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Asking the Right Question: The Statutory Right of Appraisal and Efficient Markets

By Jonathan Macey* and Joshua Mitts**

In this article, we make several contributions to the literature on appraisal rights and similar cases in which courts assign values to a company's shares in the litigation context. First, we applaud the recent trend in Delaware cases to consider the market prices of the stock of the company being valued if that stock trades in an efficient market, and we defend this market-oriented methodology against claims that recent discoveries in behavioral finance indicate that share prices are unreliable due to various cognitive biases. Next, we propose that the framework and methodology for utilizing market prices be clarified. We maintain that courts should look at the market price of the securities of a target company whose shares are being valued, unadjusted for the news of the merger, rather than at the deal price that was reached by the parties in the transaction.

In our view, unadjusted market price has two distinct advantages over deal price. First, the unadjusted market price automatically subtracts the target firm's share of the synergy gains and agency cost reductions impounded in the deal price. This is appropriate to do because dissenting shareholders in appraisal proceedings are not entitled to these increments of value that are supplied by the bidder and it is difficult to accurately ascertain the proportion of the deal price that is attributable to these increments of value. Second, the unadjusted market price is unaffected by any flaws in the deal process that led to the ultimate merger agreement. Recently, commentators have contended that deal prices in merger transactions should be ignored in appraisal cases where there are flaws in the process that led to the sale. However, flaws in the sales process are not reflected in the unadjusted market price, so such prices are valid indicators of value, regardless of whether there were flaws in the deal process.

Further, no deal process is perfect, and ignoring market prices when a deal process is flawed succumbs to what economists call the Nirvana fallacy, which posits that an analytical approach (such as relying on market prices) should not be ignored or abandoned even

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if using that approach does not produce perfect results. Rather, an analytical approach should be used if it is better than the available alternatives and provides useful information to a tribunal or policymaker.

Finally, we extend our analysis of market efficiency to a new domain. We point out that market prices can be used even when shares of non-publicly traded target companies are being evaluated to determine whether the acquirer paid a fair price in certain cases by examining the share price performance of the acquirer's shares. In cases where a bidder has paid an unfairly low price for the target's shares due to self-dealing, incompetence, or inattention on the part of the seller, the acquirer's stock should react positively to the announcement of the transaction if the transaction is significant. In the absence of such a positive share price reaction on the part of the acquirer, the price should be deemed presumptively fair. This analysis seems particularly apt in situations where there is a decline in the value of the bidder's stock upon announcement of an acquisition.

I. INTRODUCTION

Appraisal proceedings drag financial economics from the classroom into the courtroom. In Delaware, by statute, shareholders dissenting to a merger are "entitled to an appraisal by the Court of Chancery of the fair value" of their shares, "exclusive of any element of value arising from the accomplishment or expectation of the merger."¹ In that proceeding, courts are required to consider "all relevant factors."² By law, courts will look at "accepted financial principles relevant to determining the value of corporations and their stock" when engaged in the exercise of determining fair value.³ Under this standard, a single market valuation metric, such as the deal price or the pre-bid market price, will sometimes provide the most reliable evidence of fair value. In such cases, "giving weight to another factor will do nothing but distort that best estimate. In other cases, 'it may be necessary to consider two or more factors.'"⁴

This article considers the proper role of the Efficient Capital Markets Hypothesis ("ECMH") in Delaware appraisal litigation. Recently, courts in Delaware explicitly have embraced the ECMH and have correctly observed that it is methodologically and analytically superior to discounted cash flow ("DCF") analysis as a means for determining fair value in appraisal proceedings. We make three contributions to the literature as follows.

First, we describe the ECMH and explain the relationship between markets that are efficient in an information sense and markets that are fundamentally efficient. Observing that informational efficiency and fundamental efficiency are not the same thing, we acknowledge that the share price of a company's stock, even when informationally efficient, occasionally may diverge from the stock's fundamentally efficient price. We point out that this occurs infrequently. Specifically, it occurs only when there is material nonpublic information that is

1. DEL. CODE ANN. tit. 8, § 262(a), (h) (2018).

2. *Id.* § 262(h); *Golden Telecom, Inc. v. Glob. GT LP*, 11 A.3d 214 (Del. 2010).

3. *DFC Glob. Corp. v. Muirfield Value Partners, L.P.*, 172 A.3d 346, 349 (Del. 2017).

4. *Blueblade Capital Opportunities LLC v. Norcraft Cos., C.A. No. 11184-VCS*, 2018 WL 3602940, at *2 (Del. Ch. July 27, 2018).

not impounded in a company's share prices. In such cases, courts should still utilize share price when determining fair value in appraisal proceedings but adjust the share price up or down to reflect any material nonpublic information that is later revealed.

Second, we consider recent challenges to the ECMH and observe that, notwithstanding certain theoretical shortcomings in the hypothesis, Delaware courts are correct in affording primacy to the ECMH in valuation cases. In particular, we note that, whatever its shortcomings, methodologies embracing the ECMH are vastly superior to alternative, subjective valuation methodologies, such as DCF analysis. Here, we confront the argument that the use of share prices in valuation proceedings should be confined to transactions that involve arm's-length bargaining between the acquirer and the target and are not tainted by conflicts of interest.

For example, in a recent appraisal case, the Delaware Court of Chancery declined to use the merger price or any other market price when determining the fair value of the target corporation on the grounds that "significant flaws in the process leading to the Merger . . . undermine the reliability of the Merger Price as an indicator of [the] fair value" of the target company.⁵ We point out that, while the deal price of a company's securities might be tainted by flaws in the process leading to a merger, any such flaws in the deal price do not affect the unaffected,⁶ pre-bid market price of the target firm's shares. As such, market prices still should be utilized as a basis for valuation even in cases in which the deal process is flawed.

Further, we observe that, even when the sales process leading to a deal is flawed, the deal price still provides useful information that should not be ignored because it is well recognized that all of the alternative valuation methodologies also are flawed. As such, failure to take the deal price into account succumbs to what economists have described as the "Nirvana fallacy."⁷ The Nirvana

5. *Id.* at *2.

6. By "unaffected" share price, we and the courts mean the price of the target firm that is unaffected by news or rumors of the impending deal. Typically, when calculating the premium paid in a merger or other acquisition, news or rumors of a transaction reach the public before the announcement. This predictably causes an increase in the price of the target company's shares. To calculate the price premium associated with a deal as accurately as possible, the denominator in the premium calculation, which is the pre-deal share price, needs to be determined in a manner that is "unaffected" by the acquisition or by news or rumors of the acquisition. This can be done by looking at the trading volume in the target company's shares in the days leading up to the announcement date and by using average prices in the week or the month prior to the announcement of the bid. The unaffected share price will be the price before an abnormal spike in trading volume, which indicates that rumors of a deal are swirling. Where information is well contained, the unaffected price is simply the market price on the day before a deal is announced. Indeed, there is a growing industry applying artificial intelligence and machine learning to detect the presence of rumors that may affect stock prices. See, e.g., *Rumor Hound: Actionable M&A Rumors*, ACCRETE AI, <https://www.accrete.ai/rumorhound/> (last visited Apr. 24, 2019).

7. CHRISTOPHER J. COYNE, *Reconstructing Weak and Failed States: Foreign Intervention and the Nirvana Fallacy*, 2 FOREIGN POL'Y ANALYSIS 343, 345 (2006) (describing the Nirvana fallacy). The term "Nirvana fallacy" was first coined in this setting by Professor Daniel Fischel, who argued over fifteen years ago for a greater reliance on market prices in mergers and acquisitions ("M&A") litigation and appraisal. Daniel R. Fischel, *Market Evidence in Corporate Law*, 69 U. CHI. L. REV. 941 (2002). Our arguments echo those of Professor Fischel in some respects, though we allow for adjustments to the unaffected

fallacy shows that policymakers should not reject a particular policy option merely on the grounds that the policy option is flawed or that it compares unfavorably to some unarticulated, idealized real-world alternative. Put in its simplest terms, those who succumb to the Nirvana fallacy believe that the grass is always greener on the other side.⁸

In the context of appraisal rights, the Nirvana fallacy manifests itself in the assumption that an alternative valuation method, such as a DCF analysis, is always superior to the deal price in a merger transaction in which the deal process is flawed. This assumption is incorrect. Even when the process through which a deal price is determined was flawed, the deal price may provide the best information about the value of a company's shares, because the alternative valuation methodologies are even more flawed.

Similarly, we take issue with the principle espoused in Delaware appraisal cases that the stock price of the target company should be completely ignored in appraisal proceedings where the target company's shares trade in an inefficient market. This reasoning also succumbs to the Nirvana fallacy. Even if the target's stock price is not fully efficient in the semi-strong sense, it may yield information that is of use to a court because it contains beneficial unbiased information about value. This is particularly true in light of the flaws of alternative valuation methods.

In the third section of this article, we compare two market prices for a company's shares: the deal price and the unaffected pre-bid market price. We show that the unaffected pre-bid market price is the superior benchmark for determining value but that the deal price can be an appropriate reference point when the market price varies from the fundamental value of the company due to material nonpublic information being impounded in the share price.

Finally, we observe that until now it has not been possible to utilize market prices of any kind unless the shares of the target company trade in an efficient market. We further contribute to the literature on appraisal by showing that, regardless of whether the *target* company's shares trade in an efficient market, when the *acquirer* is a public company whose shares traded in an efficient market, it often will be possible to use market prices to determine whether fair value has been paid for the target by looking at the way that the share price of the acquirer firm reacts to the announcement of the bid. In particular, if the value of the acquirer *declines* when a deal is announced, then the bidder may have overpaid, suggesting that target company shareholders received more than fair value for their shares. In contrast, when the value of the bidder goes up by a statistically significant amount, after making the appropriate adjustments to account for synergies and agency-cost reduction, the bidder may have underpaid, and courts should be concerned that the target company's shares were underpriced.

market price that Professor Fischel rejected, such as material nonpublic information and selling shareholder heterogeneity as measured by the limit order book. See discussion at *infra* Part IV.D.

8. COYNE, *supra* note 7, at 344.

II. THE ECMH AND FUNDAMENTAL VALUES

The ECMH states that a market is efficient if the prices of the assets sold in that market fully reflect all available information about those assets. In other words, the ECMH posits that, when new information about the assets being sold is generated, the price of the goods changes almost instantaneously to reflect that information.

The ECMH has been subdivided into what are, in effect, three alternative theories of market efficiency: weak form efficiency, semi-strong form efficiency, and strong form efficiency.⁹ The weak form of the ECMH postulates that a stock's price is substantially independent of past price performance; whatever information is inherent in the historical progression of a stock's price is reflected in the current price. Thus, according to the weak form of the ECMH, "an investor cannot enhance his/her ability to select stocks by knowing the history of successive prices and the results of analyzing them in all possible ways."¹⁰

The semi-strong form of the ECMH goes further, claiming that "current prices fully reflect all public knowledge . . . and that efforts to acquire and analyze this knowledge cannot be expected to produce superior investment results."¹¹ Finally, the strong form of the ECMH takes the idea of market efficiency to its logical extreme and asserts that both public and private information is fully reflected in the price of a stock.¹² Thus, if the strong form of the ECMH reflected reality, no investor, no matter how well informed, would be able systematically to outperform the stock market because the market incorporates all possible information into the stock's price. Under the strong form of the ECMH, even inside traders cannot outperform investors as a group. The strong form of the ECMH is repudiated because we know that those who trade based on material nonpublic information earn abnormal returns.

All of the various forms of the ECMH have been extensively tested. There is overwhelming empirical support for the weak and semi-strong forms of the hypothesis. There is also sufficient evidence to refute the strong form of the ECMH.

In appraisal proceedings, the Delaware courts have embraced the semi-strong form of the ECMH.¹³ As the Delaware Supreme Court has observed, the ECMH "teaches that the price produced by an efficient market is generally a more reliable assessment of fair value than the view of a single analyst, especially an expert witness who caters her valuation to the litigation imperatives of a well-heeled client."¹⁴ While this statement is generally true, we recognize that it is not always true.

Shares of stock are financial assets. Like other financial assets, their value at any point in time reflects the market's assessment of the present value of the

9. Professor Eugene Fama's now-famous 1970 law review article first suggested this now-familiar taxonomy. Eugene F. Fama, *Efficient Capital Markets: A Review of Theory and Empirical Work*, 25 J. FIN. 383, 383-417 (1970).

10. JAMES H. LORIE, PETER DODD & MARY HAMILTON KIMPTON, *THE STOCK MARKET THEORIES AND EVIDENCE* 56 (2d ed. 1985).

11. *Id.*

12. *Id.*

13. *Dell, Inc. v. Magnetar Glob. Event Driven Master Fund Ltd.*, 177 A.3d 1, 25 (Del. 2017).

14. *Id.* at 24.

future income stream that is expected to flow to the owner of the asset. The concept of present value is, perhaps, the most fundamental component of finance. Present value determines not only stock and bond pricing. It also is used in most aspects of financial modeling and pension fund valuation.

