Economic Analysis at the Class Certification Stage of Exchange Act Securities Class Actions

Kristin Feitzinger, Amir Rozen, and Shaama Pandya

INTRODUCTION

At the class certification stage of Exchange Act securities class actions, at least three issues warranting economic analysis—pertaining to (1) market efficiency, (2) price impact, and (3) classwide damages methodology—can be raised. In addition to providing an overview of each issue, this article discusses potential effects on the underlying economic analysis of extreme volatility and market disruptions, examples of which have been observed recently in the context of the COVID-19 pandemic.

In 1988, the U.S. Supreme Court in *Basic*[1] addressed the issue of reliance and established an *indirect* proof, holding that reliance can be presumed if the security at issue traded in an efficient market. The price of a security traded in such a market quickly incorporates all the publicly available information and, hence, reflects the effect of any alleged misrepresentation[2] (often referred to as the "fraud on the market" theory). To invoke the *Basic* presumption of reliance, plaintiffs must show that the security at issue traded in an efficient market.

Rebutting plaintiffs' showing of market efficiency is one potential avenue for challenging class certification. More recent case law establishes additional routes for challenging class certification. In *Halliburton II*,[3] the Supreme Court ruled that defendants can rebut the *Basic* presumption of reliance at the class certification stage by providing *direct* evidence that the alleged misrepresentations did not impact the price of the security at issue.

In *Comcast*,[4] the Supreme Court held that defendants can successfully challenge class certification by establishing plaintiffs' failure to articulate a methodology capable of calculating damages for all putative class members that measures "only those damages attributable to [plaintiffs' liability] theory."[5]

There are a number of factors to consider in deciding whether and how to challenge class certification. For example, economic analysis of price impact and *Comcast* issues are often aided by adopting plaintiffs' assertion that the security in question traded in an efficient market. Moreover, challenges to price impact and the adequacy of a proposed classwide damages methodology, in particular, are often closely tied to the merits of the case (and therefore potentially relevant for broader case strategy). Further, there are unique considerations that market disruptions—such as those caused by the COVID-19 pandemic—pose for each potential avenue to challenging class certification.

MARKET EFFICIENCY

In an efficient market, "prices always 'fully reflect' available information."[6] Market efficiency forms the basis of the fraud on the market theory.[7] *Basic* explains that

> [t]he fraud on the market theory is based on the hypothesis that, in an open and developed securities market, the price of a company's stock is determined by the available material information regarding the company and its business. . . . Misleading statements will therefore defraud purchasers of stock even if the purchasers do not directly rely on the misstatements.[8]

The fraud on the market theory effectively relieves plaintiffs of the burden of establishing that each individual investor in the putative class relied directly on the alleged misrepresentations, if plaintiffs can establish that the security in question traded in an efficient market.

Factors Typically Considered in Assessing Market Efficiency

In assessing market efficiency, courts have considered certain structural factors that potentially indicate an open and developed market. For example, in *Cammer*,[9] the court considered five factors (the so-called *Cammer* factors), four of which are structural—specifically (1) weekly trading volume, (2) number of analysts following and covering the security, (3) existence of market makers and arbitrageurs, and (4) the company's eligibility to file a Form S-3 with the Securities and Exchange Commission. The court in *Krogman*[10] considered additional structural factors, including (1) market capitalization, (2) bid-ask spread, and (3) the percentage of shares held by the public (sometimes referred to as "float").[11]

Importantly, while structural factors indicative of an open and developed market are consistent with a conclusion that the market is efficient, these factors are not sufficient to establish market efficiency. From the perspective of financial economics, it is necessary to assess whether security prices react quickly to

new, value-relevant information in order to evaluate market efficiency. Courts have also recognized empirical evidence of a cause-and-effect relationship between new, value-relevant information about a company and changes in its security prices (the so-called fifth *Cammer* factor) as the most important and direct evidence of market efficiency. Indeed, the court in *Cammer* described the cause-and-effect factor as "the essence of an efficient market and the foundation for the fraud on the market theory."[12] Further, *Teamsters*[13] states that "[e]vidence that unexpected corporate events or financial releases cause an immediate response in the price of a security has been considered the most important *Cammer* factor."

Assessing Market Efficiency Using Event Study Analysis

Event study analysis typically plays a central role in assessing whether there exists a cause-and-effect relationship between unexpected news regarding a company and changes in its security prices. As typically employed in securities litigation, the event study approach begins with identification of a set of "events" (dates when information is released to the market). It then evaluates the mix of public information and uses the statistical method of regression analysis to assess the security price changes (or "returns") associated with any changes in the public mix of information on the relevant event dates. The regression analysis measures the impact of market and industry factors estimated over some period of time (the "control period") on returns. These control period measurements (often referred to as market and industry "coefficients" or "betas") are then used to estimate the company-specific portion of the returns (often called the "residual returns") during the period of interest.[14] Once residual returns are estimated, standard statistical tests are conducted in order to determine whether they differ from zero in a statistically significant manner. These tests are typically based on residual return volatility during the control period. Residual returns that are not statistically significant cannot be reliably distinguished from zero and, therefore, cannot be reliably attributed to the arrival of new, value-relevant information.

