
INFORMATIONAL EFFICIENCY IN THE CONTEXT OF SECURITIES LITIGATION: WHAT HAVE WE LEARNED?

Sunita Surana*

I. INTRODUCTION

In *Basic Inc. v. Levinson*, the U.S. Supreme Court held that investors could satisfy the reliance requirement under Section 10(b) of the Securities Exchange Act of 1934 and the Securities and Exchange Commission's Rule 10b-5 promulgated thereunder by invoking a presumption that the price of a security traded in an efficient market reflects all public, material information, including material misstatements.¹ This presumption, predicated on the 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."² To utilize the fraud-on-the-market theory to satisfy the reliance element of Rule 10b-5, a plaintiff must therefore demonstrate that the security traded in an efficient market.³

In securities class action litigation, challenges to market efficiency have often focused on arguments that can be broadly classified under two categories: (1) a notion of a perfectly efficient market; or (2) fundamental efficiency.⁴ This short essay discusses the shortcomings of such arguments, explains why they are misplaced in the context of securities litigation, and suggests the usefulness of benchmarking the routinely used indicia of efficiency against a universe of stocks generally considered to trade on open and well-developed markets.

* Vice President, Forensic Economics, Inc. I would like to thank the editors of the *University of Illinois Law Review* for helpful suggestions.

1. *Basic Inc. v. Levinson*, 485 U.S. 224, 241-48 (1988).

2. *Id.* at 241-42.

3. *Id.* at 248.

4. *See, e.g.*, *In re Xcelera.com Sec. Litig.*, 430 F.3d 503, 511 (1st Cir. 2005). The Appeals Court for the First Circuit explained, "[t]he district court was right to worry about these implications of Defendants' efficiency arguments; it did not err by rejecting Defendants' proposed definition of market efficiency requiring consistency with fundamental value. By drawing on the standard of efficiency in *Cammer* and holding that 'a share's market price [must] reflect publicly available information, not . . . perfectly and correctly incorporate it,' the district court adopted the correct standard of efficiency." *Id.* (emphasis added).

II. THE FAIRLY MODEST PREMISE OF INFORMATIONAL EFFICIENCY

In the context of securities litigation, the market for a stock is said to be efficient if the stock price quickly reflects all publicly available information.⁵ This concept of efficiency is generally referred to as informational efficiency, as distinct from fundamental efficiency which posits that the information is incorporated correctly or accurately.⁶ Informational efficiency is consistent with the semi-strong form of the Efficient Capital Market Hypothesis (ECMH), a bedrock of modern financial theory.⁷

While stocks traded on open and well-developed markets generally impound information rapidly, it is important to recognize that even in the most developed markets, frictions such as trading costs and costs of gathering information exist, in varying degrees, for all stocks.⁸ In fact, the notion of “perfect efficiency is an unrealistic benchmark that is unlikely to hold in practice.”⁹ As Grossman and Stiglitz (1980) explained, if prices at all times perfectly reflected all public information, then there would be no incentive for any investor to incur information-gathering costs to acquire information which is the source of efficiency in the first place.¹⁰ This apparent paradox illustrates that no market is perfectly efficient and that market efficiency is appropriately viewed as “a matter of degree.”¹¹

Indeed, informational efficiency “does not require that markets be *anywhere near perfectly efficient*.”¹² Courts and financial economists are in

5. *Id.* at 508.

6. “Therefore, by requiring that stock price in an efficient market fully reflect all publicly available information in order to establish the fraud-on-the-market presumption, we do not suggest that stock price must accurately reflect the fundamental value of the stock. This distinction is well-supported by the legal and economic commentary.” *In re PolyMedica Corp. Sec. Litig.*, 432 F.3d 1, 16 (1st Cir. 2005).