When it comes to shares of stock, calculating present value can be complex and imprecise, particularly in light of the many assumptions about future cash flows, rates of growth, capital costs and other expenditures, and the many other factors that are required. Ultimately, however, present value provides an estimate of what we would be required to spend today to obtain certain cash flows in the future.¹⁵

Prices change when estimates of future cash flows change. Put differently, when new information about a company becomes available, new, updated estimates of cash flows are possible, and this new information changes the present value—that is, the price—of a financial asset such as a share of stock. For example, if new information indicates that a particular company is riskier than previously had been believed, the market will apply a steeper discount to future cash flows, thereby driving down present value. Similarly, if it looks like a company's sales will be higher than previously thought, the expected cash flows in the present value calculation of the firm's value will go up, causing an increase in the company's share price.

Thus, the more information there is available about a company's share price, the more accurate the present value calculation of the company's shares will be. A share price is fundamentally efficient to the extent that it accurately reflects the present value of the future income associated with ownership of the shares. Significantly, both fundamental efficiency and informational efficiency in stock pricing are predicated on the same crucial data: information. The information that provides the basis for stock prices is current information about future cash flows. As that information changes, share prices change. The only difference between the concepts of fundamental efficiency and informational efficiency is that fundamental efficiency focuses on the *nature* of the information about a company, whereas informational efficiency focuses on the *speed* with which that information becomes impounded in a company's share price.¹⁶

As such, generally speaking, market prices of publicly traded companies that are informationally efficient will also be fundamentally efficient. Delaware courts implicitly have recognized this. For example in *Dell Inc. v. Magnetar Global Event Driven Master Fund Ltd.*, the court observed that information is impounded in a company's share price only after it has been digested and assessed:

15. Amy Gallo, *A Refresher on Net Present Value*, HARV. BUS. REV. (Nov. 19, 2014), <https://hbr.org/2014/11/a-refresher-on-net-present-value>.

16. One of us has previously studied the speed at which stock prices incorporate new information and how informational efficiency is driven by the strategic behavior of privately informed market participants. Mohammadreza Bolandnazar, Robert J. Jackson, Jr., Wei Jiang & Joshua Mitts, *Trading Against the Random Expiration of Private Information: A Natural Experiment*, J. FIN. (forthcoming 2019), https://papers.ssrn.com/sol3/cf_dev/AbsByAuth.cfm?per_id=1806223.

the record suggests the market for Dell stock was semi-strong efficient, meaning that the market's *digestion and assessment* of all publicly available information concerning Dell was quickly impounded into the Company's stock price.¹⁷

The court in *Dell* also correctly observed that “the efficient market hypothesis . . . teaches that the price of a company's stock reflects all publicly available information as a consensus, per-share valuation.”¹⁸ Similarly, the court pointed out, again correctly, that “the price produced by an efficient market is *generally a more reliable assessment of fair value* than the view of a single analyst, especially an expert witness who caters her valuation to the litigation imperatives of a well-heeled client.”¹⁹

The court made the same point, perhaps even more clearly, in *DFC* when it observed that “the relationship between market valuation and fundamental valuation has been strong historically”²⁰ and described the price produced by an efficient market as “informative of fair value.”²¹ The *DFC* court also noted that “[i]n an efficient market you can trust prices, for they impound all available information about the value of each security.”²²

Thus, Delaware has recognized the important point that stock market prices in an informationally efficient capital market reflect fundamental (or “fair”) values. However, it is also the case, as the court recognized in *Dell* and *DFC*, that, even in a capital market that is semi-strong efficient, market prices will not *always and inevitably* be fundamentally efficient. This is because, in a market that is efficient in the semi-strong sense, only publicly available information is reflected in share prices. This means that, during periods of time when there is material non-public information that is not reflected in a company's share price, the stock price for that company will be informationally efficient (as defined by the semi-strong form of the ECMH) but not fundamentally efficient. Fundamental efficiency and informational efficiency will converge once again as soon as trading or disclosure or both cause the firm's share price to impound the nonpublic information.

Thus, because informational efficiency and fundamental efficiency are not the same thing, the share price of a company's stock, even when informationally efficient, may diverge occasionally from the stock's fundamentally efficient price. This divergence occurs, however, only when and to the extent that there is material nonpublic information that is not impounded in a company's share prices.

In such cases, courts should still utilize share price when determining fair value in appraisal proceedings but should adjust the share price up or down to reflect any material nonpublic information that is later revealed. Suppose, for example, that a firm's share price is \$100 on Monday. On Wednesday morning, the firm announces that it will miss its earnings target, which causes the share price to fall to \$90. Even though the price was not fundamentally efficient

17. *Dell*, 177 A.3d at 7.

18. *Id.* at 24.

19. *Id.* (emphasis added).

20. *DFC Glob. Corp. v. Muirfield Value Partners, L.P.*, 172 A.3d 346, 370 (Del. 2017).

21. *Id.* at 373.

22. *Id.* at 370 (quoting RICHARD A. BREALEY ET AL., *PRINCIPLES OF CORPORATE FINANCE* 214 (9th ed. 2008)).

on Monday, courts can still look to the price following the earnings announcement (e.g., at the close of trading on Wednesday) as an indicator of fair value.

Similarly, suppose that insiders “trade ahead” of the earnings announcement, for example, by selling the shares of the company’s stock, causing its share price to fall to \$90 on Tuesday. Such trading effectively causes the share price to impound information as to the firm’s earnings—which was nonpublic on Tuesday—thereby rendering the stock price fundamentally efficient yet again. These hypothetical examples show how both informed trading and disclosure will cause the stock price to reflect the fair value of the firm, even when this price is artificially inflated (or depressed) before the revelation of information that has not yet been incorporated by the market.²³

III. CHALLENGES TO THE ECMH

The ECMH has been dubbed “the leading success story of modern finance theory.”²⁴ As long ago as 1978, Michael Jensen, a well-respected professor of finance at the Harvard Business School, went so far as to declare that “there is no other proposition in economics which has more empirical evidence supporting it than the Efficient Markets Hypothesis.”²⁵

More recently, however, challenges to the ECMH have emerged. In particular, behavioral economics has taught that asset prices are sometimes subject to speculative bubbles, manipulation, hindsight bias, and a host of other distortions generally attributable to various behavioral biases that cause traders to act irrationally.²⁶

The ECMH came under pointed attack in the wake of the sharp economic downturn that began in 2008.²⁷ As Ray Ball observed, however, efficient markets are better understood than asset bubbles: “[a]sset bubbles are not a well-understood phenomenon in general. Many serious economists have challenged the use of the term, other than in the *ex-post* sense of denoting episodes in which prices rose and then fell by substantial amounts. . . . Market efficiency does not predict there will be no spectacular failures of large banks or investment banks.

23. Our recognition of the need to incorporate material nonpublic information echoes a point made nearly two decades ago by Zohar Goshen, namely, the market price contains an adverse-selection discount to reflect a controlling shareholder’s informational advantage. Zohar Goshen & Zvi Wiener, *The Value of the Freezeout Option* (Colum. L. & Econ. Working Paper No. 260, Nov. 29, 2004), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=217511. This is why we advocate for an adjustment for material nonpublic information, even in an arm’s-length transaction where there is no controlling shareholder. As a practical matter, we would suggest that courts make such an adjustment when a Form 8-K is filed after the deal has been announced but before closing, which is followed by a statistically significant abnormal return. From a cursory examination of data on acquisitions of publicly traded targets, we found that, among Form 8-Ks with statistically significant abnormal returns, positive returns occur 50 percent of the time. Thus, because unexpected news is equally likely to award dissenting shareholders a lower value as a higher value, our proposal will not bias deal prices either upward or downward.

24. RONALD J. GILSON, *THE LAW AND FINANCE OF CORPORATE ACQUISITIONS* 157 (1986).

25. Michael C. Jensen, *Some Anomalous Evidence Regarding Market Efficiency*, 6 J. FIN. ECON. 95, 95 (1978).

26. ANDREI SHLEIFER, *INEFFICIENT MARKETS: AN INTRODUCTION TO BEHAVIORAL FINANCE* 23 (2000).

27. Ray Ball, *The Global Financial Crisis and the Efficient Market Hypothesis: What Have We Learned?* 21 J. APPLIED CORP. FIN. 8, 8 (2009) (observing that some blamed the ECMH for the financial crisis).

If anything, it predicts the opposite—that size and venerability alone will not guarantee you positive abnormal returns and will not protect you from the forces of competition.”²⁸

Thus, in our view, the fact that markets periodically experience asset bubbles does not *disprove* the ECMH. Rather, as Professor Ball has observed, asset bubbles serve to remind us that the ECMH is, after all, merely a hypothesis or “theory” that is “useful when organizing our thoughts and actions” but is imperfect and not without what Thomas Kuhn called anomalies, which are “facts or findings that . . . [even the best] theories cannot explain.”²⁹

A. ASSET BUBBLES AND MANIPULATION

Perhaps the largest challenge for the ECMH is asset bubbles. Asset bubbles appear to be a persistent phenomenon in securities markets. In particular, it appears clear that, like other assets, such as real estate, stock prices are occasionally characterized by “irrational exuberance” on the part of investors that manifests itself in the form of price bubbles.³⁰

Recognizing the existence of asset bubbles, however, by no means indicates that market and deal prices should be ignored in appraisal proceedings. Asset bubbles, by definition, *inflate* the prices of the assets that are “in the bubble.” The purpose of appraisal proceedings is to protect minority shareholders against being forced to sell their shares at prices that are unfairly low. Asset bubbles, to the extent that they distort valuations, only inflate such values. When shareholders are forced to sell in the midst of an asset bubble, they receive prices that are artificially high, so they have nothing to complain about.

What is worrisome is what happens after a bubble bursts because steep run-ups in asset prices appear to be followed by unusually large drops in prices. This pattern appears to “have occurred throughout the recorded history of organized markets.”³¹ Here, we consider the proper role of a tribunal in an appraisal or other valuation proceedings in which the moving party claims that an artificially low price was paid for financial assets because the transaction took place in the midst of a trough that followed a bubble.

The critical point is that asset bubbles are not confined to single stocks. They occur across asset classes. The same is true for the declines in asset values that are said to follow financial bubbles. As such, judges are free to ignore the fact that a transaction occurred in the midst of a trough because an investor who is forced to sell a financial asset at what she considers to be an artificially low price is free to *replace* that asset with an equally undervalued investment of her choice in the same asset class. When the drop in prices that follows the

28. *Id.* at 9–11.

29. *Id.* at 12.

30. This phrase appears to have originated with Alan Greenspan. See Alan Greenspan, Remarks at the Annual Dinner and Francis Boyer Lecture of The American Enterprise Institute for Public Policy Research, Washington, D.C.: The Challenge of Central Banking in a Democratic Society (Dec. 5, 1996), <https://www.federalreserve.gov/boarddocs/speeches/1996/19961205.htm>.

31. See Ball, *supra* note 27, at 8.

asset bubble has resolved itself and asset values have returned to “normal” levels, the complaining seller will be made whole. Of course, in the interim, asset prices remain depressed.

Investors purchase stock and other financial assets strictly for their risk/return attributes. Often, parts of diversified portfolios lack emotional or hedonic value for their owners. As such, financial assets serve as substitutes for one another. A person whose investment is liquidated can simply take the money obtained for her shares and purchase another asset with the same risk/return characteristics. Of course, it is true that an investor may believe (correctly or incorrectly) that she is being forced to sell in a depressed market. A complete response to this complaint is that, when values in an asset class are depressed, all investors suffer. Crucially, we contend that appraisal proceedings are not intended to provide a particular advantage to the shareholders seeking the appraisal remedy. Rather, such proceedings are supposed to provide investors with the “fair value” of their shares.

To us, the concept of “fair value” implies the value that other similarly situated investors should receive for their shares. We do not believe that the statutory requirement that dissenting shareholders in an appraisal proceeding receive fair value requires that such shareholders receive *more than* other shareholders are receiving for their shares. When a transaction occurs in a depressed market, all of the shareholders receive the same depressed values for their shares. Because fairness means treating similarly situated investors alike, fairness requires that all shareholders, including dissenting shareholders, share the pain of an artificially depressed market together and be required to choose to reinvest the proceeds of a sale in other depressed assets or to internalize losses immediately.

Thus, the fact that securities markets are sometimes characterized by asset bubbles and troughs that seem irrational does not indicate that market prices and deal prices should be ignored when transactions take place during such troughs and bubbles. This is because such troughs and bubbles affect all investors in all asset classes and investors can replace assets that have been sold during troughs and bubbles with other assets that are experiencing irrational declines or irrational increases in value. Because fairness requires treating similarly situated investors alike and does not require affording special treatment to dissenting shareholders, market prices are adequate indicators of fair value in efficient markets even during troughs and bubbles.

At the same time, we recognize that prices of shares of stock may be distorted for reasons other than asset bubbles or troughs. In particular, it is possible to manipulate share prices.³² Fox, Glisten, and Rauterberg point out that stock-price manipulation tends to take one of three forms: (a) naked open-market manipulation, (b) manipulation with an external interest, or (c) misstatement manipulation.³³

32. Merritt B. Fox, Lawrence R. Glisten & Gabriel Rauterberg, *Stock Market Manipulation and Its Regulation*, 35 YALE J. ON REG. 67 (2018); but see Daniel R. Fischel & David Ross, *Should the Law Prohibit “Manipulation” in Financial Markets?*, 105 HARV. L. REV. 503 (1991) (arguing that manipulation is notoriously difficult to accomplish).