To make an empirical showing of market efficiency, an economist will attempt to demonstrate that the price of the security at issue reacted quickly to unexpected, value-relevant company news. For example, sometimes an economist will select a number of potentially value-relevant corporate events like earnings announcements and, after analyzing the content of the news and the nature of the price response, will assert that the observed price reaction indicates efficiency.[15]

Much of the economic debate at the class certification stage, particularly for common stock traded on major U.S. exchanges for which structural indicators are typically consistent with market efficiency,[16] centers on the reliability of such empirical showings. Challenges may include issues with test design such as the appropriateness of the number or nature of days examined or the event study parameters (e.g., choice of market and industry indices or control period).[17] Other challenges may include issues with study interpretation such as failure to appropriately consider:

- the implication of days with apparently new, value-relevant information and no statistically significant security price reaction;
- the prevalence of statistically significant returns on days with no new, value-relevant information;
- significant returns that appear directionally inconsistent with the nature of the information; or
- serial correlation of returns.[18]

In some instances, plaintiffs' allegations may be inconsistent with a finding that the security at issue traded in an efficient market. For example, the claims may include multiday price declines attributable to a particular piece of allegedly important news, which is inconsistent with market efficiency because security prices react quickly to new, value-relevant information in an efficient market. Similarly, the allegations may reference a price reaction to reiteration of information previously known by the market, which is also inconsistent with market efficiency because security prices do not react to stale information in an efficient market.

While it is possible for defendants to preclude class certification by successfully challenging market efficiency, the bar for doing so—particularly in the case of common stock actively traded on major U.S. exchanges—has generally proven relatively high in recent years.[19] At the same time, defendants have been more successful in market efficiency challenges for other types of securities (e.g., bonds, preferred stock, options, common stock traded over-the-counter, etc.).[20]

However, typical approaches to event study analysis may pose unique challenges in the near future, even for actively traded common stocks, due to the rapidly shifting economic conditions caused by the COVID-19 pandemic. For example, in March 2020, securities markets experienced sharp increases in volatility,[21] increased correlation across securities,[22] and multiple halts to trading in securities markets.[23] These conditions may require more detailed analytical assessment than the typical event study approach and potentially provide an opportunity to challenge market efficiency in select cases.[24]

PRICE IMPACT

In *Halliburton II*, the Supreme Court reaffirmed its finding in *Basic* allowing plaintiffs to meet the reliance requirement *indirectly*, by demonstrating market efficiency and invoking a rebuttable presumption of reliance based on the fraud on the market theory. The Supreme Court further ruled that, even in cases where plaintiffs establish that the market for the security

was generally efficient throughout the class period, defendants can rebut the *Basic* presumption at the class certification stage *directly* by showing "that the alleged misrepresentation did not actually affect the stock price—that is, that it had no 'price impact.'"[25]

Halliburton II states:

> *Basic* allows plaintiffs to establish price impact indirectly, by showing that a stock traded in an efficient market and that a defendant's misrepresentations were public and material. But an indirect proxy should not preclude consideration of a defendant's direct, more salient evidence showing that an alleged misrepresentation did not actually affect the stock's price and, consequently, that the *Basic* presumption does not apply.[26]

In essence, *Halliburton II* broadens the scope of economic evidence that courts must consider at the class certification stage to include direct evidence refuting price impact. While the ruling does not provide specific guidance regarding precisely what economic evidence will be required to "sever the link" between the alleged misrepresentation and the security price, it does refer to an event study as a possible method for showing that the alleged misrepresentation had no price impact.[27] Indeed, subsequent to the *Halliburton II* ruling, event study analysis has often played a prominent role in the analysis of price impact. Event study analysis can be used to examine security price movements at the time of the alleged misrepresentations ("front-end") or at the time of the alleged corrective disclosures ("back-end"). In some cases, economic analysis in addition to an event study analysis is required.

Appropriate economic analysis to assess price impact varies with case characteristics. Notably, any event study analysis for price movements during the current period of heightened uncertainty and market volatility driven by COVID-19 will require nuanced economic analysis. It is possible that even large price movements are indistinguishable from the substantial swings in the market more broadly or from price movements of other companies in the same industry.[28]

Front-End Event Studies

From an economic perspective, the lack of a statistically significant residual security price increase at the time of an alleged misrepresentation indicates no significant positive change in the total mix of information regarding the subject company at that time.