7. Based on nested information sets, three forms of an efficient market have traditionally been defined: (1) the weak form, in which historical prices are incorporated into public prices; (2) the semi-strong form, in which all publicly available information is incorporated into public prices; and (3) the strong form, in which all publicly and privately available information are incorporated into public prices. *See* JOHN Y. CAMPBELL ET AL., *THE ECONOMETRICS OF FINANCIAL MARKETS* 22 (1997). *See also* Daniel R. Fischel, *Efficient Capital Markets, the Crash, and the Fraud on the Market Theory*, 74 CORNELL L. REV. 907, 911 (1989) (“The link between the concept of efficient capital markets and the fraud on the market theory is clear. The central premise of the fraud on the market theory is that prices of actively-traded securities reflect publicly-available information. This premise is roughly equivalent to the semi-strong version of the efficient capital markets hypothesis. Not surprisingly, courts adopting the fraud on the market theory have alluded to the empirical studies establishing the validity of the semi-strong version of the efficient capital markets hypothesis for support.”). *See also, e.g.*, Eugene F. Fama, *Efficient Capital Markets: II*, 46 J. FIN. 1575, 1575 (1991); Eugene F. Fama, *Two Pillars of Asset Pricing*, 104 AM. ECON. REV. 1467, 1467–69 (2014).

8. *See, e.g.*, CAMPBELL ET AL., *supra* note 7, at 24.

9. *Id.*

10. Sanford J. Grossman & Joseph E. Stiglitz, *On the Impossibility of Informationally Efficient Markets*, 70 AM. ECON. REV. 393, 393 (1980).

11. *Halliburton Co. v. Erica P. John Fund, Inc.*, 573 U.S. 258, 272 (2014).

12. Brief of Financial Economists as *Amici Curiae* in Support of Respondents for the Supreme Court of the United States, *Halliburton Co. v. Erica P. John Fund, Inc.* 573 U.S. 258 (2014) (hereinafter “Brief of Financial Economists as *Amici Curiae*”) at 12 (emphasis added). *Amici* included the following academic financial economists who teach and write about public securities markets: Sanjai Bhagat; John H. Cochrane; Darrell Duffie; B. Espen Eckbo; Eugene Fama; S.P. Kothari; Reinier H. Kraakman; Andrew Lo; Burton G. Malkiel;

agreement on this.¹³ Therefore, any argument that absence of perfect efficiency implies that the market does not adequately impound information is misguided. Such an argument is also inconsistent with the decision in *Basic*, reaffirmed in *Halliburton II*, which noted that the presumption of reliance is based on “the *fairly modest premise* that ‘market professionals generally consider most publicly announced material statements about companies, thereby affecting stock market prices.’”¹⁴

Although the notion of perfect efficiency is unrealistic, “economists broadly agree that stock prices in developed markets generally do respond to information,”¹⁵ making efficiency a matter of degree. As Campbell, Lo, and MacKinlay (1997) explain:

The notion of *relative* efficiency ... may be a more useful concept than the all-or-nothing view taken by much of the traditional market-efficiency literature. The advantages of relative efficiency over absolute efficiency are easy to see by way of an analogy. Physical systems are often given an efficiency rating based on the relative proportion of energy or fuel converted to useful work. Therefore, a piston engine may be rated at 60% efficiency, meaning that on average 60% of the energy contained in the engine’s fuel is used to turn the crankshaft, with the remaining 40% lost to other forms of work such as heat, light, or noise.

Few engineers would ever consider performing a statistical test to determine whether or not a given engine is perfectly efficient—such an engine exists only in the idealized frictionless world of the imagination.¹⁶

In similar vein, it is futile to argue for perfect efficiency; the more relevant concept is that of relative efficiency. As such, to understand where a security falls in the spectrum of efficiency, benchmarking the various indicia of market efficiency for a particular stock against those listed on markets considered to be open and well-developed can provide insight into the relative or degree of efficiency of the stock at issue.¹⁷ Citing Bromberg and Lowenfels, the *Cammer* court

Jeffrey M. Netter; Thomas Philippon; Jay R. Ritter; Richard Roll; and David L. Yermack. *Id.* at 1–2. They “file[d] this brief in order to clarify the areas of agreement and disagreement among economists regarding the ‘Efficient Capital Markets Hypothesis’ (‘ECMH’).” *Id.* at 1.

13. *Id.* at 3. “Economists disagree about whether markets *perfectly* process information and how quickly they do so; about whether prices reflect the fundamental value of the underlying stock; about the size and significance of ‘bubbles’ and other pricing anomalies in the market and the extent to which non-informational factors affect prices; and about whether it is possible to ‘beat the market’ by pursuing various investment strategies designed to exploit pricing anomalies. Such disagreements existed when *Basic* was decided in 1988, and they exist today. *But economists do not generally disagree about whether market prices respond to new material information.*” *Id.* (emphasis added and in original). See also *In re Computer Sci. Corp. Sec. Litig.*, 2012 U.S. Dist. LEXIS 181450, *28 n.10 (E.D. Va. 2012) (“Of course, it must be said that the NYSE is not a perfectly efficient market for any stock, as there is no such thing as a perfectly efficient market.”).