33. Fox et al., *supra* note 32, at 74–77; Franklin Allen & Douglas Gale, *Stock Price Manipulation*, 5 REV. FIN. STUD. 503, 505 (1992).

Naked open-market manipulation involves the purchase (or sale) of shares where such purchases (or sales) place upward (or downward) pressure on share prices, followed by the sale (purchase) at the new higher (lower) prices.³⁴ For this sort of manipulation to succeed, the manipulator must be able to buy (or sell) the financial assets being manipulated at the lower (or higher) prices generated by the purchases (or sales) and then succeed in selling them while the prices remain distorted. As they point out, this seems unlikely.³⁵ However, in the rare cases where naked open-market manipulation can be proved, the effects of such manipulation should be removed before market prices are used in assessing value in an appraisal proceeding.

Manipulation with an external interest occurs when the putative manipulator buys or sells shares because she expects a payoff from an external source if share prices rise or fall.³⁶ For example, in *United States v. Mulheren*, the “external interest” was an agreement by the chief executive officer of Gulf and Western Industries, Inc. (G&W) to purchase the G&W shares belonging to the infamous stock market schemer Ivan Boesky³⁷ at the closing price for G&W stock on October 17, 1985.³⁸ Obviously, Boesky would benefit from manipulating the stock in a positive direction at the end of the October 17, 1985, trading day.

Fox, Glosten, and Rauterberg argue that manipulation with an external interest occurs when:

a trader . . . has an economic interest in the price of a security independent of the price at which she can buy and sell it in the open market. An example is an executive with a compensation scheme tied to her company's stock price at a particular moment in time. Shortly in advance of this moment, the trader purchases a number of shares and the resulting upward push on prices leads to a gain based on the external interest. Once this moment has passed, she would likely resell the shares that she previously purchased to push the price up because that is the only reason she included them in her portfolio in the first place and her purpose has now been accomplished. To yield an expected gain, this strategy does not require that the likelihood of an asymmetric price reaction be sufficiently great to make up for the costs of the trading involved. It only requires that the expected gain derived from the external interest be greater than the costs of trading, a condition that would be easily satisfied for an external interest of any real size.³⁹

We are skeptical of the view that stock-price manipulation is a serious concern in M&A. At the same time, we recognize that traders will be motivated sometimes by an “external interest” of the kind that characterized *United States v. Mulheren* because the acquirer has an interest in purchasing the shares of the target

34. Fox et al., *supra* note 32, at 74; Fischel & Ross, *supra* note 32, at 521.

35. Fox et al., *supra* note 32, at 74 (observing that this can happen under certain circumstances but that “such circumstances arise relatively infrequently”).

36. *Id.* at 75.

37. Myles Meserve, *Meet Ivan Boesky, The Infamous Wall Streeter Who Inspired Gordon Gekko*, BUS. INSIDER (July 26, 2012), <https://www.businessinsider.com/meet-ivan-boesky-the-infamous-wall-streeter-who-inspired-gordon-gecko-2012-7>.

38. 938 F.2d 364 (2d Cir. 1991).

39. Fox et al., *supra* note 32, at 75.

company at the lowest possible price. And we readily acknowledge that, where such manipulation has occurred, market prices will fail to reliably establish the value of the target company.

Nonetheless, we predict that such manipulation in the M&A context will be extremely rare. This is because an acquirer will often have to purchase shares in the target to effectuate the acquisition. It is unavoidable that such purchases will exert upward pressure on the target's share prices, offsetting the manipulative effects of other actions that a bidder might take. Nevertheless, to the extent that such manipulation occurs, market prices should be adjusted downward to account for the price distortions caused by the manipulation.

We note that, just as potential buyers can attempt to manipulate markets to reduce stock prices, prospective sellers can attempt manipulation with the goal of increasing stock prices. To the extent that a potential seller engages in manipulation to drive prices artificially upward in anticipation of an appraisal proceeding, the appraisal price should be adjusted downward to adjust for the distorting effects of the manipulation.

In the context of statutory appraisal proceedings, manipulation appears to be a concern where "appraisal arbitrage" occurs. Appraisal arbitrage arose from the 2005 acquisition of Transkaryotic Therapies, Inc. by Shire Pharmaceuticals Group plc.⁴⁰ Hedge funds and other arbitrageurs were allowed to buy shares in the target company after the record date of the transaction and still assert their statutory right of appraisal as long as the number of shares for which appraisal was being sought were less than the number of shares that either voted no or did not vote on the merger. This decision gave hedge funds and other strategic investors an incentive to examine every merger in Delaware that qualified for appraisal rights and to purchase shares after announcement of the deal "with the goal of either negotiating a settlement of the claims after the merger or convincing an appraisal court that the value of the shares was higher than the merger price."⁴¹

Where parties, such as hedge funds, invest in target company stock after the announcement of a merger with the intention of pursuing appraisal, the practice is called "appraisal arbitrage."⁴² When engaging in appraisal arbitrage, hedge

40. *In re Appraisal of Transkaryotic Therapies, Inc.*, Civ. A. No. 1554-CC, 2007 WL 1378345, at *1 (Del. Ch. May 2, 2007).

41. *Appraisal Arbitrage: Will It Become a New Hedge Fund Strategy?*, LATHAM & WATKINS LLP (May 2007), https://www.lw.com/upload/pubContent/_pdf/pub1883_1.pdf. For a critique of appraisal arbitrage and a detailed discussion of the *Aruba* decision, see William J. Carney & Keith Sharfman, *The Death of Appraisal Arbitrage: Ending Windfalls for Deal Dissenters*, DEL. J. CORP. L. (forthcoming 2019); see also William J. Carney & Keith Sharfman, *Appraisal in Delaware: Possible Improvement from the Bottom Up?* (Emory Legal Stud. Res. Paper, Mar. 27, 2018), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3138251.

42. Charles R. Korsmo & Minor Myers, *Appraisal Arbitrage and the Future of Public Company M&A*, 92 WASH. U. L. REV. 1551, 1551 (2015). One empirical study found that appraisal petitions increased from 2–3 percent of M&A transactions in the early 2000s to 25 percent of transactions by 2014 and generated gross returns of 32.9 percent for hedge funds specializing in this strategy. Wei Jiang, Tao Li, Danqing Mei & Randall Thomas, *Appraisal: Shareholder Remedy or Litigation Arbitrage?*, 29 J.L. & ECON. 697 (2016). Another study found that the stock-price reaction to acquisitions that are the

funds have an incentive to acquire target company shares at low prices and then manipulate prices to higher levels to convince courts in appraisal proceedings, relying on market prices to accord high prices to their shares. When such manipulation occurs, courts should adjust appraisal prices downward to nullify its effects.

In addition to naked open-market manipulation and open-market manipulation coupled with an external interest, a third type of market manipulation has been identified: misstatement manipulation. Misstatement manipulation occurs when a trader “makes a materially false statement concerning an issuer that pushes down its price, purchases a certain number of shares in the market, waits until the truth comes out, and then resells the shares.”⁴³

As with the other forms of manipulation, while misstatement manipulation is theoretically possible, this method of manipulation seems highly unlikely in the context of valuation proceedings. Misstatement manipulation, in the context of a merger, clearly involves fraud and violates SEC Rule 10b-5.⁴⁴ It seems obvious to us that a court would adjust the market price and the deal price of a security whose efficient price has been distorted by material misstatements by an acquirer.

B. OTHER EXAMPLES OF MARKET IRRATIONALITY

In addition to divergences from pricing efficiency caused by bubbles, troughs, or manipulation, there is a related concern, articulated by those working in the field of behavioral finance, that irrational decision making by investors results in “observable directional biases resulting from departures from rational decision making, and that significant barriers prevent professional traders from fully correcting the mistakes made by less than rational investors.”⁴⁵

subject of appraisal petitions is positive on average. Jonathan Kalodimos & Clark Lundberg, *Shareholder Rights in Mergers and Acquisitions: Are Appraisal Rights Being Abused?*, 22 FIN. RES. LETTERS 53 (2017). Empirical studies have also examined the effect of the Delaware Chancery Court’s decision in *Transkaryotic*, which loosened the requirements for bringing appraisal actions by finding that they can be brought by holders who bought shares after the record date and there is no need to prove continued eligibility by tracing whether the shares voted in favor of the merger. Two studies have found an increase in deal premia in the wake of this decision. Audra Boone, Brian Boughman & Antonio Macias, *Merger Negotiations in the Shadow of Judicial Appraisal* (Ind. Legal Stud. Res. Paper No. 381, Mar. 22, 2019), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3039040; Scott Callahan, Darius Palia & Eric Talley, *Appraisal Arbitrage and Shareholder Value*, 3 J.L. FIN. & ACCT. 147 (2018).

43. Fox et al., *supra* note 32, at 75. One of us has analyzed market manipulation by pseudonymous short sellers who issue misleading attack articles while trading heavily in options markets to drive prices down and back up. Joshua Mitts, *Short and Distort* (Colum. L. & Econ. Working Paper No. 592, Feb. 3, 2019), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3198384; see also Joshua Mitts, *A Data-Driven Defense Against Short and Distort*, N.Y. L.J. (Sept. 13, 2018), <https://www.law.com/newyorklawjournal/2018/09/12/a-data-driven-defense-against-short-and-distort/>. On September 12, 2018, the U.S. Securities and Exchange Commission (“SEC”) brought its first enforcement action against a hedge fund engaging in such a “short-and-distort” campaign; see *SEC Charges Hedge Fund Adviser with Short-and-Distort Scheme*, U.S. SEC. & EXCHANGE COMMISSION (Sept. 12, 2018), <https://www.sec.gov/news/press-release/2018-190>.

44. 17 C.F.R. § 240.10b-5 (2019); see Fox et al., *supra* note 32, at 124.

45. Ronald J. Gilson & Reinier Kraakman, *The Mechanisms of Market Efficiency Twenty Years Later: The Hindsight Bias*, 28 J. CORP. L. 715, 723–24 (2003).

Ron Gilson and Reinier Kraakman have identified the more significant biases that may plague market pricing mechanisms.⁴⁶ They are (a) overconfidence, which refers to the tendency of individuals to overestimate their own evaluative skills; (b) the endowment effect, which describes the tendency of individuals to insist on a higher price to sell something they already own than to buy the same item if they do not already own it; (c) loss aversion, which is the tendency for people to be risk averse for profit opportunities but willing to gamble to avoid a loss; (d) anchoring, which describes the tendency of people to make decisions based on an initial estimate that is later adjusted but not sufficiently to eliminate the influence of the initial estimate; (e) framing, which is the tendency of people to make different choices based on how the decision is framed, such as whether it is framed in terms of the likelihood of a good outcome or in terms of the reciprocal likelihood of a bad outcome; and (f) hindsight bias, which is the tendency of people to read the present into assessments of the past.⁴⁷

Several of these behavioral biases, such as overconfidence, framing, and hindsight bias, do not appear immediately relevant, nor do they suggest a systematic bias in decision making in the appraisal context.⁴⁸ However, two of these biases, the loss aversion and endowment effect, do seem quite relevant in the valuation context.

1. Loss Aversion

Loss aversion refers to people's alleged propensity to strongly prefer avoiding losses over garnering profits. As Benartzi and Thaler have explained,

Loss aversion refers to the tendency for individuals to be more sensitive to reductions in their levels of well-being than to increases. The concept plays a central role in Kahneman and Tversky's [1979] descriptive theory of decision-making under uncertainty, prospect theory. In this model, utility is defined over gains and losses relative to some neutral reference point, such as the status quo, as opposed to wealth as in expected utility theory. This utility function has a kink at

46. *Id.* at 724.

47. *Id.* (citations omitted); see also Nicholas Barberis & Richard Thaler, *A Survey of Behavioral Finance*, in *HANDBOOK OF THE ECONOMICS OF FINANCE* 1053 (G.M. Constantinides et al. eds., 2003); G. William Schwert, *Anomalies and Market Efficiency*, in *HANDBOOK OF THE ECONOMICS OF FINANCE* 939 (G.M. Constantinides et al. eds., 2003); Donald C. Langevoort, *Taming the Animal Spirits of the Stock Market: A Behavioral Approach to Securities Regulation*, 97 *Nw. U. L. Rev.* 135 (2002).

