market beta of 1.0 is expected to increase (decrease) by one percent for each one percent increase (decrease) in the market index. Similarly, a stock with a market beta of 2.0 is expected to increase (decrease) by two percent for each one percent increase (decrease) in the market index. Likewise, a stock with a net-of-market industry beta of 1.0 is expected to increase (decrease) by one percent for each one percent increase (decrease) in the value of the industry index (net of the market return).

After estimating the market model, the next step is to use it to calculate the predicted daily returns. The predicted returns are equal to the intercept term from the regression plus the market beta multiplied by the return on the market index, and the net of market industry beta multiplied by the net of market return on the industry index (if applicable).[17] Excess returns are then calculated by subtracting the predicted returns from actual returns.

The actual returns generally deviate from the predicted returns even when no observable disclosure or event has occurred. Accordingly, the event study methodology requires a determination of whether an excess return is likely attributable to chance. This is done by testing the excess return for statistical significance. The statistical significance of the daily excess returns is indicated by the "t-statistic."[18] A t-statistic greater than 1.96 in absolute value (either positive or negative) means that the excess return is significant at the 95% confidence level; a t-statistic greater than 2.58 in absolute value means that the excess return is significant at the 99% confidence level. As is common in financial economics research, excess returns with a t-statistic greater than 1.96 in absolute value are generally characterized as statistically significant.[19]

14. *Id.* §§ 19.2–19.3.

15. *See* CAMPBELL ET AL., *supra* note 5, at 155. The industry return is generally measured net-of-market to reduce a statistical phenomenon called multicollinearity.

16. *Id.*

17. *Id.* at 155–58.

18. The t-statistic is equal to the excess return divided by the standard error of the market model regression.

19. TABAK & DUNBAR, *supra* note 13, § 9.1; *see also* Mark L. Mitchell & Jeffry M. Netter, *The Role of Financial Economics in Securities Fraud Cases: Applications at the Securities and Exchange Commission*, 49 BUS. LAW. 545, 584 (1994) (discussing materiality and damages). Some economists establish the threshold of

III. EVENT STUDIES FOR SECURITIES CLASS ACTIONS

Event study methodology has been widely used in fraud-on-the-market cases to assess the effect on market prices of disclosures of false and misleading information.[20] The results of event study analysis have been used as economic evidence of materiality, loss causation, and artificial inflation.[21] The focus of event studies in securities class actions has been predominantly on disclosures that correct prior misrepresentations. Statistically significant and negative price reactions to corrective disclosures can provide economic evidence of materiality and loss causation. The stock price change caused by a corrective disclosure generally is the best estimate of the change in the amount of artificial inflation present in the security on the date of the disclosure because the corrective disclosure removes artificial inflation from the market price of the stock.

It has become commonplace in securities class actions for defendants' experts to focus event study analysis on days in which the alleged misleading disclosures were made (as opposed to corrective disclosure dates) for purposes of materiality and loss causation.[22] These event study analyses are generally performed for dates identified in a complaint in which plaintiffs allege that defendants have made false and misleading statements. The test employed by some experts is whether these misleading disclosures resulted in statistically significant stock price increases on each date identified in the complaint. The argument goes that the alleged false and misleading statements could not have artificially inflated the stock price during the class period if the misstatements did not cause a significant price increase, and consequently, there is insufficient evidence of loss causation.

More often than not, however, such arguments are plainly incorrect and at odds with accepted economic literature regarding the appropriate and proper use of event studies. That is, these event studies of days on which misleading information is disclosed are generally not conducted with a level of intellectual rigor that would be expected of a professional economist and the conclusions from such analyses can be improper and erroneous.

IV. EVENT STUDY AND OMISSIONS

It is widely recognized and understood that one would not expect to observe a price reaction to an omission because of the nature of an event. By definition, an omitted fact is not disclosed to the market. An event study is designed to quantify the effect of *disclosed*

statistical significance at a 90% confidence level or lower.