14. *Halliburton*, 573 U.S. at 272 (emphasis added) (citing *Basic Inc. v. Levinson*, 485 U.S. 224, 247 (1988)).

15. Brief of Financial Economists as *Amici Curiae*, *supra* note 12, at 12.

16. CAMPBELL ET AL., *supra* note 7, at 24.

17. The following factors are generally considered when examining the efficiency of the market for a given stock: (1) trading volume; (2) number of analysts following and reporting on the security; (3) bid-ask spreads; (4) level of institutional ownership; (5) market capitalization of the company; (6) ability to sell short; (7) presence of market makers; (8) serial correlation in the stock’s price; and (9) cause-and-effect relationship between new

noted that “[t]urnover measured by average weekly trading of two percent or more of the outstanding shares would justify a strong presumption that the market for the security is an efficient one; one percent would justify a substantial presumption.”¹⁸ The use of these thresholds of 1% and 2% as guideposts in the determination of whether trading volume is adequate is ubiquitous in court opinions.¹⁹ Thus, the idea of the use of a yardstick to assess market efficiency is well accepted and widely used. In fact, courts have also accepted the use of relative benchmarking for other indicia of market efficiency.²⁰ While courts near-universally use the 1%–2% thresholds for turnover, similar thresholds for other factors of efficiency, however, were not articulated by the *Cammer* court. Using data from 2010 to 2018, Bhole, Surana, and Torchio (2020)²¹ rank stocks listed on the NYSE and Nasdaq stock exchanges—two of the most open and well-developed markets²²—from best to worst, allowing a researcher to assess, relative to this universe of stocks, the percentile ranking, and hence the relative efficiency, of the stock that is the subject of the efficiency inquiry.²³ Such benchmarking offers a means to objectively assess efficiency of a particular stock and can be insightful for judges and practitioners alike.

information and changes in the security’s price. *See, e.g.*, *Vinh Nguyen v. Radiant Pharms. Corp.*, 287 F.R.D. 563, 574–75 (C.D. Cal. 2012).

18. *Cammer v. Bloom*, 711 F. Supp. 1264, 1286 (D.N.J. 1989) (citing BROMBERG & LOWENFELS, 4 SECURITIES FRAUD AND COMMODITIES FRAUD, § 8.6 (Aug. 1988)).

19. *See, e.g.*, *In re NetSol Techs., Inc. Sec. Litig.*, 2016 U.S. Dist. LEXIS 193924, 17–18 (C.D. Cal. 2016) (“The turnover as a percentage of average shares outstanding during the Class Period was 14.9%. In *Cammer*, the court cited approvingly an assessment that “[t]urnover measured by average weekly trading of 2% or more of the outstanding shares would justify a strong presumption that the market for the security is an efficient one...””) (quoting *Cammer*, 711 F. Supp. At 1293); *Willis v. Big Lots, Inc.*, 242 F. Supp. 3d 634, 654 (S.D. Ohio 2017) (“This amounted to a weekly turnover of over 11% of its outstanding shares, which well exceeds the 2% benchmark justifying a ‘strong presumption’ of efficiency, which was referenced in *Cammer*”); *Norfolk Cty. Ret. Sys. v. Cmty. Health Sys.*, 332 F.R.D. 556, 574 (M.D. Tenn. 2019) (“An average weekly trading volume that exceeds two percent of the total outstanding shares of the company is widely recognized as a sign of an efficient market.”).

20. *See, e.g.*, *Loritz v. Exide Techs.*, 2015 U.S. Dist. LEXIS 100471, 30–31 (C.D. Cal. 2015) (“Torchio finds that, on average, Exide’s analyst coverage was in the 57th percentile of stocks in his NASDAQ benchmark. The Court FINDS that this factor favors market efficiency.”) (internal citation omitted).

21. Bharat Bhole et al., *Benchmarking Market Efficiency Indicators for Securities Litigation*, 2020 U. ILL. L. REV. ONLINE 96 (2020).