48. That said, an optimistic investor might believe that she can value the firm's stock better than other investors and thus be more likely to bring an appraisal action for that reason. This sort of overconfidence might justify courts discounting or adopting a presumption against petitioners' experts, who may be retained to validate these higher valuations. In some instances, it does appear that hindsight bias affects the Delaware courts. In *Cede & Co. v. Technicolor, Inc.*, 634 A.2d 345 (Del. 1994), MAF enjoyed a massive return of \$738 million compared to a purchase price of \$105 million, for a net profit well over \$600 million. One might wonder whether the Delaware Supreme Court's multiple remands in that litigation were driven by this fact. Similarly, in *Gonsalves v. SAP*, the Supreme Court referenced internal projections that turned out to be correct in hindsight. *Gonsalves v. Straight Arrow Publishers Inc.*, 793 A.2d 312 n.3 (Del. 1998).

the origin, with the slope of the loss function steeper than the gain function. The ratio of these slopes at the origin is a measure of loss aversion.⁴⁹

Benartzi and Thaler invoke loss aversion to explain the enormous discrepancy between the returns on stocks and fixed income securities. “Since 1926 the annual real return on stocks has been about 7 percent, while the real return on treasury bills has been less than 1 percent.”⁵⁰ This wide gap between return on equity and return on debt had been difficult to explain given patterns of consumption and had long puzzled economists.⁵¹

Loss aversion is cogently explained in an example of a thought experiment that MIT economist Paul Samuelson performed with a colleague. Samuelson asked the colleague whether he would be willing to accept the following bet: a 50 percent chance to win \$200 and a 50 percent chance to lose \$100. The colleague turned down this bet and offered the following rationale: “I won’t bet because I would feel the \$100 loss more than the \$200 gain.” This sentiment is the intuition behind the concept of loss aversion.⁵²

In the context of mergers and acquisitions, the equity premium puzzle can be used to explain why selling to appraisal arbitrageurs is so attractive to target company shareholders in the first place. Appraisal arbitrage refers to the process by which professional investors, usually hedge funds or other activist investors, “take advantage of statutory appraisal rights by acquiring a sizeable amount of shares shortly after a merger is announced with the intention of asserting appraisal rights” in subsequent litigation.⁵³

The practice of appraisal arbitrage has been sharply criticized. Appraisal arbitrageurs are said to “prey on merger transactions as they deem fit,” “taking advantage of minority shareholder appraisal rights.”⁵⁴ Share purchases by appraisal arbitrageurs are thought “to exploit” the statutory right of appraisal.⁵⁵ But loss aversion may explain why shareholders are so eager to sell their shares, usually at a substantial premium to the share price prior to announcement but at a discount to the post-announcement share price, which is typically close to the announced merger price.⁵⁶

49. Shlomo Benartzi & Richard H. Thaler, *Myopic Loss Aversion and the Equity Premium Puzzle*, 110 Q. J. ECON. 73, 73–74 (1995) (citing Daniel Kahneman & Amos Tversky, *Prospect Theory: An Analysis of Decision Under Risk*, 47 ECONOMETRICA 263 (1979)).

50. *Id.* at 73.

51. Rajnish Mehra & Edward C. Prescott, *The Equity Premium Puzzle*, 15 J. MONETARY ECON. 145 (1985).

52. This experiment is recounted in Benartzi & Thaler, *supra* note 49, at 74; see also Paul A. Samuelson, *Risk and Uncertainty: A Fallacy of Large Numbers*, 98 SCIENTIA 108 (1963).

53. See Craig Boyd, *Appraisal Arbitrage: Closing the Floodgates on Hedge Funds and Activist Shareholders*, 65 KAN. L. REV. 497, 497–98 (2016); see also Charles R. Korsmo & Minor Myers, *Appraisal Arbitrage and the Future of Public Company M&A*, 92 WASH. U. L. REV. 1551 (2015); *New Activist Weapon—The Rise of Delaware Appraisal Arbitrage: A Survey of Cases and Some Practical Implications*, FRIED FRANK (2014), <https://www.friedfrank.com/siteFiles/Publications/FINAL%20-%206182014%20TOC%20Memo%20-%20New%20Activist%20Weapon-%20The%20Rise%20of%20Delaware%20Appraisal%20Arbitrage.pdf>.

54. Boyd, *supra* note 53, at 498.

55. *Id.*

56. See, e.g., Jiang et al., *supra* note 42, at 713, 721 (annualized raw return to appraisal litigation is 32.9 percent compared to a deal announcement premium of 21.5 percent).

Due to loss aversion, the “bird in the hand” offered by the appraisal arbitrageur conceivably could be greater than the “two in the bush” that will come a month or two later when the transaction closes.

2. The Endowment Effect

The endowment effect is a cognitive bias that manifests itself when market participants overvalue something that they already own, regardless of its objective market value.⁵⁷ It has been shown that people often are reluctant or unwilling to part with something that they own even for a premium over its cash equivalent. Similarly, it has been shown that, for a transaction to occur, people will insist on paying less for something than the price they insist on receiving to part with it in a sale.

In other words, “people place a greater value on things once they have established ownership.”⁵⁸ In the context of capital markets, as Gilson and Kraakman have observed, “if one imagines the endowment effect is at work on target shareholders, then they may require too high a price for their stock, and mistakenly let a good offer pass.”⁵⁹ To the extent that target company shareholders experience the endowment effect, they may demand an unrealistic premium for their shares to approve a transaction. This indicates that concerns about shareholder exploitation in merger transactions may be overblown.

Of course, a significant practical problem with applying the lessons of social psychology in a real world is that theories of irrationality are contradictory.⁶⁰ Loss aversion indicates that shareholders may be too willing to sell because they are afraid of experiencing losses if they hold onto their shares.⁶¹ The endowment effect indicates that shareholders may be too reluctant to sell to an outside bidder. Both conditions cannot occur simultaneously. It is difficult to know in any particular context which particular biases are at work. And, as Gilson and Kraakman have observed, “[i]f one cannot observe which biases are operative and their interaction, one may not be able to assess whether a market price reflects any bias at all.”⁶²

While a complete review of the literature on behavioral economics and the stock market is beyond the scope of this article, it is clear that relying on market prices makes eminent sense, notwithstanding the fact that large numbers of individual market participants may well not be rational actors at any particular moment. We base this view on the simple fact that in the valuation context, partic-

57. Daniel Kahneman & Richard H. Thaler, *Anomalies: The Endowment Effect, Loss Aversion, and Status Quo Bias*, 5 J. ECON. PERSP. 193 (1991); Daniel Kahneman, Jack L. Knetsch & Richard H. Thaler, *Experimental Tests of the Endowment Effects and the Coase Theorem*, 98 J. POL. ECON. 1325 (1990).

58. ALAIN SAMSON & ROGER MILES, *THE BEHAVIORAL ECONOMICS GUIDE* 2016 107 (Alain Samson ed., 2016).

59. Gilson & Kraakman, *supra* note 45, at 732.

60. *Id.* at 790.

61. A willingness to sell may also reflect impatience—needing cash now for unexpected liquidity needs or reflecting a desire to reinvest and earn a quick return.

62. *Id.* at 732.

ularly in appraisal proceedings, judges are *required* by statute to come up with a valuation. As such, they must utilize some valuation methodology. And, where market prices are available, they are the best basis for valuation, despite their imperfections. In this context, we note that whatever cognitive biases afflict the *markets* that set prices for stocks and other financial assets also afflict the *individuals* who are tasked with determining valuations in the event that market prices are ignored; even though experts are likely immune to loss aversion or the endowment effect, they are hired by parties who have strong economic incentives.⁶³

As Stephen Ross has observed, modern financial theory does not require or even imply that individual investors be rational.⁶⁴ Rather, as long as there are a small number of rational investors who can observe divergences from rationality and trade until prices are restored to reflect fundamental values, markets will behave “rationally” even if individual participants may be irrational. To the extent that this occurs, markets, unlike the individuals who perform DCF analyses, will be far less susceptible to irrational pricing decisions.

As Maureen O’Hara has posited, “[W]hat matters is that there are a few sharks, or arbitrageurs, who wait for opportunities and then pounce. This makes markets behave ‘rationally’ even if individual participants may be irrational. To the extent that this occurs, then we are back to the ‘no bubbles’ outcome even with irrational traders.”⁶⁵ A similar insight emerges from those who have studied the “wisdom of crowds,” which posits that large groups of people, such as those who participate in buying and selling securities in the capital markets, collectively make much better judgments than do individual experts about many issues, including predicting cash flows.

Above all, we note that buyers and sellers interacting in markets are not merely expressing opinions about asset values in a conjectural or hypothetical way. Unlike academic or industry valuation experts, the individual traders whose buy and sell orders move stock market prices are risking their own wealth when buying and selling shares. Because such traders internalize the costs of being irrational, over time rational traders, who prosper, will drive out irrational traders, who will not be able to sustain the losses associated with irrational trading indefinitely.

Thus, notwithstanding challenges to the ECMH, Delaware courts are correct in affording primacy to the ECMH in valuation cases. In particular, we note that, whatever its shortcomings, the ECMH is vastly superior to alternative, subjective valuation methodologies, such as DCF analysis. In particular, in corporate finance, “[m]arket prices are typically viewed superior to other valuation techniques because, unlike, e.g., a single person’s discounted cash flow model, the

63. The Court of Chancery has long been concerned with the intractable problem of dramatically divergent valuations and biased expert reports. See, e.g., *Cede & Co. v. Technicolor, Inc.*, Civ. A. No. 1990 WL 161084, at *7 (Del. Ch. Oct. 19, 1990) (“[T]he expert opinions on value cover an astonishing range. Two experts looking at the same historic data and each employing a discounted cash flow valuation technique arrive at best estimates as different as \$13.14 per share and \$62.75 per share.”).

64. STEPHEN A. ROSS, *NEOCCLASSICAL FINANCE* 67 (2005).

65. Maureen O’Hara, *Bubbles: Some Perspectives (and Loose Talk) from History*, 21 *REV. FIN. STUD.* 11, 15–16 (2008).

market price should distill the collective judgment of the many based on all the publicly available information about a given company and the value of its shares.”⁶⁶

IV. PRACTICAL IMPLICATIONS

A. DEAL PRICE VERSUS UNAFFECTED MARKET PRICE

It seems clear that actual prices generated in the market are an unambiguously superior methodology for determining fair value than is the DCF analysis. DCF calculations are highly subjective, and courts have expressed frustration with the wildly divergent views of competing experts who often arrive at wildly different valuations for companies when employing a DCF analysis.⁶⁷ As the Delaware Court of Chancery has trenchantly observed, “[m]en and women who purport to be applying sound, academically-validated valuation techniques come to this court and, through the neutral application of their expertise to the facts, come to widely disparate results, even when applying the same methodology.”⁶⁸

But deciding to focus on market prices does not end the inquiry because there is something of a disagreement in Delaware about *which* market price to apply. In particular, while the Delaware Supreme Court has focused in recent appraisal decisions on the adjusted *deal price*, the Court of Chancery has often relied on the unaffected *market price* of the target firm’s securities when valuing a target company whose shareholders are exercising their appraisal rights.

In two recent decisions, *DFC* and *Dell*, the deal price has emerged as the lodestar in determining the fair value of the target corporations. In *DFC*, the Chancery Court determined the fair value of DFC’s shares by affording equal weight to (a) a discounted cash flow analysis, (b) a comparable company analysis, and (c) the transaction price.⁶⁹

While the Delaware Supreme Court declined the opportunity to create a *presumption* that deal price is the best indicator of fair value in an appraisal transaction, the court nevertheless held that the particular deal price in *DFC* was the best indicator of value in light of the fact that it was generated in “an open process, informed by robust public information, and easy access to deeper, nonpublic information, in which many parties with an incentive to make a profit had a chance to bid.”⁷⁰

66. *DFC Glob. Corp. v. Muirfield Value Partners, L.P.*, 172 A.3d 346, 369–70 (Del. 2017) (citing BRADFORD CORNELL, *CORPORATE VALUATION: TOOLS FOR EFFECTIVE APPRAISAL AND DECISION MAKING* 35–38 (1993)).

67. *Dell, Inc. v. Magnetar Glob. Event Driven Master Fund Ltd.*, 177 A.3d 1, 35 (Del. 2017); *Dunmire v. Farmers & Merchants Bancorp of Western Pa., Inc.*, C.A. No. 10589-CB, 2016 WL 6651411, at *6 (Del. Ch. Nov. 10, 2016); *In re ISN Software Corp. Appraisal Litig.*, C.A. No. 8388-VCG, 2016 WL 4275388, at *1 (Del. Ch. Aug. 11, 2016); *LongPath Capital, LLC v. Ramtron Int’l Corp.*, C.A. No. 8094-VCP, 2015 WL 4540443, at *9 (Del. Ch. June 30, 2015); *In re Appraisal of Dole Food Co.*, 114 A.3d 541, 557 (Del. Ch. 2014).

68. *Finkelstein v. Liberty Dig., Inc.*, Civ. A. No. 19598, 2005 WL 1074364, at *13 (Del. Ch. Apr. 25, 2005).

69. The Court of Chancery determined that the fair value of DFC was \$9.50 (deal price) + \$8.07 (comparable companies analysis) + \$13.07 (DCF analysis) ÷ 3 = \$10.21 per share.

70. *DFC Glob. Corp. v. Muirfield Value Partners, L.P.*, 172 A.3d 346, 349 (Del. 2017).