20. *See* Mitchell & Netter, *supra* note 19, at 556–61 (describing event study methodology and its use in fraud-on-the-market cases).

21. TABAK & DUNBAR, *supra* note 13, § 9.1; *see also* Mitchell & Netter, *supra* note 19, at 548–56 (discussing materiality and damages).

22. *See, e.g.*, *In re* Bristol-Myers Squibb Sec. Litig., [2007 Transfer Binder] Fed. Sec. L. Rep. (CCH) ¶ 94,447 (3d Cir. July 27, 2007); *In re* Marsh & McLennan Cos. Sec. Litig., 536 F. Supp. 2d 313 (S.D.N.Y. 2007); *In re* JDS Uniphase Corp. Sec. Litig., [2007–2008 Transfer Binder] Fed. Sec. L. Rep. (CCH) ¶ 94,503 (N.D. Cal. Aug. 24, 2007); Baker v. MBNA Corp., [2007 Transfer Binder] Fed. Sec. L. Rep. (CCH) ¶ 94,371 (D. Del. July 6, 2007); *In re* Vivendi Universal, S.A. Sec. Litig., [2007 Transfer Binder] Fed. Sec. L. Rep. (CCH) ¶ 94,357 (S.D.N.Y. Mar. 22, 2007).

information, not undisclosed information.[23] It is an oxymoron to have an event study of an omitted piece of information. Consequently, it is incorrect and improper to use an event study to analyze or quantify the effect of information that was alleged to have been omitted by plaintiffs.

On this point, NERA economist David Tabak notes that:

> [O]ne would not expect the stock price to move when defendants did not make a statement, so there is no reason to examine the stock price at the time of an alleged omission. An alternative way of showing the effect of the omission is by examining the stock price when the information was finally disclosed . . . .[24]

Although this conclusion is a rudimentary inference of event study analysis, it is often ignored by damages experts who fail to account for disclosures that are alleged to have improperly *omitted* certain information.

Therefore, the lack of a statistically significant stock price increase on a date in which plaintiffs allege information was omitted does not mean that the omission is not material. Rather, an omission would be considered material to investors if a subsequent correct and complete statement caused a significant stock price reaction, as stated by Dr. Tabak above.

V. EVENT STUDY, MISSTATEMENTS, AND MARKET EXPECTATIONS

In conducting an event study, the economic expert must always be concerned with circumstances in which the information being studied is already in the marketplace. As discussed previously, a predicate of an event study is that the information being studied is new to the marketplace. Consequently, care must be taken when conducting an event study of an alleged misrepresentation to ensure that the misrepresented information does not merely confirm or coincide with prior market expectations. This is because significant stock price reactions are not expected in an efficient market when alleged misstatements merely *confirm* the market's *prior* expectations.

An efficient market is generally defined as a market in which security prices reflect all publicly available information.[25] In such a market, investors use the information available to them to form expectations about future cash flows and derive their valuations of a company's stock on these expectations. Information that is misstated, but which is consistent with current expectations, would not cause investors to revalue the company, and thus would not cause a significant stock price reaction.[26]

For example, assume that the market expects a company project to generate significant future cash flows. Next, assume that the company has discovered that the project no longer is expected to generate positive cash flows and thus no positive value. If

23. *See* TABAK & DUNBAR, *supra* note 13, § 19.2 (stating securities fraud cases include disclosures as events of interest).

24. David Tabak, Loss Causation and Damages in Shareholder Class Actions: When It Takes Two Steps to Tango 6 (May 27, 2004) (unpublished manuscript, available at http://www.nera.com/image/200405Tabak_Loss_Causation.pdf).

25. This definition reflects a "semi-strong-form" efficient market. *See, e.g.*, BREALEY ET AL., *supra* note 2, at 337.

26. *See supra* text accompanying note 13 ("(iii) there is no reason to believe that the market anticipated the news item").

the company says nothing (an omission) or confirms investors' high expectations about the project (a misstatement), the stock price will not change because investors have no reason to revalue the company since their expectations are the same.