22. Courts have recognized the NYSE and Nasdaq stock exchanges to be open and well-developed markets. *See, e.g.*, *Local 703, I.B. v. Regions Fin. Corp.*, 282 F.R.D. 607, 618 (N.D. Ala. 2012) (“As noted by the Third Circuit: Securities markets like the NYSE and the NASDAQ are open and developed, and are therefore well suited for application of the fraud on the market theory”) (internal citations omitted); *Lapin v. Goldman Sachs & Co.*, 254 F.R.D. 168, 183 (S.D.N.Y. 2008) (“[N]o argument could be made that the [NYSE] is not an efficient market.”); *In re Accredo Health, Inc.*, 2006 U.S. Dist. LEXIS 97621, 25 (W.D. Tenn. 2006) (“Moreover, based on this court’s research, the overwhelming case authority holds that securities listed on the NASDAQ trade in an efficient market”); *Lumen v. Anderson*, 280 F.R.D. 451, 461–62 (W.D. Mo. 2012) (“The NASDAQ is probably properly considered to be a *per se* efficient market.”).

23. Daniel R. Fischel, *Use of Modern Finance Theory in Securities Fraud Cases Involving Actively Traded Securities*, 38 BUS. LAW. 1, 4 (1982) (“In an efficient capital market, such as American stock markets, however, the market price of a firm’s stock will reflect all available information about the firm’s prospects”) (internal citation omitted).

III. FUNDAMENTAL EFFICIENCY IS BESIDE THE POINT

At any point in time, the market price of a security is based on the buying and selling decisions of a diverse set of investors who hold different views about the future prospects of a company.²⁴ Trading based on these disparate views and the forces of supply and demand determine the market price. While the resulting market price may diverge from any particular investor's view of the future prospects for the company, it reflects the overall consensus view of the market participants.

Underlying the diverse set of views that drives the trading are oftentimes a diverse set of investment strategies—value investing, growth investing, momentum investing, counter-cyclical investing, to name just a few.²⁵ Because these investment strategies are generally based on views on whether the market price has impounded information “correctly,” it is often used as a pretext to argue against market efficiency.²⁶ These criticisms, however, miss the mark.²⁷ As courts have emphasized, the relevant concept of efficiency in the context of securities litigation is informational efficiency, not fundamental efficiency.²⁸ In *Halliburton II*, the U.S. Supreme Court categorically rejected the argument that “‘overwhelming empirical evidence’ now ‘suggests that capital markets are not fundamentally efficient’” as a basis for overturning *Basic*.²⁹ As the Court recognized, “this debate [about fundamental efficiency] is not new,”³⁰ and has “not refuted the modest premise underlying the presumption of reliance.”³¹ For the same reason, many courts have explicitly ruled that a showing of “directionality

24. See, e.g., LARRY HARRIS, TRADING & EXCHANGES: MARKET MICROSTRUCTURE FOR PRACTITIONERS 243 (2003).

25. *Id.* at 226–35.

26. *Halliburton Co. v. Erica P. John Fund, Inc.*, 573 U.S. 258, 273–74 (2014).

27. Similarly, pricing anomalies identified in the literature are also consistent with informational efficiency. As explained in Brief of Financial Economists as *Amici Curiae*, “Our conclusion that prices generally move reasonably promptly in the predicted direction in response to unexpected material public information (favorable or unfavorable) is *perfectly consistent* with the view that there are sometimes anomalies in the way markets process information and that bubbles can exist.” Brief of Financial Economists as *Amici Curiae*, *supra* note 12, at 3 (emphasis added). Moreover, proponents of the semi-strong form of the ECMH, such as Schwert (2003), have argued that such anomalies tend “to disappear, reverse, or attenuate.” WILLIAM SCHWERT, *Anomalies and Market Efficiency*, in HANDBOOK OF ECONOMICS AND FINANCE 940 (2003).

28. See, e.g., *Loritz v. Exide Techs.*, 2015 U.S. Dist. LEXIS 100471, 42–43 (C.D. Cal. 2015) (“This Court agrees with the First Circuit and with *In re Countrywide* that for purposes of showing entitlement to the fraud-on-the-market presumption, a plaintiff need only show that a security’s market is informationally efficient; the plaintiff need not show fundamental efficiency.”); *In re Accredo Health, Inc.*, 2006 U.S. Dist. LEXIS 97621, *30 (W.D. Tenn. 2006) (“First, the standard by which Statman measures the efficiency of the Accredo market is more demanding than is required for purposes of class certification. Statman defines the term ‘efficient market’ as follows: ‘The market for a stock is ‘efficient’ when the price of a stock reflects its fundamental value. The fundamental value of a stock . . . is the present value of logically expected cash flows, such as dividends, discounted by a rate that reflects the risk of these cash flows.’ . . . Accredo, however, in its brief and at oral argument could not cite any case that has accepted this fundamental value analysis for market efficiency. To the contrary, the few cases that have addressed this issue have squarely rejected this fundamental value approach.”).