What appeared to have irked the Delaware Supreme Court about the lower court opinion was the fact that the Chancery Court did not rely significantly enough on market prices notwithstanding the fact that the Court of Chancery found that a “sales process” it described as “robust and conflict-free” preceded the sale.⁷¹ The Delaware Supreme Court indicated that the Court of Chancery should, as it had done in previous cases, “exercis[e] its discretion to give the deal price predominant, and indeed exclusive, weight when it determines, based on the precise facts before it that led to the transaction, that the deal price is the most reliable evidence of fair value.”⁷²

Interestingly, in *DFC* the Court of Chancery rejected using market price because it thought that the market price was inefficient because it was in a (presumably temporary) “trough.” The Delaware Supreme Court in *DFC* quoted this portion of the Chancery Court’s opinion:

[At the time of its sale, DFC was navigating turbulent regulatory waters that imposed considerable uncertainty on the company’s] future profitability, and even its viability. Some of its competitors faced similar challenges. The potential outcome could have been dire, leaving DFC unable to operate its fundamental businesses, or could have been very positive, leaving DFC’s competitors crippled and allowing DFC to gain market dominance. Importantly, DFC was unable to chart its own course; its fate rested largely in the hands of the multiple regulatory bodies that governed it. Even by the time the transaction closed in June 2014, DFC’s regulatory circumstances were still fluid. . . . DFC’s performance also appeared to be in a trough, with future performance depending on the outcome of regulatory decision-making that was largely out of the company’s control.⁷³

Similarly, in *Dell*, the Delaware Supreme Court rejected the Chancery Court’s reliance on a DCF analysis to determine the fair value of Dell’s shares and held that the Chancery Court abused its discretion by not giving any weight to market data because “the market for Dell’s shares was actually efficient and, therefore, likely a proxy for fair value.”⁷⁴

The Chancery Court’s concerns about the share price of DFC being in a trough were dismissed because the company’s shares traded in an efficient market. The Delaware Supreme Court recognized that, where this is the case, the “economic reality that the sale value resulting from a robust market check will often be the most reliable evidence of fair value, and that second-guessing the value arrived upon by the collective views of many sophisticated parties with a real stake in the matter is hazardous.”⁷⁵ We applaud this reliance on market prices, but, as we point out below, some further clarification is needed because the term “market price” can be used to describe two different prices, the unaffected market price and the deal price. One must determine which of these market prices to utilize as the primary reference point in an appraisal proceeding.

71. *Id.* at 372.

72. *Id.* at 366.

73. *Id.* at 360.

74. *Dell, Inc. v. Magnetar Glob. Event Driven Master Fund Ltd.*, 177 A.3d 1, 6 (Del. 2017).

75. *DFC*, 172 A.3d at 366.

The Chancery Court in *Dell* relied even more heavily on nonmarket measures than it had in *DFC*. In *DFC*, the Chancery Court at least afforded a one-third weight to the deal price. In *Dell*, the Chancery Court ignored the deal price and relied entirely on its own DCF analysis to determine value.⁷⁶

The Delaware Supreme Court rejected the Chancery Court's reliance on a DCF analysis as an abuse of discretion that lacked a reasonable basis in the record and in accepted financial principles.⁷⁷ Instead of using DCF, because "the market for Dell's shares was actually efficient and, therefore, likely a proxy for fair value," the court held that the deal price should have been used.⁷⁸

Further supporting the Delaware Supreme Court's reliance on the deal price was the fact that the sales process was uncorrupted. Dell canvassed every logical buyer, there was an open and flexible go-shop process,⁷⁹ and "the world was put on notice of the possibility of a transaction" so that "any interested parties would have approached the Company . . . if serious about pursuing a deal."⁸⁰ Given these facts, the court in *Dell* concluded that "[the] deal price has heavy, if not overriding, probative value."⁸¹

Responding to the Delaware Supreme Court decisions in *DFC* and *Dell*, the Delaware Court of Chancery understandably relied heavily on market prices in a subsequent appraisal case, *Verition Partners Master Fund Ltd. v. Aruba Networks, Inc.*⁸² However, the Chancery Court relied on a *different* market price in *Aruba* than the Delaware Supreme Court relied on in either *DFC* or *Dell*. Specifically, while in *DFC* and *Dell* the supreme court relied on the *deal price* of the target company, the Chancery Court in *Aruba* used as its benchmark the thirty-day average of the *market price* of the target company in the period before the transaction was publicly announced in concluding that \$17.13 was the fair value for the target, Aruba Networks, Inc.⁸³

In a decision that has been described as "extraordinary,"⁸⁴ the Delaware Supreme Court in a unanimous *per curiam* opinion determined that the Court of Chancery abused its discretion by relying on the thirty-day unaffected pre-bid market price rather than relying on deal price minus synergies. Using its preferred approach of deal price minus synergies, the supreme court found that the appropriate valuation for Aruba Networks should have been \$19.10 rather than \$17.13.

76. *Dell*, 177 A.3d at 24.

77. *Id.* at 5.

78. *Id.* at 6.

79. A "go-shop" process is the process of actively marketing a target company to prospective bidders that is conducted pursuant to a provision in a purchase agreement that permits a target company actively to solicit higher bids after a merger agreement has been signed with a prospective acquirer for a determined period of time, usually between twenty and fifty days.

80. *Dell*, 177 A.3d at 28.

81. *Id.* at 30.

82. C.A. No. 11448-VCL, 2018 WL 922139 (Del. Ch. Feb. 15, 2018).

83. The court used a thirty-day pre-announcement average in calculating the unaffected market price of *DFC* shares.

84. Jason M. Halper, Joshua Apfelroth & Jared Stanisci, *The Delaware Supreme Court's Decision in Verition Partners Master Fund Ltd. v. Aruba Networks, Inc.—Calculating Fair Value in Statutory Appraisal Cases*, HARV. L. SCH. F. ON CORP. GOVERNANCE & FIN. REG. (Apr. 20, 2019), <https://corp.gov.harvard.edu/2019/04/20/the-delaware-supreme-courts-decision-in-verition-partners-master-fund-ltd-v-aruba-networks-inc-calculating-fair-value-in-statutory-appraisal-cases/#7b>.

While the Delaware Supreme Court did not utilize actual pre-bid market prices in determining the fair value of Aruba stock, the opinion left open the possibility that our preferred approach, the utilization of market prices, might be used in the future. Praising the Chancery Court, the Delaware Supreme Court in *Aruba* recognized and affirmed the importance of market prices, observing that “to the extent the Court of Chancery read *DFC* and *Dell* as reaffirming the traditional Delaware view, which is accepted in corporate finance, that the price a stock trades at in an efficient market is an important indicator of its economic value that should be given weight.”⁸⁵

Rather than rejecting unaffected (pre-bid) market prices entirely, consistent with the analysis in this article, the court instead rejected the use of unaffected market price where no adjustments for the impact of material nonpublic information on that price were made. Lacking any adjustments to the unaffected market price to account for material nonpublic information, the court in *Aruba* reasoned that the deal price was a better measure. Specifically, the court held that the deal price minus synergies better reflected fair value in light of the impact of material nonpublic information, especially in light of the fact that the buyer had access to such information because it performed extensive due diligence before making its bid.

The supreme court focused on the lack of a developed record and concerns about “due process and fairness problems” with using unaffected market price in light of the fact that:

The idea of awarding the stock price came into the proceedings from the Vice Chancellor himself after requesting supplemental post-trial briefing on the matter. Prior to that point, neither party argued for that figure as the fair value under § 262. Because the Vice Chancellor introduced this issue late in the proceedings, the extent to which the market price approximated fair value was never subjected to the crucible of pretrial discovery, expert depositions, cross-expert rebuttal, expert testimony at trial, and cross examination at trial.⁸⁶

We believe that, if the issue is properly briefed in the future, litigants can establish that an important advantage of using the unaffected market price, rather than the deal price, is that the deal price will generally contain elements of value impounded in the price that the dissenting shareholders in an appraisal proceeding are not entitled to receive, and indeed, this is precisely what the Chancery Court did in its recent decision in *In re Appraisal of Jarden Corp.*⁸⁷ Vice Chancellor Slight's based his appraisal of *Jarden* on the unaffected market price rather than the deal price less synergies approach preferred in *Aruba* due to flaws in the deal process and uncertain estimates of synergies. Indeed, under Delaware law, the goal of courts engaged in appraisal proceedings is “to value the *corporation* itself as distinguished from a specific fraction of its *shares* as they may exist in

85. Verition Partners Master Fund Ltd. v. Aruba Networks, Inc., No. 368, 2019 WL 1614026, at *7 (Apr. 16, 2019).

86. *Id.*

87. C.A. No. 12456-CVS (Del. Ch. July 19, 2019), <https://courts.delaware.gov/Opinions/Download.aspx?id=292660>

the hands of a particular shareholder.”⁸⁸ As such, courts should exclude from their valuations “any synergies or other value expected from the merger giving rise to the appraisal proceeding itself.”⁸⁹ Indeed, the statutory language of section 262(h) is unambiguous: fair value for purposes of appraisal excludes “any element of value arising from the accomplishment or expectation of the merger.”⁹⁰ This implies that, to the extent that a business combination creates value by enabling the realization of synergies or reducing agency costs, any such additional incremental value should be realized by the party that created such value, namely, the bidder.⁹¹

As such, courts in appraisal proceedings should exclude from their analysis “any value that the selling company’s shareholders would receive because a buyer intends to operate the subject company, not as a stand-alone going concern, but as a part of a larger enterprise, from which synergistic gains can be extracted.”⁹² Synergies must be excluded from valuation calculations because bidders should

88. *Aruba*, 2018 WL 922139, at *23 (citing *Dell*). We recognize that the Delaware Supreme Court has insisted, as far back as *Cavalier Oil*, on valuing the corporation as opposed to a minority block of shares. See, e.g., *Cavalier Oil Corp. v. Harnett*, 564 A.2d 1137, 1145 (Del. 1989) (“[T]o fail to accord to a minority shareholder the full proportionate value of his shares imposes a penalty for lack of control, and unfairly enriches the majority shareholders who may reap a windfall from the appraisal process by cashing out a dissenting shareholder, a clearly undesirable result.”). We agree that, as a matter of Delaware law, the appraisal award should not include a discount for minority status per se. However, we find it difficult to understand why the trading price of a block of shares represents anything other than the pro rata share of the value of the company (fewer synergies and reduction in agency costs) represented by the block. We recognize that the market price of a firm may be lower than its net going concern value if the separation of ownership and control allows for the consumption of private benefits of control. We agree, however, with the view in *Aruba* that agency-cost reduction should not be included in the appraisal action. In our view, “fair value” means the value if there were a single shareholder whose share ownership was characterized by the separation of (share) ownership and (managerial) control. In this respect, we agree wholeheartedly with the *Aruba* court and numerous commentators who have reached the same conclusion as to agency-cost reduction. See, e.g., *Aruba*, 2018 WL 922139, at *3 (citing William J. Carney & Mark Heimendinger, *Appraising the Nonexistent: The Delaware Court’s Struggle with Control Premiums*, 152 U. PA. L. REV. 845, 847–48, 857–58, 861–66 (2003); Lawrence A. Hamermesh & Michael L. Wachter, *Rationalizing Appraisal Standards in Compulsory Buyouts*, 50 B.C. L. REV. 1021, 1023–24, 1034–35, 1044, 1046–54, 1067 (2009); Lawrence A. Hamermesh & Michael L. Wachter, *The Short and Puzzling Life of the “Implicit Minority Discount” in Delaware Appraisal Law*, 156 U. PA. L. REV. 1, 30–36, 49, 52, 60 (2007); Lawrence A. Hamermesh & Michael L. Wachter, *The Fair Value of Cornfields in Delaware Appraisal Law*, 31 J. CORP. L. 119, 128, 132–33, 139–42 (2005)). Indeed, *Cavalier Oil* based its holding on *Tri-Continental Corp. v. Battye*, 74 A.2d 71 (1950), which concerned a closed-end mutual fund that trades at a discount to its net asset value due to the illiquidity of its shares. That sort of illiquidity discount is not present for most publicly traded operating companies. In short, we do not believe there is a magical additional increment in value that explains deal premia.

89. *Global GT LP v. Golden Telecom, Inc.*, 993 A.2d 497, 507 (Del. Ch. 2010) (quoting *Union Ill. 1995 Inv. Ltd. P’ship v. Union Fin. Grp., Ltd.*, 847 A.2d 340, 343 (Del. Ch. Jan. 5, 2004)), *aff’d*, 11 A.3d 214 (Del. 2010).

90. DEL. CODE ANN. tit. 8, § 262(h) (2018).

91. Lawrence A. Hamermesh & Michael L. Wachter, *Rationalizing Appraisal Standards in Compulsory Buyouts*, 50 B.C. L. REV. 1021, 1052 (2009); see also *Verition Partners Master Fund Ltd. v. Aruba Networks, Inc.* C.A. No. 11448-VCL, 2018 WL 922139, at *54 (Del. Ch. Feb. 15, 2018) (“When an acquirer purchases a widely traded firm, the premium that an acquirer is willing to pay for the entire firm anticipates incremental value both from synergies and from the reduced agency costs that result from unitary (or controlling) ownership. Like synergies, the value created by reduced agency costs results from the transaction and is not part of the going concern value of the firm.”).