In cases where the alleged misrepresentation is an affirmative misstatement that differs from prior market expectations, a front-end event study may establish that the alleged misrepresentation had no price impact (depending on the nature of any other simultaneously disclosed information). For example, in *Best Buy*[29] and *Finisar*,[30] the courts found lack of front-end price impact sufficient to establish lack of price impact. Notably, in both, there was a statistically significant stock price increase for the full trading day on which the alleged misrepresentation was made, but a more granular, intraday event study analysis—examining the stock price movement during trading hours—provided evidence that it was not the alleged misrepresentation that caused that increase.

When the alleged misrepresentation comprises an omission or a misstatement consistent with prior expectations that is alleged to "maintain" existing inflation, however, event study findings at the front end may not be sufficient. In such cases, other analysis (such as an assessment of back-end price impact) may be required.

Back-End Event Studies

Back-end price impact analysis examines whether an alleged corrective disclosure affected the security price. From an economic perceptive, the lack of a statistically significant residual security price decline at the time of an alleged corrective disclosure indicates no significant change in the total mix of information regarding the company at that time.[31] Such a finding is consistent with a conclusion that the alleged misrepresentation did not impact price. In *Halliburton II* (on remand),[32] for example, the court found lack of back-end price impact sufficient to establish lack of price impact with respect to some of the alleged corrective disclosures.

Additional Price Impact Analysis

A typical event study analysis measures only the aggregate impact of all company-specific news revealed to the market during a single trading day. If confounding and allegation-related information arrive at different times during the trading day, a more granular intraday event study analysis may be helpful in assessing price impact. Given the COVID-19 pandemic, such intraday analysis may also require additional assessments, including evaluating market microstructure effects in the wake of trading halts.[33]

If confounding and allegation-related information are released contemporaneously, intraday event study analysis may not be sufficient to draw conclusions about price impact, or lack thereof. In such instances, additional economic analysis may be informative, including:

- Using fundamental financial principles to assess how the allegation-related information affects expected future cash flows. In an efficient market, security prices reflect the present value of expected future cash flows, discounted at the appropriate rate. Information that does not change the market's assessment of expected future cash flows, or their risk, will not impact security prices in an efficient market.
- Reviewing analysts' commentary to assess how market participants viewed or valued different pieces of

information. This provides insight into what affected security prices.

DAMAGES METHODOLOGY

In *Comcast*, the Supreme Court found that class certification demands a common, classwide methodology for determining damages attributable to plaintiffs' allegations. An arbitrary measurement that can be employed classwide is insufficient. Specifically, *Comcast* states:

> [A] model purporting to serve as evidence of damages in this class action *must measure only those damages attributable to [plaintiffs'] theory*. If the model does not even attempt to do that, it cannot possibly establish that damages are susceptible of measurement across the entire class.
>
> . . . The Court of Appeals simply concluded that respondents "provided a method to measure and quantify damages on a classwide basis," finding it unnecessary to decide "whether the methodology [was] a just and reasonable inference or speculative." 655 F. 3d, at 206. Under that logic, at the class-certification stage *any* method of measurement is acceptable so long as it can be applied classwide, no matter how arbitrary the measurements may be. Such a proposition would reduce Rule 23(b)(3)'s predominance requirement to a nullity.[34]

Although recoverable per-share damages are also limited by actual losses caused by the fraud and a statutory limit prescribed by the Private Securities Litigation Reform Act of 1995 (PSLRA),[35] the primary measure of damages in securities class actions is out-of-pocket damages. Such damages represent the difference between any alleged inflation at the time the security was purchased and any alleged inflation that remained at the time that security was sold. Inflation is the difference between the security's actual price and its true value—the price that would have persisted absent the alleged misrepresentations (i.e., had the alleged "truth" been told on that day).[36]

Damages Approach Typically Proffered by Plaintiffs' Experts at the Class Certification Stage

At the class certification stage, plaintiffs' experts typically posit a relatively simplistic "methodology" for determining out-of-pocket damages, relying heavily (if not solely) on the event study analysis described above. A typical approach to estimating inflation focuses on event study analysis following the release of allegedly corrective information. It generally:

- Uses event study analysis to establish statistically significant price declines following alleged corrective disclosures.[37]
- At times, acknowledges that some confounding information may also be released, and that some additional valuation tools may be required to isolate the effect of the allegedly corrective information. Typically, plaintiffs' experts do not identify the confounding information or specify which additional tools would be employed (or how they would be employed) to isolate the price effect of the allegedly corrective information.
- Proposes to estimate inflation using a "backcasting" technique. Inflation going backward in time increases by the amount of the price decline following each alleged corrective disclosure, generally implying that inflation at the beginning of the class period is simply the sum of all of the residual price declines following the alleged corrective disclosures.

