

SECURITIES LITIGATION

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Event Studies Using Contemporaneous Forward-Looking Information

By Aaron Dolgoff and Tiago Duarte-Silva

Parties to securities litigation often rely on analysis of the price impact of particular news through an event study in connection with class certification and arguments on loss causation and damages. In an event study, the economic expert typically uses a statistical model to assess the portion of the stock price reaction due to such news and not due to market factors or noise. In this article, we describe a novel way to implement this statistical model that more readily incorporates investors' forward-looking views, while maintaining a solid basis in economic theory.

Traditional Approaches

The usual statistical model used in an event study relies on the premise that observed price changes result from news in the marketplace and random variability commonly known as "noise." See A. Craig MacKinlay, "[Event Studies in Economics and Finance](#)," 35 *J. Econ. Literature* 13, Mar. 1997. This model (also known as the market model) describes and estimates how investors expect a stock price to react to changes in market, industry, and selected company-specific factors. Such a model produces an estimate of a stock's expected return. The remainder of any observed price change is known as excess return and may be attributed to known company-specific news or to noise.

If the excess return for the event analyzed exceeds a threshold based on typical return fluctuations, it is considered statistically significant. When this is the case, the economic expert is likely to opine that the excess return is due to potentially identifiable news rather than to noise. If the excess return does not exceed that threshold, the expert cannot determine that the price changed for a reason other than noise.

Traditional approaches estimate the market model using a sample of stock returns. Traditional approaches derive estimates based on historical data for a period prior to the events being studied or, alternatively, based on data surrounding the event. The reliability of these traditional approaches, however, can be affected by changes in investors' perceptions of future conditions. For example, a market model estimated with historical data might incorrectly assess an excess return as statistically significant because it is high relative to its historical threshold level, although it is not actually significant because volatility had recently and substantially increased.

A Forward-Looking Approach

Investors constantly revise their views on companies, industries, and the market. They change their views on risk, measured as the variability of returns. A market model that could incorporate the most up-to-date information will reflect these contemporaneous investor views more precisely than a model based on a sample from past or future time periods. Stock option data can provide such up-to-date information about investor expectations. In fact, option data can be used

to calibrate a market model for an event study using forward looking information, with limited or no use of historical or in-sample data.

A forward-looking methodology can produce results that diverge from the results of traditional approaches in two ways. See Aaron Dolgoff & Tiago Duarte-Silva, “[Event Studies Using Forward-Looking Information](#)” (Charles River Assocs. Working Paper May 1, 2013). First, the statistical significance of excess returns may change if forward-looking estimates of return volatility differ from historical or other sample-based estimates. Second, the measured excess returns may be materially affected if, for example, the forward-looking market model incorporates a different relationship between stock and market returns. The following two examples illustrate these effects.

Example: Statistical Significance of Excess Return

April 17, 2006, was the first alleged disclosure date in a class action lawsuit against UnitedHealth (*In re UnitedHealth Group Inc. PSLRA Litigation*). See Charles Forelle, “Probe of UnitedHealth Options Grants Deepens,” *Wall St. J.* (Apr. 17, 2006). An examination of the variability of returns around this date shows that returns had been more volatile nearer this date than during the previous year. For example, the standard deviation of UnitedHealth’s excess returns of 1.10 percent during the whole prior year is substantially lower than the standard deviation based on the prior 10 trading days: 1.45 percent. The standard deviation had been increasing from below that level in the prior month, to well above it before the first alleged disclosure date. As a result, establishing the statistical significance of this date’s return based on the previous year of returns tends more toward accepting it as abnormal than based on a more contemporaneous assessment of variability.

This intuition is corroborated by a comparison of the p-values of the excess returns on April 17 under different approaches. As a side note, a p-value below 5 percent indicates statistical significance at the commonly accepted 95 percent confidence level. UnitedHealth’s excess return on that day looks statistically significant under traditional approaches, with p-values of 0.9 percent under the historical approach and 2.5 percent under the in-sample approach. However, the market’s view that UnitedHealth’s volatility increased was reflected in option prices in the prior weeks. Taking this forward-looking information into account, the excess return on April 17 is not statistically significant at the 95 percent confidence level, as evidenced by its 7.8 percent p-value.

Example: Estimate of Excess Return

Another example illustrates a situation where a forward-looking approach leads to a considerably different estimate of the magnitude of the price impact of the analyzed event. On September 29, 2008, Morgan Stanley announced it was selling a 21 percent stake in the firm to Mitsubishi UFJ for \$9 billion. See Allison Tudor & Aaron Lucchetti, “[Mitsubishi UFJ to Buy Morgan Stanley Stake](#),” *Wall St. J.* (Sept. 29, 2008). This announcement coincided with other news affecting the financial services industry and the overall market. For example, on that date, the U.S. House of Representatives rejected the Troubled Asset Relief Program legislation, Citigroup purchased

Wachovia, and the Federal Reserve doubled swap lines with the European Central Bank. We measured Morgan Stanley's estimated excess return on that day under the three aforementioned approaches. Under the historical approach, the excess return was 1.1 percent. Under the in-sample approach, it was 5.2 percent. However, under the forward-looking approach, the excess return was quite higher, at 24.9 percent.

While all measure a positive excess return, the forward-looking approach produces a substantially higher excess return because the market's forward-looking views reflected that Morgan Stanley's value was more correlated with the market and its industry at that time compared with historical periods. Because the market and industry benchmarks declined on September 29, 2008, this higher sensitivity results in a larger portion of loss-inducing returns attributable to market and industry factors and, correspondingly, a larger firm-specific excess return.

Selecting an Appropriate Method

A forward-looking approach has the potential to incorporate information that is contemporaneous and thus more relevant to evaluating investors' reactions to news. This method offers another tool in the expert's toolbox: It does not replace the traditional event study methods; instead, it provides additional analytical options. The forward-looking approach should be considered

- when the events being studied occur on or around periods of significant changes in firm, industry, or market risk,
- when the results under traditional methods are particularly sensitive to the market model's estimation period, or
- as a robustness test and confirmatory evidence for results obtained through traditional methods.

Keywords: litigation, securities, event study, forward-looking, investor reaction, excess return

[Aaron Dolgoff](#), CFA, and [Tiago Duarte-Silva](#), PhD, are economists with Charles River Associates in Boston, Massachusetts.