92. *DFC Glob. Corp. v. Muirfield Value Partners, L.P.*, 172 A.3d 346, 368 (Del. 2017).

not be required to “end up losing its upside for [the] purchase by having to pay out the expected gains from its own business plans for the company it bought to the petitioners.”⁹³ Just as the synergy gains associated with a merger are excluded from the calculation of a company’s value in an appraisal proceeding, so too are any control premiums paid as well as any savings associated with elimination of “agency costs” associated with a going private transaction, and any savings associated with the elimination of “public company” expenses should be excluded.⁹⁴

In its recent decision in *Aruba*, the Delaware Supreme Court apparently accepted the principle that agency costs could be deducted from the deal price in calculating fair value. This basis for excluding agency costs is that “replacing a dispersed group of owners with a concentrated group of owners can be expected to add value because the new owners are more capable of making sure management isn’t shirking or diverting the company’s profits, and that added value must be excluded under § 262 as ‘arising from the accomplishment or expectation of the merger or consolidation.’”⁹⁵ However, because the buyer in the HP–*Aruba* merger was strategic, not financial, and “neither party presented any evidence to suggest that any part of the deal price paid by HP, a strategic buyer, involved the potential for agency cost reductions that were not already captured by its synergies estimate” in *Aruba* itself, there was no need to adjust the deal price to account for the elimination of agency costs.⁹⁶

The necessity of excluding the reduction in agency costs realized in a merger transaction from the calculation of fair value in an appraisal proceeding strengthens our conclusion that unaffected market price is a superior methodology for determining fair value under Delaware law than is deal price. As Vice Chancellor Laster trenchantly observed in a letter to counsel in the *Dell* appraisal case, “once one has embraced the implications of the efficient capital market hypothesis in the manner of *Dell* and *DFC*, then it follows that the unaffected market price provides the best evidence of the going concern value of the company in its pre-deal ownership configuration.”⁹⁷

Thus, deal price has a serious drawback in that it contains elements of value to which the plaintiffs are not entitled and must be calculated and adjusted. First, of course, in a well-negotiated deal, the deal price will contain a portion of the synergistic gains that the bidder hopes to generate from the deal.⁹⁸ Moreover, as Chancellor Laster observes, the deal price, “even in a nonsynergistic transaction,

93. *Id.*

94. Lawrence A. Hamermesh & Michael L. Wachter, *Finding the Right Balance in Appraisal Litigation: Deal Price, Deal Process, and Synergies*, 73 *BUS. LAW.* 961, 998 (2018).

95. *Verition Partners Master Fund Ltd. v. Aruba Networks, Inc.*, No. 368, 2018, 2019 WL 1614026, at *4 (Del. Ch. Apr. 16, 2019).

96. *Id.*

97. Letter from J. Travis Laster, Vice Chancellor, Del. Court of Chancery, to Counsel in *In re Appraisal of Dell Inc.* (Jan. 3, 2018) (on file with *The Business Lawyer*).

98. We acknowledge that the *DFC* court did not consider the possibility of “common value” or “nonunique” synergies (i.e., an increase in the value of the target that would arise in any acquisition). We think this idea is highly speculative because synergies tend to be idiosyncratic and value gains are specific to individual acquirers. Thus, while we might concede theoretically that common-value synergies might be included in the appraisal price, we would encourage the courts to require a high burden of proof to establish these (e.g., multiple bids all of which reflect a common *element*

establishes a form of third-party sale value that includes value created by a reduction in agency costs from the consolidation of control under unitary (or controlling) ownership⁹⁹ because “this value belongs to the buyer and should not be shared with the stockholders seeking appraisal, both under the statute and in light of generally accepted principles of finance.”¹⁰⁰

Thus, the unaffected pre-bid market price is the superior benchmark for determining value. However, we recognize that the deal price can be an appropriate reference point where the market price varies from the fundamental value of the company due to material nonpublic information not yet impounded in the share price. Even when markets are informationally efficient in the sense of the semi-strong form of the ECMH, in those rare instances where there is material nonpublic information that is not impounded in a firm’s share price, the unaffected market price of the target firm’s shares will not reflect the fundamental value of the company.

Where this is the case, an up or down adjustment in the price of the firm’s shares should be made—suppose, for example, when the firm has just learned that a key top-performing executive will be leaving the company for health reasons or, alternatively and more optimistically, that the company’s earnings have exceeded the consensus estimates of the professional stock market analysts who follow the company’s stock. In the former hypothetical case, where a key executive is unexpectedly leaving the company, it will be necessary to apply a downward adjustment to the unaffected market price of the company’s stock to account for the decline that would have occurred if the executive’s departure had been announced prior to the merger announcement.

Similarly, where there is reason to believe that certain positive material nonpublic information is not impounded in a firm’s share price, an upward adjustment in the market price of a company’s securities will be indicated. In most transactions, and particularly in arm’s-length acquisitions, the buyer will perform a due diligence investigation on the target company.¹⁰¹ Buyers have a fiduciary duty to their own investors to perform an adequate due diligence investigation on any company they are considering acquiring. It is ordinary and customary for acquirers to sign nondisclosure agreements (NDAs) prior to commencing a due diligence investigation of a potential target. During the course of the subsequent due diligence investigation, the target typically will share material nonpublic information with the acquirer.

of value accretion, not just the minimum of multiple bid premia, which could simply reflect idiosyncratic synergies).

99. *Id.* (relying on Lawrence A. Hamermesh & Michael L. Wachter, *The Fair Value of Cornfields in Delaware Appraisal Law*, 31 J. CORP. L. 119 (2005); Lawrence A. Hamermesh & Michael L. Wachter, *The Short and Puzzling Life of the “Implicit Minority Discount” in Delaware Appraisal Law*, 156 U. PA. L. REV. 1 (2007); and Lawrence A. Hamermesh & Michael L. Wachter, *Rationalizing Appraisal Standards in Compulsory Buyouts*, 50 B.C. L. REV. 1021 (2009), for the proposition that deal price contains elements of value to which dissenters are not entitled, thereby indicating that unaffected market price is a superior indicator of value over deal price in an appraisal proceeding).

100. *Id.*

101. See PETER HOWSON, *DUE DILIGENCE: THE CRITICAL STAGE IN MERGERS AND ACQUISITIONS* (2d ed. 2017).

While the material nonpublic information that is shared with an acquirer will be impounded in the deal price paid by an acquirer, by virtue of the fact that such information is nonpublic, it will not be impounded in the share price of the target firm's stock because markets are not strong-form efficient. It is appropriate when determining the fair value of a company to make upward or downward adjustments to the value of the target company's price to reflect any material nonpublic information that is not impounded in the market price prior to the announcement of a transaction.¹⁰²

The antifraud rules make it unlikely that material nonpublic information will not be revealed during due diligence investigations. In particular, failing to disclose material nonpublic information to a bidder in the context of a sale of securities is securities fraud.¹⁰³ More importantly, nonconflicted sellers have strong incentives as well as fiduciary obligations to disclose material nonpublic information that is positive during a buyer's due diligence investigation to be in a better position to bargain for a higher price.¹⁰⁴

B. WHAT SHOULD HAPPEN WHEN THE DEAL PROCESS IS FLAWED?

Here, we confront the argument that the use of share prices in valuation proceedings should be confined to transactions that are not tainted by conflicts of interest, involve arm's-length bargaining between the acquirer and the target, and in which the structure of the deal contains structural safeguards, such as a lengthy go-shop period that deprives the original bidder of matching rights and lacks a significant breakup fee.

Guhan Subramanian has argued that, in a deal process that “involves a meaningful market canvass . . . and an arm's length negotiation, there should be a strong presumption that the deal price represents fair value in an appraisal proceeding.”¹⁰⁵ But he argues that, “if the deal process does not include these features, deal price should receive no weight.”¹⁰⁶

102. We recognize that proving the existence of such material nonpublic information may pose an evidentiary challenge. We submit, however, that federal courts are well suited to address these kinds of questions of proof, which are far less arbitrary than DCF analyses that rely solely on expert analysis not amenable to traditional standards of proof.

103. See 17 C.F.R. § 240.10b-5 (2018).

104. Indeed, sometimes a board will choose an all-cash deal over a transaction where the consideration is higher but takes the form of shares of another public company, on the ground that, in the board's view, the value of the combined company would not have been greater than the cash price. This is similar to the board's rejection of Express Scripts' offer in the CVS–Caremark transaction, despite these being stock deals. In that kind of situation, the alternative offer price may have been higher than the unaffected market price of the company, perhaps, because of the emergence of material nonpublic information during the negotiation process. In appraisal litigation, courts might incorporate the incremental additional value over the unaffected price when determining the “fair value” of the company.

105. Guhan Subramanian, *Using the Deal Price for Determining “Fair Value” in Appraisal Proceedings*, in *THE CORPORATE CONTRACT IN CHANGING TIMES: IS THE LAW KEEPING UP?* 1, 11 (Steven Davidoff Solomon & Randall Stuart Thomas eds., forthcoming 2019).

106. *Id.* at 11.

Similarly, in a recent appraisal case, the Delaware Court of Chancery declined to use the merger price or any other market price in determining the fair value of the target corporation on the grounds that “significant flaws in the process leading to the Merger . . . undermine the reliability of Merger Price as an indicator of . . . [the] fair value”¹⁰⁷ of the target company.

That case, *Blueblade Capital Opportunities LLC v. Norcraft Cos.* (“*Norcraft*”), is worth examining at some length because it has profound implications for the analysis here and important implications about the nature of the appraisal process.

Norcraft arose out of the arm’s-length acquisition of Norcraft (a public company) by another public company, Fortune Brands Home & Security, Inc., for \$25.50 per share. Fortune was the only bidder that considered purchasing Norcraft during the so-called pre-signing period prior to the pre-signing of the purchase agreement. The deal featured a thirty-five-day post-signing go-shop period, during which Norcraft contacted fifty-four potential bidders, with seven signing confidentiality agreements with the target. Only one of these potential bidders met with management, and no potential bidder ultimately submitted a bid as a result of the go-shop.

The sale process was “flawed in several respects”¹⁰⁸ both before and after the signing, according to the Court of Chancery. According to the court, several “significant flaws undermine the reliability of the Merger Price as an indicator of Norcraft’s fair value.”¹⁰⁹ First, there was only a single prospective bidder in the pre-signing process and thus “no pre-signing market check.”¹¹⁰

Second, “Norcraft and its advisors fixated on Fortune and never broadened their view to other potential merger partners.”¹¹¹ Compounding this flaw in the sales process for Norcraft, “[a]s the parties worked to negotiate the Merger agreement, Norcraft’s lead negotiator was at least as focused on securing benefits for himself as he was on securing the best price available for Norcraft.”¹¹²

Third, turning to the post-signing period, “while the Merger agreement provided for a thirty-five-day post-signing go-shop, that process was rendered ineffective as a price discovery tool by a clutch of deal-protection measures.”¹¹³

The *Norcraft* court acknowledged that there is nothing inherently objectionable about an acquisition transaction in which only one bidder is involved in the pre-signing process. However, having only one bidder caused Norcraft to lose “the opportunity to test the market before committing to Fortune [and] also [to miss] the opportunity to leverage the interest of another suitor to extract a higher price from Fortune.”¹¹⁴ As the court observed, limiting a sales process to a single bidder “can, in certain instances, lead to significant value.”¹¹⁵

107. *Blueblade Capital Opportunities LLC v. Norcraft Cos.*, C.A. No. 11184-VCS, 2018 WL 3602940, at *2 (Del. Ch. July 27, 2018).

108. *Id.*

109. *Id.*

110. *Id.*

111. *Id.*

112. *Id.*

113. *Id.*

114. *Id.* at *24.

115. *Id.* at *23.

Thus, the court held, somewhat opaquely, that, where having a single bidder in combination with other factors indicates a flawed deal process, the deal price should be ignored. Clearly, however, having a single bidder does not indicate a flawed process. In the sale of Norcraft, however, the court found “no evidence” that the single bidder approach was employed “for the sake of achieving a strategic advantage or maximizing value.”¹¹⁶ If there is a single bidder during the pre-signing period, it is advisable to afford other parties the opportunity to make competing bids, even if such bids are not actively solicited.¹¹⁷

In the wake of *Dell*, *DFC*, and *Aruba*, *Norcraft* reinforces the now settled view that market prices (whether unadjusted pre-deal market price or deal price) should be the determinative data point in an appraisal proceeding when the deal process is solid; there is, however, some confusion about the role of market prices when there are perceived flaws in the process.

In *Norcraft* the court utilized a DCF analysis to value the target company because it viewed the sale process as flawed.¹¹⁸ As the court articulated it, “[h]aving concluded that flaws in the sales process leading to the Merger undermine the reliability of the Merger Price as an indicator of fair value, and that the evidence *sub judice* does not allow for principled reliance upon the efficient capital markets hypothesis, I have turned to a ‘traditional valuation methodology,’ a discounted cash flow (‘DCF’) analysis, to calculate the fair value of Norcraft as of the Merger date.”¹¹⁹

However, the court in *Norcraft* did not ignore deal price entirely. The court drew comfort from the fact that the appraisal result was only modestly (\$0.66) above the deal price. The court observed, correctly in our view, that the fact that the deal process was flawed “does not mean, however, that the Merger Price is *irrelevant* for purposes of the Court’s fair value determination. To the contrary, it is appropriate to consider the Merger Price as a ‘reality check’ on the Court’s DCF valuation of Norcraft.”¹²⁰ Vice Chancellor Slight was, as he put it, “cognizant of the Delaware Supreme Court’s embrace of ‘deal price’ as a strong indicator of fair value in *Dell* and *DFC*.”¹²¹ He noted that “[t]hose decisions teach that deal price often will be a relevant factor in the trial court’s fair value calculus—particularly where the respondent company was publicly traded and sold following a meaningful market check.”¹²²

The question to which we now turn is whether courts, such as the court in *Norcraft*, are correct in relegating market price to a mere “reality check” on DCF analysis when there are significant flaws in the sale process that generated

116. *Id.* at *24.