This backcasting approach, which is predicated on the assumption that price changes following alleged corrective disclosures provide an appropriate measure of the hypothetical price reactions to an alternative disclosure of the alleged "truth" on earlier dates, may be an appropriate measure of damages in simple cases. However, as discussed below, certain conditions must hold in order for such a technique to reliably estimate alleged inflation consistent with plaintiffs' liability theory throughout the class period. If those conditions do not hold, there is simply no economic basis to claim that price declines following alleged corrective disclosures can reliably measure earlier inflation.

Certain Conditions Must Be Met for the Typical Backcasting Method to Measure Damages Attributable to Plaintiffs' Liability Theory

In order for a security price decline following an alleged corrective disclosure to provide a reliable measure of earlier inflation attributable to plaintiffs' liability theory:

- The allegedly corrective information that is actually disclosed must comprise the information that allegedly could and should have been disclosed at the time of the earlier alleged misrepresentations (i.e., the alleged "truth").
- Economic conditions unrelated to the alleged fraud at the time of the alleged corrective disclosure must be comparable to the conditions that existed at the time of the alleged misrepresentation.
- The security price reaction to any simultaneously disclosed confounding information must be disaggregated from the price reaction to allegedly corrective information.

If any one of these conditions is not satisfied, a statistically significant price decline following an alleged corrective disclosure cannot be used to establish a methodology capable of measuring alleged inflation throughout the class period and, hence, alleged out-of-pocket damages consistent with plaintiffs' liability theory. Moreover, each of these conditions

may be affected by the economic effects of market disruptions, such as the COVID-19 pandemic, as discussed in more detail below.

The allegedly corrective information must comprise the alleged "truth"

Inflation during the class period represents the difference between a security's actual price and the price at which the security would have traded absent the alleged misrepresentations (i.e., had the alleged "truth" been told). Thus, to establish whether a proposed methodology is capable of measuring damages attributable to plaintiffs' liability theory, it is necessary to first establish what that liability theory asserts could and should have been disclosed to the market at the time of each alleged misrepresentation in addition to or in lieu of what was actually disclosed at that time.

If the allegedly corrective information eventually disclosed differs from the alleged "truth," an event study will be insufficient to establish earlier inflation. There is simply no economic basis to say that the price reaction to some allegedly corrective information X measures the price reaction to some different alleged "truth" Y, even if the two are somehow related.[38]

Assume, for example, that on May 5, 2019, a defendant allegedly understated expenses for the first quarter of 2019 by $10 million. In January 2020, an accounting investigation of undisclosed scope is announced, and the company's stock price falls significantly. There is no economic basis to equate the price decline associated with the accounting investigation and the price decline that would have occurred had the company announced the correct expenses on May 5, 2019. Importantly, this is true even assuming that the announced accounting investigation is determined to be sufficient to establish loss causation because it is somehow related to the expense understatement. The inadequacy of an event study to establish earlier inflation in this context is a valuation issue, not a question of whether a particular disclosure satisfies the loss causation element of a 10(b) claim. Assessing the ability of a proposed damages methodology to reliably value inflation attributable to plaintiffs' theory of liability is relevant for determining whether the *Comcast* requirements have been met.

As another example, if the allegedly corrective information "over-discloses" the alleged misrepresentation (i.e., provides more information than allegedly could and should have been disclosed by defendants at the time of an alleged misrepresentation), then the price reaction to that allegedly corrective information does not provide a reliable measure of alleged inflation at the time of that alleged misrepresentation (even if other conditions discussed in this section are met).

One particular type of over-disclosure occurs when the alleged misrepresentation comprises a concealed risk and the allegedly corrective information comprises materialization of that risk. An approach that equates the price response to a certain negative outcome and the hypothetical price impact of an earlier allegedly concealed risk lacks economic basis.

The following example illustrates how the typical backcasting approach is inconsistent with a materialization of risk liability theory. Consider a pharmaceutical company that publicly conveyed certainty that a new drug would receive FDA approval, when internally it believed the probability to be only 80 percent. The FDA ultimately does not approve the drug, and the company's stock price declines $10 (net of market and industry movements)—a price movement that an event study determines to be statistically significant. The typical backcasting approach would use the $10 price decline to measure earlier alleged inflation attributable to the company's alleged failure to fully disclose the risk of not receiving FDA approval. However, doing so inappropriately uses hindsight to assume that the company could have disclosed the FDA's ultimate denial with certainty, when at most it could have disclosed a 20 percent chance that the new drug would not receive FDA approval. All else equal, the economic value of inflation at the time of the alleged misrepresentation was only $2.[39] The remaining $8 of the price decline results not from the alleged misrepresentation (i.e., failure to adequately disclose the company's understanding of the risk) but the outcome (i.e., no FDA approval, which resulted from a third party's action that was unknown to the company at the time of the alleged misrepresentation).