However, the misstatement or omission is material to investors because if they knew that the project was worthless, they would lower their valuations and the stock price would decline commensurately. In this hypothetical situation, it is not possible to assess the materiality of the misstatement or omission by the stock price reaction on the day when the information was misstated because as an economic matter no stock price reaction is expected. NERA economist David Tabak notes that:

> If the case involves a misstatement, plaintiffs may be able to show that the stock price moved up in response to the false information. Unfortunately, this is not always even possible. For example, suppose a company was expected to earn fifty cents a share but actually only earned forty cents. If the company falsely announces earnings of forty-five cents, the market will be disappointed and the stock price will fall, even though the company has overstated its earnings. Thus, stock price evidence to support an allegation of loss causation based on an inflated purchase price will only be readily available in cases where the defendant makes an affirmative misstatement *relative to market expectations*.[27]

Thus, the logic is the same whether there is an omission of material information or a disclosure of information that simply confirms market expectations. A misstatement that confirms prior market expectations would *not* be expected to result in a price movement. Failure to account for these factors in an event study is incorrect and can result in serious errors and misleading conclusions.

VI. THE NATURE OF COMPLAINTS

Because the subjects of misrepresentation event studies almost always come from a complaint, this problem of misrepresentations that merely confirm prior market expectations is ubiquitous. Complaints generally contain every instance in which defendants reiterate a misstated fact. It is evidently incumbent upon the plaintiffs, in order to establish liability, to recount each instance in which defendants reiterate a previous misrepresentation. Consequently, a conclusion of immateriality and lack of causation based on an event study analysis that shows that nine out of the ten dates for which allegedly disclosed misrepresentations are not statistically significant is misleading and incorrect if the nine days merely reiterate the first instance of the misrepresentation.

So, in option backdating cases, for example, plaintiffs will include as dates of misstatements each date in which the company filed financials with the SEC that contain incorrect statements that executive options were issued at the market price. Defendants have contended in several option backdating cases that the lack of a statistically significant price response each time that options were issued at the market price demonstrates a lack of materiality and shows that there can be no losses caused by such misstatements based on this economic analysis.

27. Tabak, *supra* note 24, at 6 (emphasis added).

Again, the misstatements comport to prior market expectations. The market is expecting the company to continue to adhere to its previously stated policy of issuing options at market prices on the issuance dates and the market is expecting the company to reiterate that past options were issued at market prices on their issuance dates. Thus, given that a company is reiterating its policy regarding executive options in a disclosure, a researcher would not expect the market to react positively to what is clearly an expectation already impounded in the market price before such a disclosure.

VII. AFFIRMATIVE MISSTATEMENTS

I refer to an "affirmative misstatement" as a statement containing misleading information such that the information was *not* already in the total mix of information in the marketplace prior to the statement. Put another way, an affirmative misstatement is a statement containing misleading information for which such information is unanticipated or unexpected by the market. Only in circumstances for which there are affirmative misstatements can an event study analysis for the disclosure day of the misstatement provide useful economic evidence concerning materiality and loss causation.

VIII. STRAW MAN TEST AND FAILING *DAUBERT*

Absent *affirmative misstatements* (relative to market expectations), one would not expect there to be any statistically significant price reaction on the day containing a misrepresentation that is false or misleading. Thus, the measure of any stock price reaction on such day is unlikely to be probative for determining materiality, loss causation, or whether artificial inflation exists. Otherwise, under such a theory, a company could lie to the market (by making misleading statements) with impunity so long as the misstatements comported with existing expectations. For example, consider a circumstance in which the market is expecting 10% annual growth in earnings. Further assume the company reports its annual earnings guidance to be 10% (matching prior market expectations), but that the company's true internal expected growth in earnings is 4%. The 10% growth guidance does not result in a price increase. Thus, the "test" espoused by many defendants' experts is that there is no loss causation or artificial inflation from a failure to disclose the 4% true growth by invoking "event study evidence" that the misstatement did not result in a statistically significant price increase.