29. *Halliburton Co. v. Erica P. John Fund, Inc.*, 573 U.S. 258, 270–72 (2014).

30. *Id.*

31. *Id.*

or the degree of fit between expected and observed moves in a market need not be substantial to allow a finding of market efficiency.”³²

The fact that any given type of investor’s views about the prospects of a company differs from the consensus view of the market does not make a market informationally inefficient. Quite the opposite. Trading based on these disparate views and strategies drives the price and makes the market informationally efficient. As Harris (2003) explains, “[i]nformed traders are speculators who acquire and act on information about fundamental values. They buy when prices are below their estimates of fundamental value and sell when prices are above their estimates. Informed traders include value traders, news traders, information-oriented technical traders, and arbitrageurs.”³³ These traders “generally differ in their estimates of values,” and “[t]he price impacts of their trading cause prices to reflect the information they collect.”³⁴

The ultimate question in securities litigation is whether investors were harmed by the alleged misrepresentations or omissions. The out-of-pocket damages methodology, a standard approach used in securities class action litigation, measures damages based on artificial inflation in *market* prices at the time of purchase and sale, *i.e.*, did the investors transact at artificially inflated market prices?³⁵ Generally, event studies are used by financial economists to assess the impact of a specific event (such as the corrective disclosure) on the value of a stock and thus determine the level of artificial inflation in the stock.³⁶ Event studies are based on *market* prices.³⁷ Even the statutory limitation on damages

32. *See, e.g.*, In re: Petrobras Sec. Litig., 312 F.R.D. 354, 370 (S.D.N.Y. 2016) (“Such evidence goes to the accuracy of the price of a security, and the Supreme Court has explained that it is not the accuracy of a price as a reflection of underlying value but instead the sensitivity of the price to false statements that underlies the Basic presumption”); Petrie v. Elec. Game Card, Inc., 308 F.R.D. 336, 354–55 (C.D. Cal. 2015) (“The Court agrees with Plaintiffs that there is no absolute requirement to show that certain information caused prices to move in a specific direction. In some circumstances, it may be virtually impossible to determine the ‘correct’ direction in which the price should move in response to a certain piece of information. For instance, a press release might contain both ‘good’ and ‘bad’ news. Or, the same new information might be ‘good’ news to one investor but ‘bad’ to another. On the other hand, certain news can be reasonably expected to drive the price only in one direction.”).

33. HARRIS, *supra* note 24, at 222 (emphasis removed).

34. *Id.* at 224, 237.

35. *See, e.g.*, City of Miami Gen. Employees’ & Sanitation Employees’ Ret. Trust v. RH, Inc., 2018 U.S. Dist. LEXIS 175573, *7 (N.D. Cal. 2018) (“Courts regularly reaffirm that the out-of-pocket, or event study, method matches plaintiffs’ theory of liability under Section 10(b) of the Securities Exchange Act, making it the standard method for calculating damages in virtually every Section 10(b) class action.”).

36. *See, e.g.*, CAMPBELL ET AL., *supra* note 7. (“The general applicability of the event-study methodology has led to its wide use. In the academic accounting and finance field, event-study methodology has been applied to a variety of firm specific and economywide events. Some examples include mergers and acquisitions, earnings announcements, issues of new debt or equity, and announcements of macroeconomic variables such as the trade deficit. However, applications in other fields are also abundant. For example, event studies are used in the field of law and economics to measure the impact on the value of a firm of a change in the regulatory environment, and in legal-liability cases event studies are used to assess damages.”) (internal citations omitted).