Another type of over-disclosure occurs when a defendant's knowledge changes over time during the class period. For example, if a company's knowledge with respect to its ability to achieve a specific earnings target changes over time, it will be inappropriate to use the price reaction to any ultimate failure to achieve that target (a certain outcome) to measure alleged inflation throughout the class period.

Both materialization of risk and changing information over time will likely be relevant issues in Exchange Act cases filed in the wake of COVID-19. To the extent that companies were aware of risks (i.e., possible outcomes) to their operations from a pandemic, whether or not they adequately disclosed such risks, the eventual impact of COVID-19 on their financial or operating performance will likely nonetheless reflect the materialization (i.e., certainty) of such risks. Further, the situation is unfolding rapidly, so it is also highly likely that companies are continually learning and reevaluating the effects on their operations—that is, what they know (and arguably could and should have disclosed) is changing over time.

Economic conditions must be comparable

In order for a security price decline attributable to allegedly corrective information to measure earlier alleged inflation, economic conditions unrelated to the alleged fraud must be comparable to the conditions that existed at the time of the alleged misrepresentation. If economic conditions have

changed over time during the class period, then there is no economic basis to assume that any damages methodology relying on security price responses to allegedly corrective information reliably measures earlier alleged inflation. Thus, substantial changes in the company's business, operations, or financial position can similarly render the price declines at the time of the alleged corrective disclosures an inappropriate measure of earlier inflation.

The "black swan" nature of the COVID-19 pandemic appears, at least at this stage, to parallel the relatively unprecedented market dislocations in the wake of the financial crisis. For example, there has been a marked increase in the volatility in equity markets (as measured by the CBOE VIX Index).[40] Given the unpredictability of the spread of the coronavirus and the severity of the economic effects (both directly from COVID-19 and from government responses to combat the fallout), it is highly likely that economic conditions at the time of alleged corrective disclosures occurring during (and potentially following) the pandemic period will differ substantially from those that existed at the time of earlier alleged misrepresentations. The price declines associated with these alleged corrective disclosures may thus serve as poor proxies for the expected reaction had the same disclosure been made earlier.

Any security price reaction to allegedly corrective information must be isolated

To reliably measure earlier alleged inflation (and hence damages) attributable to plaintiffs' liability theory, the security price reaction to any simultaneously disclosed confounding information must be disaggregated from the security price reaction to allegedly corrective information. Only the latter can measure earlier inflation (assuming the other criteria discussed in this section are also met).

Even assuming that it is appropriately constructed, the typical event study assesses security price reaction to the *totality* of information released during a one-trading-day event window. It cannot be used to measure price reactions to different pieces of company-specific information released within that window. Accordingly, the typical event study approach cannot reliably isolate the price reactions (if any) to the alleged corrective disclosures from the price reactions to any confounding information released during the same window. Additional economic analysis must be performed.

As noted above, certain financial economic tools could be employed to isolate the effect of corrective information. However, without specifying which tools and how they will be used in the context of case-specific facts and circumstances, there can be no assurance of a classwide damages methodology capable of limiting damages to only those attributable to plaintiffs' liability theory in cases where confounding and allegedly corrective information are disclosed at the same time. Similar challenges arise if there are multiple alleged corrective disclosures and multiple alleged misrepresentations (or multiple theories of liability).[41]

CONCLUSION

Relatively recent Supreme Court rulings have offered avenues, in addition to evaluating market efficiency, to employ economic analysis at the class certification stage. Market disruptions and sharp increases in volatility, such as those associated with the COVID-19 pandemic, raise additional questions and considerations for each potential challenge to class certification in Exchange Act securities class actions.

Challenges to price impact and the adequacy of any proposed classwide damages methodology are more closely tied to the merits of the case than are market efficiency inquiries, and may require a clearer articulation of plaintiffs' liability and economic theories at a relatively early stage of the case. Thus, in addition to the potential to limit the putative class or defeat class certification altogether, pursuing these challenges may allow defendants the opportunity to educate the court and offer a chance for the court to weigh in on merits-related issues at an earlier juncture.

Kristin Feitzinger is a senior vice president of Cornerstone Research and has more than twenty-five years of experience addressing securities and valuation issues arising in class actions, breach of contract, and general damages litigation.

Shaama Pandya is a principal of Cornerstone Research and has over a decade of experience, with areas of focus including securities, valuation, and consumer finance.