Indeed, in this circumstance such a conclusion is counter to financial economics: given that only new, material information causes a price reaction, there can be no economic basis to even expect a price reaction. Thus, this "test" is nothing more than a straw man. It is a test that is designed to fail because it is counter to the very essence of event study methodology—the information or event being studied cannot have been anticipated or was already in the mix of information in the market before the event.

Consequently, this blind application of event study analysis indiscriminately applied to dates of alleged misrepresentations is certainly subject to challenges under *Daubert*.[28] It has been advanced that economic testimony can be excluded under *Daubert* if the work fails to meet the standards of the profession or if the work is not of the same level of

28. Allen, *supra* note 1, at 958–59.

intellectual rigor that would be expected of a professional economist.[29] The failure of an economist to have engaged in an event study and formulated conclusions about loss causation and materiality without any consideration as to whether the events being studied contain new information versus events that merely repeat prior disclosures is a serious methodological error in event study analyses and should fail under *Daubert*.

This criticism is wholly distinct from situations in which the conclusions of one economist differ from another based on properly conducted event studies; these differences of opinion are still the stuff of trials. Moreover, it is inadequate to justify such lack of intellectual rigor by merely invoking the mantra that "these are the dates in the complaint." It is still incumbent upon the economist to understand and consider in event study analyses why these dates are in the complaint or face risk of a *Daubert* challenge.

IX. ALTERNATIVE EVENT STUDY ANALYSIS FOR LOSS CAUSATION AND MATERIALITY

In these circumstances, the materiality of alleged misstatements must be derived from other evidence, most commonly the stock price reactions to subsequent disclosures of information that correct the prior misstatements and omissions.[30] Thus, the lack of a statistically significant stock price reaction to a misstatement or omission does not mean that the misstatement or omission is not material. Rather, a misstatement or omission would be considered material to investors if a subsequent correct and complete statement caused a significant stock price reaction. Thus, the stock price reaction to information that corrects a prior misstatement, or to information that provides the previously omitted information, generally can be a more reliable measure of materiality than the stock return on days when information was misstated or omitted.

A recent Third Circuit Court of Appeals opinion affirmed a lower court ruling that rejected the misstatement argument.[31] The Court of Appeals opinion stated:

> The gravamen of this argument is that the results of the CLASS study were immaterial as a matter of law in light of the lack of movement in stock price following the initial release of those results [the alleged misstatement] in April 2000. We disagree.
>
> . . . But that fact [of little measurable effect on the stock price] does not negate a finding of materiality when the market was *expecting* that the results would be positive, and plaintiffs have presented evidence indicating precisely that.
>
> . . . And of course, the materiality of the alleged misrepresentations is self-

29. *See generally* Steven Schwartz, Senior Vice President, Nat'l Econ. Research Assocs., Inc., Presentation to the Ohio State Bar Association, Antitrust Section: Economics and *Daubert* Challenges (May 11, 2001), *available at* http://www.nera.com/image/3675.pdf.

30. In general, the materiality of allegedly misstated or omitted information is measured on a corrective disclosure. *See, e.g.*, Daniel R. Fischel, *Use of Modern Finance Theory in Securities Fraud Cases*, 38 BUS. LAW. 1, 17 (1982) ("The market model makes it possible to test whether false information caused a security to trade at an artificially high or low price by measuring whether investors earned any abnormal returns at the time the correct information was released to the public."). *See also* TABAK & DUNBAR, *supra* note 13, § 19.3 ("[I]n cases of securities fraud, experts commonly measure changes in the alleged inflation in a stock price by the movement in that stock price in the wake of a corrective disclosure, after controlling for market, industry, and other company-specific information.").

31. Alaska Elec. Pension Fund v. Pharmacia Corp., 554 F.3d 342 (3d Cir. 2009).

evident when we look at the market's negative reaction—to the tune of a nine-percent drop in stock price in three days—when defendants' analysis of the CLASS study was questioned in February 2001.[32]

32. *Id.* at 352.