117. *C&J Energy Servs., Inc. v. City of Miami Gen. Emps.’ & Sanitation Emps.’ Ret. Trust*, 107 A.3d 1049 (Del. 2014); *see also Revlon, Inc. v. MacAndrews & Forbes Holdings, Inc.*, 506 A.2d 173 (Del. 1986).

118. *Norcraft*, 2018 WL 3602940, at *2.

119. *Id.*

120. *Id.* at *39 (emphasis added).

121. *Id.* at *1 (citing *Dell, Inc. v. Magnetar Glob. Event Driven Master Fund Ltd.*, 177 A.3d 1 (Del. 2017); *DFC Glob. Corp. v. Muirfield Value Partners, L.P.*, 172 A.3d 346 (Del. 2017)).

122. *Id.*

the deal process. For three reasons, we are of the view that market prices should play a central role in determining the fair value of a company even where the deal price that leads to a transaction is imperfect or even significantly flawed.

i. The Unaffected Market Price of the Target Is Untainted by Even the Most Flawed Process

As we have observed throughout this article, in every deal involving a public company target that is subject to appraisal rights, there will be two “market” prices: the pre-bid unaffected market price and the deal price that is agreed upon between the buyer and the seller. By definition, the unaffected market price is not “affected” by the deal price.

Thus, while the deal price of a company’s securities might be tainted by flaws in the process leading to a merger, any such flaws in the deal price do not affect the pre-bid market price of the target firm’s shares. As such, market price, specifically the unaffected deal price, still should be utilized as a basis for valuation even in cases in which the deal process is flawed.

We believe that the Delaware Supreme Court was entirely correct when it admonished that, when market evidence is available, “the Court of Chancery should be chary about imposing the hazards that always come when a law-trained judge is forced to make a point estimate of fair value based on widely divergent partisan expert testimony.”¹²³ Here, we merely observe that this admonition is valid with respect to the unaffected market price of a target firm’s shares regardless of the quality of any additional market price generated during a subsequent sales process, however flawed that process may be deemed to be by experts or courts.

Take, for example, the extreme case in which a company is sold not just in a sales process that is flawed but in a sales process that is corrupt. Imagine, hypothetically, that the fundamental value of a target company is \$100 per share but an inattentive, somnambulant board and a corrupt CEO agree to sell the company for \$90 per share in exchange for side payments in the form of consulting opportunities and future employment. Clearly, in such a case, the deal price is not indicative of fundamental value. The unadjusted market price, however, will reflect the true, higher value of the company and could reliably be used as an indicator of value in an appraisal proceeding.

ii. Dissenting Shareholders Are Not Entitled to the Deal Price Anyway

Typically, however, even when the sales process that leads to an acquisition is flawed, the price that shareholders receive is significantly above the previous market price for the firm’s shares. While premiums vary, average premiums in

123. *Dell*, 177 A.3d at 26.

deals are in the 30 percent range,¹²⁴ and negative premiums are entirely unheard of. The main reason unaffected market price is superior to even the most effectively negotiated deal price is that deal prices are too high.

In fact, the more effective the negotiations, the more value a seller can extract from a buyer and the more inappropriate the deal price will be relative to the market price. As Michael Wachter and Larry Hamermesh have pointed out in a trilogy of important articles,¹²⁵ unlike market prices, deal prices include values associated with the “gains from trade” in an arm’s-length transaction. There are several sources of gains from trade in merger transactions. Among the primary sources of gain in M&A deals are the potential synergies when a target combines with an acquiring strategic bidder and the increases in company value obtained from reducing agency costs that can be realized both in financial deals as well as in some strategic ones.

As Hamermesh and Wachter explain, the gains derived from generating synergies and reducing agency costs rightfully belong to the buyer under Delaware law. Consequently, these gains should not be shared with the stockholders seeking appraisal. This is true “both under the statute and in light of generally accepted principles of finance.”¹²⁶ Consistent with this analysis, Delaware courts in both *Norcraft* and *In re Appraisal of Solera*¹²⁷ indicate that, when Delaware courts rely on the deal price, they will subtract the values of the synergies associated with the transaction as a matter of course. While the position of the courts regarding deducting the gains associated with reducing agency costs is not so clear, logic dictates that such agency costs should be deducted from the deal price because these are gains that are associated with the transaction that are attributable to actions of the acquirer.

The share price of the target that is generated by the market, unvarnished by the price effects associated with the deal itself, is the best indicator of value for the target, unless fraud, manipulation, or material information not impounded in the unadjusted pre-deal market price is present. Where these factors taint the market price, appropriate adjustments should be made. Otherwise, the market price clearly is the gold standard for determining the fundamental, fair value of a publicly traded market.

124. Mathieu Gomes & Sylvain Marsat, *Does CSR Impact Premiums in M&A Transactions?*, 26 FIN. RES. LETTERS 71, 74 (2018) (reporting that the “average acquisition premium is 32.1% with a standard deviation of 26.8%, which is consistent with previous research”).

125. Lawrence A. Hamermesh & Michael L. Wachter, *Rationalizing Appraisal Standards in Compulsory Buyouts*, 50 B.C. L. REV. 1021 (2009); Lawrence A. Hamermesh & Michael L. Wachter, *The Short and Puzzling Life of the “Implicit Minority Discount” in Delaware Appraisal Law*, 156 U. PA. L. REV. 1 (2007); Lawrence A. Hamermesh & Michael L. Wachter, *The Fair Value of Cornfields in Delaware Appraisal Law*, 31 J. CORP. L. 119 (2005); see also Verition Partners Master Fund Ltd. v. Aruba Networks, Inc., No. CV 11448-VCL, 2018 WL 922139, at *126–27 (Del. Ch. Feb. 15, 2018).

126. See Letter from J. Travis Laster, *supra* note 96, at 2.

127. *In re Solera Holdings, Inc. Stockholder Litig.*, No. CV 11524-CB, 2017 WL 57839, at *1 (Del. Ch. Jan. 5, 2017).

iii. Discounted Cash Flow Analysis Is Flawed: The Nirvana Fallacy

The court in *Norcraft* jumps, without analysis, from its observation that the deal process for the sale of the target company was flawed to the conclusion that a DCF analysis should instead be used to compute the fair value of the company. The problem with this methodology is that it ignores the fact that, whatever flaws there might be in a particular deal process, there also are well-known flaws in any DCF methodology. It defies logic simply to leap from one flawed valuation methodology (reliance on deal price) to another flawed valuation methodology (DCF analysis) without any consideration of *which* valuation methodology is less flawed.

More precisely, the approach taken by the court in *Norcraft* succumbs to a methodological flaw known to economists as the “Nirvana fallacy.” The Nirvana fallacy was formally identified in 1969 by the economist Harold Demsetz, who observed that policymakers should not reject a particular policy option merely on the grounds that the policy option is flawed or that it compares unfavorably to some unarticulated, idealized real-world alternative.¹²⁸

Relying on a DCF methodology when a deal process is flawed ignores the following realities: (a) deal processes are never perfect, and (b) the real-world alternative process to the use of deal price for determining fair value in this case is the use of a valuation methodology, such as a DCF analysis.

It is well known that valuation methodologies are imperfect. In light of the fact that DCF (or other available techniques) is not a perfect valuation methodology, one cannot logically claim that the deal price in this case should be ignored because it was less than perfect, unless one also is able to claim that the DCF process is not flawed. Put simply, in determining fair value, a court can look only at the evidence that is actually available. All of the available information, including DCF analysis, has drawbacks. The mere fact that one valuation methodology may have a drawback does not mean that it should be ignored because that would leave the court with no valuation methodologies at all.

The view that the deal price should be afforded zero weight does not logically follow from the conclusion that a negotiation process was flawed. In particular, it is not true that, when deal price is considered in an appraisal proceeding, it must be afforded either zero weight or 100 percent weight. Merely identifying what one believes to be “flaws” in a deal process might indicate that the deal price should be afforded less than 100 percent weight, but it does not indicate that deal price should be afforded zero weight.

With regard to the reliability of DCF analysis, Bradford Cornell, a foremost authority on market efficiency, observes in his seminal treatise on corporate valuation that DCF models must be treated with caution and skepticism because such models are “easily abused.”¹²⁹ Further, because “value can be created out

128. Harold Demsetz, *Information and Efficiency: Another Viewpoint*, 12 J.L. & ECON. 1, 12 (1969); see also ISRAEL M. KIRZNER, *COMPETITION AND ENTREPRENEURSHIP* 231 (1973).

129. BRADFORD CORNELL, *CORPORATE VALUATION: TOOLS FOR EFFECTIVE APPRAISAL AND DECISION MAKING* 264 (1993).

of thin air by optimistic forecasting . . . the weight applied to a [DCF model] forecast should be directly proportional to the confidence that can be placed in the cash flow forecasts.”¹³⁰

Similarly, as the court observed in *DFC*, “[m]arket prices are typically viewed superior to other valuation techniques because, unlike, e.g., a single person’s discounted cash flow model, the market price should distill the collective judgment of the many based on all the publicly available information about a given company and the value of its shares.”¹³¹ For example, in *Aruba* the DCF analysis prepared by the petitioners’ expert generated a value of \$32.57, whereas the DCF analysis prepared by the respondent’s expert generated a value of \$19.75.¹³² The court in that case correctly refused to rely at all on DCF analysis. Generally speaking, as the following subpart makes clear, we believe that market prices are the best indicator of fundamental values for companies’ shares, even when markets are not efficient.

C. WHAT HAPPENS WHEN THE MARKET IS NOT EFFICIENT

While we commend the recent trend in Delaware to rely on market prices, and particularly on unadjusted pre-bid market prices, when determining value, we question the validity of limiting such reliance to target companies whose share prices trade in efficient markets. To satisfy the semi-strong form of the ECMH, one has to show that share prices react virtually instantaneously to new information. This seems like an unreasonably high standard. After all, what is relevant in an appraisal proceeding is not how quickly the target company’s share price reacts to new information. Rather, the relevant inquiry is whether the target company’s share prices have reacted to all relevant public and nonpublic information about its future prospects prior to the announcement of a transaction.

As one of us has noted previously, “[a] variety of methodologies have been employed to test the semi-strong form of the ECMH. These empirical tests generally look at the speed of adjustment of share prices to particular events or to new information.”¹³³ And another of us has found that informed speculators “trade more aggressively when the value-price divergence is larger, when [a new disclosure] entails high information content (measured ex-ante or ex-post), and when the market is deeper (measured ex-ante or in real time).”¹³⁴

We take issue with the principle espoused in Delaware appraisal cases that the stock price of the target company should be ignored in appraisal proceedings where the target company’s shares do not trade in a market that is a semi-strong efficient market. Ignoring information gleaned from share prices for shares that trade in inefficient markets in favor of exclusive reliance on DCF analysis suc-

130. *Id.*

131. *DFC Glob. Corp. v. Muirfield Value Partners LP*, 172 A.3d 346, 369–70 (Del. 2017).

132. *Verition Partners Master Fund Ltd. v. Aruba Networks, Inc.*, C.A. No. 11448-VCL, 2018 WL 922139, at *1 (Del. Ch. Feb. 15, 2018).

133. Jonathan R. Macey & Geoffrey P. Miller, *Good Finance, Bad Economics: An Analysis of the Fraud-on-the-Market Theory*, 42 *STAN. L. REV.* 1059, 1082 (1990).