ENDNOTES

[1] *Basic Inc. v. Levinson*, 485 U.S. 224 (1988) ("*Basic*").

[2] Here, and throughout the remainder of this paper, the term "alleged misrepresentation" is used to refer to either an alleged misstatement or an alleged omission. Cases that only involve alleged omissions are outside the scope of this paper.

[3] *Halliburton Co. v. Erica P. John Fund Inc.*, 573 U.S. 258, 134 S. Ct. 2398 (2014) ("*Halliburton II*") ("*Basic* allows plaintiffs to establish price impact indirectly, by showing that a stock traded in an efficient market and that a defendant's misrepresentations were public and material. But an indirect proxy should not preclude consideration of a defendant's direct, more salient evidence showing that an alleged misrepresentation did not actually affect the stock's price and, consequently, that the *Basic* presumption does not apply.").

[4] *Comcast Corp. v. Behrend*, 569 U.S. 27 (2013) ("*Comcast*").

[5] *Comcast* at 35 ("It follows that a model purporting to serve as evidence of damages in this class action must measure only those damages attributable to that theory"). The Supreme Court further noted in *Comcast* that "[a] model that does not attempt to measure only those damages attributable to [plaintiff's liability] theory cannot establish that damages are susceptible of measurement across the entire class for Rule 23(b)(3) purposes," and that, in addition to being "consistent with its liability case," the proposed damages methodology must be "sound" and "produce [a] commonality of damages." *Comcast* at 37.

[6] Eugene F. Fama, "Efficient Capital Markets: A Review of Theory and Empirical Work," *Journal of Finance* 25, no. 2 (1970): 383–417 ("Fama (1970)"), p. 383.

[7] The fraud on the market theory rests on the semi-strong form of the efficient market hypothesis, which holds that stock prices always fully reflect *publicly available* information. Accordingly, this is the form discussed in this paper. There are two other forms of the efficient market hypothesis. The weak form asserts simply that a security's price reflects past security prices. The strong form asserts that all relevant information, public and private, is reflected in a security's price. See, e.g., Fama (1970), p. 383.

[8] *Basic* at 241.

[9] *Cammer v. Bloom*, 711 F. Supp. 1264, 1279–1287 (D.N.J. 1989) ("*Cammer*").

[10] *Krogman v. Sterritt*, 202 F.R.D. 467, 478 (N.D. Tex. 2001).

[11] In addition to the *Cammer* and *Krogman* factors, other indicators (structural or otherwise) that are sometimes analyzed include the exchange on which a security is traded, institutional ownership, short interest, coverage by credit rating agencies (for debt securities), press coverage, autocorrelation in securities returns, correlation between security price changes and trading volume, and put-call parity (for options), among others.

[12] *Cammer* at 23 ("Finally, it would be helpful to a plaintiff seeking to allege an efficient market to allege empirical facts showing a cause and effect relationship between unexpected corporate events or financial releases and an immediate response in the stock price. This, after all, is the essence of an efficient market and the foundation for the fraud on the market theory.").

[13] *Teamsters Local 445 Freight Div. Pension Fund v. Bombardier Inc.*, 546 F.3d 196, 198 (2d Cir. 2008).

[14] First, the "predicted" returns during the period of interest are calculated using the estimated coefficients on the market and industry indices and the observed returns for these indices. Next, the "residual" returns are calculated as the difference between the actual (observed) returns during the period of interest and the predicted returns.

[15] Sometimes an economist may test the proportions of statistically significant security price movements on what the economist determines to be "news" and "non-news" days, and will assert that a statistically significant difference in these proportions indicates market efficiency. However, there is economic debate on the sufficiency of such an "aggregate" analysis, or the validity of the conclusions drawn therefrom. That debate is beyond the scope of this paper.

[16] An assessment of structural factors may play a more prominent role for other securities (e.g., bonds, preferred stock, common stock traded over-the-counter, etc.), as those factors may indicate the lack of an open and developed market.

[17] The change in market conditions and volatility associated with the COVID-19 pandemic may render these considerations particularly challenging.

[18] Serial correlation is the tendency of past stock returns to predict future stock returns. Positive serial correlation occurs when positive returns tend to be followed by positive returns and negative returns tend to be followed by negative returns (i.e., there is a drift in the stock price). Negative serial correlation occurs when positive returns tend to be followed by negative returns and vice versa (i.e., there is stock price reversal).