37. While a showing of efficiency is required to satisfy the reliance element of a Rule 10b-5 claim, consistent with academic literature, courts recognize that it is not necessary to first establish an efficient market in order to conduct an event study. *See, e.g.*, Alpha Capital Anstalt v. Intellipharma International Inc., 2021 U.S. Dist. LEXIS 128773, *17 (S.D.N.Y. 2021) (“[I]n any event, ‘[I]oss causation addresses a matter different from whether an investor relied on a misrepresentation, presumptively or otherwise, when buying or selling a

pursuant to the Private Securities Litigation Reform Act (PSLRA) of 1995 is based on *market* prices in the 90-day period following the corrective disclosure.³⁸ Thus, for securities litigation, the emphasis is on realized *market* prices, not any particular investor's valuation of the company, underscoring the irrelevance of fundamental efficiency in securities litigation.³⁹ Accordingly, in the context of securities litigation, as the Supreme Court concluded, "[d]ebates about the precise degree to which stock prices *accurately* reflect public information are thus largely *beside the point*."⁴⁰ As the Court explained, debates about whether the market price is "accurate" does not "detract from the fact that false statements affect it, and cause loss."⁴¹

IV. CONCLUSION

For purposes of informational efficiency, the relevant concept of market efficiency in the context of securities litigation, criticisms rooted in notions of perfect efficiency or fundamental efficiency are misguided. As the court in *Xcelera* explained, "[t]he law expects that a share's market price reflect publicly available information, not that the price *perfectly* and *correctly* incorporate it... A stock may trade in an efficient market yet be overvalued, and in such cases victims of securities violations—and their correspondingly higher damages—must be taken as they are. Otherwise, a robust stock market would always present a defense at the class certification stage and on the merits that depends on highly subjective, retrospective analysis of what people trading in a stock should have been thinking."⁴²

stock.' The Defendants therefore need not address market efficiency to prove negative loss causation. '[O]n both the materiality and loss causation fronts . . . the market efficiency issue [is] a red herring' in the context of a § 11 claim." (quoting *Erica P. John Fund, Inc. v. Halliburton Co.*, 563 U.S. 804, 812 (2011) & *In re Constar Int'l Inc. Sec. Litig.*, 585 F.3d 774, 785 (3d Cir. 2009)).

38. Private Securities Litigation Reform Act of 1995, 15 U.S.C. § 78u-4(e) (1995).

39. "In an open and developed market, the dissemination of material misrepresentations or withholding of material information typically affects the price of the stock, and purchasers generally rely on the price of the stock as a reflection of its value." *Peil v. Speiser*, 806 F.2d 1986, 1154, 1161 (3rd Cir. 1986). *See also* Daniel R. Fischel, *Efficient Capital Markets, the Crash, and the Fraud on the Market Theory*, 74 CORNELL L. REV. 907, 911 (1989) ("Because market prices of actively-traded securities do reflect publicly-available information, it is rational for many investors to accept the market price as given. For the same reason, investors are harmed if they purchase securities at prices which reflect false information as a result of disclosure defects.").

40. *Halliburton Co. v. Erica P. John Fund, Inc.*, 573 U.S. 258, 272 (2014) (emphasis added). This view is in line with those of financial economists: "The critical point, however, is that this debate about excess returns has little to do with the modest assumption that prices move reasonably promptly in a predictable direction in response to favorable or unfavorable public information. The excess returns debate goes to whether stock prices are fundamentally accurate, not whether they move in response to information." Brief of Financial Economists as *Amici Curiae*, *supra* note 12, at 11.

41. "That the . . . price [of a stock] may be inaccurate does not detract from the fact that false statements affect it, and cause loss," which is "all that *Basic* requires." *Halliburton*, 573 U.S. at 272 (quoting *Schleicher v. Wendt*, 618 F.3d 679, 685 (7th Cir. 2010)).

42. *In re Xcelera.com Sec. Litig.*, 2004 U.S. Dist. LEXIS 29064, 9–10 (D. Mass. 2004). The appeals court concurred: "Defendants do not, and cannot, cite to any language in *Basic* requiring that the market price of a stock must accurately reflect its fundamental value for purposes of demonstrating market efficiency. In fact, as we noted in *PolyMedica*, the Supreme Court in *Basic* declined to explicitly address the meaning of market efficiency—much less a fundamental value theory of market efficiency—stating that, 'we do not intend conclusively

to adopt any particular theory of how quickly and completely publicly available information is reflected in market price.” In re Xcelera.Com Sec. Litig., 430 F.3d 503, 510 (1st Cir. 2005) (quoting *Basic Inc., v. Levinson*, 485 U.S. 224, 249 n.28 (1988)) (internal citations omitted).