[19] An exception to the lack of success in challenging class certification based on market efficiency is *IBEW Local 90 Pension Fund et al. v. Deutsche Bank AG et al.* In that case, defendants' experts successfully argued that the plaintiffs did not demonstrate that the primary market (in this case Germany for Deutsche Bank) was efficient and thus, could not use the presumption of reliance. The court agreed and noted that "[plaintiff expert's] failure to analyze the primary market in which the DB GRSs traded—namely, Germany—is fatal to his analysis." See *IBEW Local 90 Pension Fund v. Deutsche Bank AG*, 2013 WL 5815472, at *21 (S.D.N.Y., October 29, 2013) ("*Deutsche Bank*"). Additionally, the court noted that "[plaintiff's expert] failed to take into account the three short sale bans in Germany and the U.S. that occurred during the Class Period. [Plaintiff's expert] acknowledged that arbitrage and short sales are aspects of maintaining market efficiency—and that a ban on short selling could impact market efficiency . . . , yet he failed to consider their impact here. That, too, undermines the sufficiency of his conclusions regarding market efficiency." *Deutsche Bank* at *21.

[20] *Lord Abbett Affiliated Fund v. Navient Corporation*, Civ. No. 16-112 (MN) (D. Del. Aug. 25, 2020) ("*Navient*") is a recent indication that defendants may encounter more success in challenging market efficiency for securities other than common stock. In *Navient*, the court denied class certification for various notes (bonds), stating that the plaintiffs "cannot rely on their analysis of Navient's stock to show that the market for Navient's notes is efficient, because the market for stock and debt is not the same." *Navient* at 7. The court further acknowledged that "the *Cammer* and *Krogman* factors developed to measure the efficiency of stock markets 'do not fit the bond markets well.'" *Navient* at 8.

[21] "Fear Gauge Jumps to Highest Level since Financial Crisis," *Wall Street Journal*, March 9, 2020, https://www.wsj.com/articles/fear-gauge-jumps-to-highest-level-since-financial-crisis-11583768353.

[22] See, e.g., "What Happens When Bull Markets Unravel," *Wall Street Journal*, March 13, 2020, https://www.wsj.com/articles/what-happens-when-bull-markets-unravel-11584095797.

[23] See, e.g., "Wall Street Explores Changes to Circuit Breakers after Coronavirus Crash," *Wall Street Journal*, April 15, 2020, https://www.wsj.com/articles/wall-street-explores-changes-to-circuit-breakers-after-coronavirus-crash-11586952558.

[24] For example, academic literature suggests that trading halts can affect price discovery. See, e.g., Nikolaus Hautsch and Akos Horvath, "How Effective Are Trading Pauses?," *Journal of Financial Economics* 131, no. 2 (2019): 378–403.

[25] *Halliburton II* at 2405.

[26] *Halliburton II* at 2404.

[27] *Halliburton II* at 2415 ("After all, plaintiffs themselves can and do introduce evidence of the existence of price impact in connection with 'event studies'—regression analyses that seek to show that the market price of the defendant's stock tends to respond to pertinent publicly reported events. . . . Defendants—like plaintiffs—may accordingly submit price impact evidence prior to class certification.").

[28] In periods of high volatility, such as the COVID-19-driven uncertainty, there are specific technical challenges to conducting event study analysis. For example, academic research has shown that stock returns are more highly correlated in declining market environments. See, e.g., Andrew Ang and Joseph Chen, "Asymmetric Correlations of Equity Portfolios," *Journal of Financial Economics* 63, no. 3 (2002): 443–494. Further, research has shown that the "beta" of a company's stock (which measures its co-movement

with the market) can increase on key event dates (e.g., earnings announcements). See, e.g., Andrew J. Patton and Michela Verardo, "Does Beta Move with News? Firm-Specific Information Flows and Learning about Profitability," *Review of Financial Studies* 25, no. 9 (2012): 2789–2839.

[29] *IBEW Local 98 Pension Fund v. Best Buy Co.*, 818 F.3d 775 (8th Cir. 2016) ("*Best Buy*"). The court in *Best Buy* noted that the "overwhelming evidence of no 'front-end' price impact rebutted the *Basic* presumption. Plaintiffs' contrary theory—that the [actionable alleged misrepresentations] effected a gradual increase in stock price between September and December—was contrary to the efficient market hypothesis on which the Basic presumption of reliance is based. . . . [Plaintiffs' expert] attributed the entire . . . price impact [on the alleged misrepresentation day] to the non-fraudulent EPS guidance in the press release. The substance of the conference call statements [containing the actionable alleged misrepresentations] two hours later was 'virtually the same' and had no immediate impact on that price, impact the *Basic* presumption would otherwise presume." *Best Buy* at 782–783.

[30] *In re Finisar Corp. Sec. Litig.*, No. 5:11-CV-01252-EJD, 2017 WL 6026244 (N.D. Cal. Dec. 5, 2017) ("*Finisar*"). The court in *Finisar* noted that "Defendants have rebutted the *Basic* presumption of fraud-on-the-market reliance by demonstrating through a preponderance of evidence that [the actionable alleged misstatement] had no price impact when made or thereafter." *Finisar* at *9.

[31] Consistent with the earlier discussion regarding alleged misstatements, it is necessary to examine the total mix of information released on the date of the alleged corrective disclosure to confirm that there is no substantial positive information which might "mask" a negative reaction to the alleged corrective disclosure.

[32] *Erica P. John Fund Inc. v. Halliburton Co.*, 309 F.R.D. 251 (N.D. Tex. 2015) ("[Defendant] must ultimately persuade the Court that its expert's event studies are more probative of price impact than [Plaintiff's] expert's event studies. . . . Measuring price change at the time of the corrective disclosure, rather than at the time of the corresponding misrepresentation, allows for the fact that many alleged misrepresentations conceal a truth. Thus, the misrepresentation will not have changed the share price at the time it was made. . . . The Court GRANTS in part Plaintiffs' Motion for Class Certification, only with respect to the alleged corrective disclosure of December 7, 2001. The Motion for Class Certification is DENIED as to the other five corrective disclosures on which Plaintiffs rely.").

[33] The technical challenges to event study analysis discussed earlier also apply with respect to intraday analysis.

[34] *Comcast* at 35–36 (emphasis added).

[35] Kristin Feitzinger, "Estimating Recoverable Damages in Rule 10b-5 Securities Class Actions," Cornerstone Research (2014).

[36] See, e.g., *Robbins v. Koger Props. Inc.*, 116 F.3d 1441 (11th Cir. 1997) ("The proper measure of damages utilizes the out-of-pocket rule: the plaintiff can recover 'the difference between the price paid and the "real" value of the security, i.e., the fair market value absent the misrepresentations, at the time of the initial purchase by the defrauded buyer'" citing *Huddleston v. Herman & MacLean*, 640 F.2d 534, 556 (5th Cir. 1981)).

[37] A variation of this technique also considers statistically significant price increases on days with alleged misrepresentations.

[38] Plaintiffs occasionally object to the requirement that the allegedly corrective information that is actually disclosed match (i.e., contain the same economic content as) the information that allegedly could and should have been disclosed at the time of the alleged misrepresentations, stating that such equivalency is not required to establish loss causation. This argument confuses a valuation issue, which is relevant for determining the reliability of a damages methodology, with the question of loss causation. That a particular alleged corrective statement X may meet a legal threshold for establishing loss causation does not mean that the price reaction to X reliably measures the price reaction that would have occurred had some different alleged "truth" Y been told.

[39] This example assumes that no other company-specific information is disclosed on the date on which the allegedly concealed risk materializes and economic conditions unrelated to the alleged misrepresentation are sufficiently similar at the time of the alleged misrepresentation and the time of the alleged corrective disclosure.

[40] The CBOE Volatility Index (VIX Index) is a financial benchmark that measures the market's expectation of volatility of the S&P 500 Index over the next 30 days in the future. "Cboe Volatility Index (VIX Index) FAQs," Chicago Board Options Exchange, http://www.cboe.com/products/vix-index-volatility/vix-options-and-futures/vix-index/vix-faqs#1.

[41] See, e.g., *Loritz v. Exide Technologies et al.*, No. 13-CV-02607 (C.D. Cal. July 21, 2015) ("Plaintiffs failed to set forth any model of damages (let alone one tied to their theory of liability) in their opening brief. . . . [Plaintiffs' expert] discusses general techniques for computing damages in securities fraud cases . . . and describes generally some techniques that he asserts can be used to address each issue (most of which he claims arise commonly in cases such as this). However, [plaintiffs' expert] fails to tie these theories to the facts of this case or to each other—in other words, he fails to propose one model explaining how he would use these techniques in concert to calculate damages in this case. . . . [The] Court has serious concerns regarding Plaintiffs' ability to present a damages model that is sufficiently tied to their theory of liability. The severity and nature of the alleged misrepresentations changed and grew throughout the class period. Moreover, the information was disclosed at different times in multiple alleged corrective disclosures issued at different times within the class period. Additionally, there were multiple alleged misrepresentations unfolding simultaneously—some of which may have been materially misleading and some of which may not have been. . . . Here, Plaintiffs submit [plaintiffs' expert's] testimony recounting various techniques that may generally be used to account for these considerations. [Plaintiffs' expert's] primary fault is his failure to tie these techniques together into one model. Plaintiffs thus fail to show that damages 'could feasibly and efficiently be calculated once the common liability questions are adjudicated.' However, although his testimony is insufficient to satisfy Plaintiffs' burden of establishing predominance, it does indicate that it [is] possible to calculate damages for at least some of the class members—albeit on an individualized basis and possibly using laborious and difficult calculations.").