134. Bolandnazar et al., *supra* note 16, at 4–5.

cumbs to the Nirvana fallacy. Even if trading prices are not fully efficient in the semi-strong sense, they may yield information that is of use to a court because they contain valuable, unbiased information about value. This is particularly true in light of the flaws in the alternative valuation methods. As Bradford Cornell has observed, “[a] market that is not perfectly efficient may still value securities more accurately than appraisers who are forced to work with limited information and whose judgments by nature reflect their own views and biases.”¹³⁵

We fully acknowledge, of course, that the market for some securities is less efficient than the market for other securities. There is significant empirical support for this proposition.¹³⁶ For example, in a fascinating recent study examining the effects of “fake news” on securities prices, using a unique dataset of fake paid-for articles obtained from an SEC investigation, Shimon Kogan, Tobias J. Moskowitz, and Marina Niessner found evidence of increases in abnormal trading volume and temporary price impact following fake news for small firms but no impact for large firms.¹³⁷ Similarly, one of us has shown that pseudonymous short sellers are able to manipulate stock prices by issuing misleading attack articles and trading heavily in options markets to drive the stock price down and back up.¹³⁸

The fact that some stocks trade in a manner consistent with the semi-strong form of the efficient markets hypothesis, whereas others do not, is consistent with financial theory. Working in a highly competitive environment, traders invest their resources, particularly their human capital, to ferret out information that is not yet impounded in share prices and then buy or sell financial assets until prices adjust to reflect such information.¹³⁹ As Gilson and Kraakman have observed:

In today’s securities markets, the dominant minority of informed traders is the community of market professionals, such as arbitrageurs, researchers, brokers and portfolio managers, who devote their careers to acquiring information and honing evaluative skills. The trading volume in most securities that these professionals control, directly or indirectly, seems sufficient to assure the market’s rapid assimilation into price of most routine information.¹⁴⁰

135. CORNELL, *supra* note 128, at 46.

136. S. Basu, *Investment Performance of Common Stocks in Relation to Their Price-Earnings Ratios: A Test of the Efficient Market Hypothesis*, 32 J. FIN. 663 (1977) (low P/E stocks earn slightly higher returns because P/E information apparently is not fully reflected rapidly in prices); Levis A. Kochin & Richard W. Parks, *Was the Tax-Exempt Bond Market Inefficient or Were Future Expected Tax Rates Negative?*, 43 J. FIN. 913 (1988) (unexploited tax arbitrage opportunities in municipal bonds); BURTON G. MALKIEL, *A RANDOM WALK DOWN WALL STREET* 176–80 (4th ed. 1985) (small-firm effect is soft spot in ECMH); *but see* Richard Roll, *A Possible Explanation of the Small Firm Effect*, 36 J. FIN. 879 (1981) (small firm effect is illusory, a product of risk mismeasurement in calculating estimates of returns).

137. Shimon Kogan, Tobias J. Moskowitz & Marina Niessner, *Fake News: Evidence from Financial Markets* (Apr. 22, 2019) (unpublished manuscript available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3237763).

138. Mitts, *supra* note 43.

139. See Sanford J. Grossman & Joseph E. Stiglitz, *On the Impossibility of Informationally Efficient Markets*, 70 AM. ECON. REV. 393 (1980) (because arbitrage is costly, markets will not be perfectly efficient).

140. Ronald J. Gilson & Reinier H. Kraakman, *The Mechanisms of Market Efficiency*, 70 VA. L. REV. 549, 571 (1984).

Because it is costly to ferret out information, market professionals will search out and analyze new information about a firm only up to the point at which an additional marginal expenditure on searching, analyzing, and transacting in shares is expected to produce an additional marginal gain in trading profits of equal or greater size. Because obtaining and analyzing certain sorts of information is a more costly process than is necessary for other types, the market will not adjust at the same speed for all information.

Because ferreting out information is costly, sometimes capital markets cause accurate information to be rapidly impounded in a firm's share price, and sometimes it does not. And sometimes markets avoid impounding inaccurate information in a firm's share price, and sometimes it does not. These are the simple lessons from the theoretical and empirical literature on efficient markets.

Courts first engage in a process of determining whether the market for a company's shares is efficient to decide whether they should rely on stock prices in determining fundamental value. In other words, under present law, a finding that a firm's shares trade in efficient markets acts as a *gatekeeper* in determining whether market prices will be relied on in valuation proceedings. A finding that the market for a stock is "efficient" is considered a necessary condition to the use of market prices because, in Delaware, it is thought that "the price produced by an efficient market is generally a more reliable assessment of fair value than the view of a single analyst, especially an expert witness who caters her valuation to the litigation imperatives of a well-heeled client."¹⁴¹

We agree with this assessment (with the caveat that unadjusted market prices rather than deal prices are the best indicators of fundamental value). However, we would go further for the simple reason that even prices produced in an inefficient market are a more reliable assessment of fair value than the wildly divergent predictions of an expert witness who tailors his or her valuation to the litigation imperatives of his or her client.

Thus, courts should expand their reliance on market prices to include an analysis of stocks that do not trade in an efficient market not because such prices are perfect—far from it. Rather, market prices should be relied on because such prices are methodologically unbiased and qualitatively the best source of information about fundamental values. Moreover, courts are not required to blindly adopt market prices. Nor should they in contexts in which the shares of the company being valued do not trade in an efficient market. Courts are free to adjust the market price of shares that trade in inefficient markets to make them reflect material information of any kind that is not impounded in such price. And courts are also free to use their discretion to take inefficient market prices into account not in isolation but in combination with other methodologies, such as DCF analysis.

We would go still further. It appears to us that, where market prices for a company's shares are available, courts are compelled by statute to consider such prices. After all, it is well settled that, in an appraisal action under the Delaware

141. *Dell, Inc. v. Magnetar Glob. Event Driven Master Fund Ltd.*, 177 A.3d 1, 24 (Del. 2017).

General Corporation Law, the trial court's fair value determination must take into account all relevant factors.¹⁴² Certainly it is the case that "[t]he relevance (or not) of certain factors 'can vary from case to case depending on the nature of the [acquired] company,' the nature of the process leading to the company's sale and, perhaps most importantly, the evidence adduced by the parties at trial in support of their respective valuation positions."¹⁴³ It also is true that "[i]n some cases . . . 'it may be necessary to consider two or more factors.'"¹⁴⁴ In all cases, however, all relevant factors must be taken into account in a Delaware appraisal proceeding, and market price is clearly a relevant factor, even when the market that generates the relevant price is not efficient within the meaning of the semi-strong form of the ECMH.

At present, courts in Delaware engage in a formal analysis to determine market efficiency. For example, in *DFC*, the court looked at (1) the venue on which *DFC*'s shares traded (the NASDAQ stock market), (2) how long it had been trading on that market (a long time from 2005 until the merger, which occurred in 2014), (3) the lack of a controlling stockholder, (4) the size of the public float of the company (39.6 million shares),¹⁴⁵ and (5) an average daily trading volume of slightly less than one million shares.¹⁴⁶

The court in *DFC* found additional support for its finding that *DFC*'s stock traded in an efficient market because the company's share prices "moved sharply in reaction to information about the company's performance, the industry, and the overall economy, as the following chart, prepared by the petitioners' expert, illustrates."¹⁴⁷ Specifically, the court found that regulatory action "at different times and by different regulators elicited differing responses by the market."¹⁴⁸

Common indicia of the efficiency of the trading market for a stock are the so-called *Cammer* factors, which consist of the following: (1) the stock's average weekly trading volume; (2) the number of securities analysts that followed and reported on the stock; (3) the presence of market makers and arbitrageurs; (4) the company's eligibility to file a Form S-3 Registration Statement; and (5) a cause-and-effect relationship, over time, between unexpected corporate events or financial releases and an immediate response in stock price.¹⁴⁹ Reviewing

142. DEL. CODE ANN. tit. 8, § 262(h) (2018).

143. *Blueblade Capital Opportunities LLC v. Norcraft Cos.*, C.A. No. 11184-VCS, 2018 WL 3602940, at *1 (Del. Ch. July 27, 2018) (quoting *Merion Capital L.P. v. Lender Processing Servs., Inc.*, No. 9320-VCL, 2016 WL 7324170, at *16 (Del. Ch. Dec. 16, 2016)).

144. *Id.* (quoting *DFC Glob. Corp. v. Muirfield Value Partners, L.P.*, 172 A.3d 346, 388 (Del. 2017)).

145. The term "public float" refers to the number of shares of a corporation that are available for trading by public investors as distinct from outstanding shares that are not freely available for trading because of contractual or legal restrictions or because they are held by company officers or controlling-interest investors.

146. *DFC*, 172 A.3d at 352.

147. *Id.*

148. *Id.*

149. *Cammer v. Bloom*, 711 F. Supp. 1264, 1286, 1292 (D.N.J. 1989) (quoting 4 BROMBERG & LOWENFELS, SECURITIES FRAUD AND COMMODITIES FRAUD § 8.6 (Aug. 1988)); see also *In re Xcelera.com Sec. Litig.*, 430 F.3d 503 (1st Cir. 2005).

the cases, Elaine Buckberg observed that courts sometimes “supplemented the five *Cammer* factors with other measures such as market capitalization, bid/ask spread, float, and analyses of autocorrelation.”¹⁵⁰ But there are no clear-cut guidelines. For example, “the presence of nine analysts covering a security could lead a court to a finding that that factor was in favor, against, or neutral with regard to market efficiency.”¹⁵¹

While we commend the courts for evaluating the particular characteristics of trading markets and share prices in a granular way when making decisions about such things as valuation, it is not clear to us that courts are asking the right question when they do so. Specifically, the right question is not whether a company’s shares trade in an efficient market. Rather, the right question is whether the share price at any particular point in time provides reliable information about the fundamental value of those shares. Simply put, keeping in mind that courts must use some metric or methodology for determining fundamental value, the issue is whether a more accurate assessment of value can be obtained by taking market prices into account either in isolation or in combination with other valuation techniques, even in inefficient markets. We believe that market prices generally provide extremely useful benchmarks and therefore should not be ignored, even in inefficient markets.

Recently, for example, the Delaware Court of Chancery in *Norcraft* declined to assign *any* weight to the market price of a target company’s shares in an appraisal proceeding because it concluded that the shares did not trade in an efficient market. The Chancery Court’s analysis of the efficiency of the trading market for *Norcraft* stock was provided in post-trial briefing.¹⁵² The court found that *Norcraft* had a limited public trading history, that it had completed an initial public offering (“IPO”) eighteen months before the merger, that trading following the IPO was relatively limited, and that analyst coverage of *Norcraft*’s stock was relatively sparse. Based on this record, the court was unable to conclude that the market for *Norcraft*’s common stock was efficient or semi-strong efficient and thus did not assign any weight to *Norcraft*’s unaffected trading price as an indicator of *Norcraft*’s fair value on the merger date.¹⁵³

We believe that it was a mistake to ignore completely *Norcraft*’s unaffected share price. The company’s shares were listed for trading on the New York Stock Exchange (“NYSE”), one of the world’s deepest and most efficient markets. To remain listed on the NYSE, a security must meet certain financial criteria, maintain a certain minimum share price, and be distributed sufficiently broadly.¹⁵⁴ Moreover, the NYSE attempts to provide liquidity and efficiency in

150. Elaine Buckberg, *Do Courts Count Cammer Factors?*, HARV. L. SCH. F. ON CORP. GOVERNANCE & FIN. REG. (Aug. 23, 2012), <https://corpgov.law.harvard.edu/2012/08/23/do-courts-count-cammer-factors/>.

151. *Id.*

152. *Blueblade Capital Opportunities LLC v. Norcraft Cos. Inc.*, C.A. No. 11184-VCS, 2018 WL 3602940, at *27 (Del. Ch. July 27, 2018).

153. *Id.*

154. *MKT Continued Listing Standard*, N.Y. STOCK EXCHANGE, https://www.nyse.com/publicdocs/nyse/markets/nyse-american/MKT_Continued_Listing_Standards.pdf (last visited June 27, 2019).

share pricing by allocating a designated market maker (“DMM”) to every company whose shares are listed on the exchange for trading. DMMs have obligations to maintain fair and orderly markets for their assigned securities. They operate both manually and electronically to facilitate price discovery during market opens and closes and during periods of trading imbalances or instability.¹⁵⁵

In *Norcraft*, prior to the date on which the acquisition was announced on March 30, 2015, Norcraft had a respectable following among arbitrageurs and other market professionals. The hedge funds Amici Capital, Citadel Investment Group, Covalent Capital Partners, and Driehaus Capital actively followed the stock and had positions in it.¹⁵⁶ Yahoo! Finance focused on the company,¹⁵⁷ as did Zacks Investment Research.¹⁵⁸ Free analyst reports were available to potential investors.¹⁵⁹ The stock also was covered by Street.com¹⁶⁰ and InvestorPlace.¹⁶¹ It had an average daily trading volume of \$6.5 million and was mentioned an average of 1.61 times per day on StockTwits.¹⁶²

In our view, the focus in *Norcraft* and other valuation cases in which markets may not be efficient should be on a question other than the broad question of market efficiency. The better question for courts to ask in the valuation process is whether, on the date on which a value must be assigned to a company, there is any material information that is not reflected in the firm’s share price. Such an analysis would significantly broaden the contexts in which market prices would be relevant to courts. Moreover, in the appraisal context, because a due diligence investigation often precedes an acquisition, evidence from the due diligence investigation would provide valuable information about information that is not reflected in a firm’s share price.

D. AUCTION THEORY AND CHOI & TALLEY (2018)

In an influential article recently published in the *Journal of Law, Economics and Organization*, Professors Albert Choi and Eric Talley apply auction theory to consider the appraisal setting.¹⁶³ They do not directly address unaffected market prices but focus their discussion on the implications of relying on the *deal*

155. *The NYSE Market Model*, N.Y. STOCK EXCHANGE, <https://www.nyse.com/market-model> (last visited Oct. 30, 2018).

156. Andrei Braghis, *Amici Capital Increases Holding of Norcraft Companies Inc. (NCFT)*, INSIDER MONKEY (July 14, 2014), <https://www.insidermonkey.com/blog/amici-capital-increases-holding-of-norcraft-companies-inc-ncft-323600/>.

157. Zacks Equity Research, *Can the Rally in Norcraft (NCFT) Shares Continue?*, YAHOO! FIN. (Nov. 7, 2014), <https://finance.yahoo.com/news/rally-norcraft-ncft-shares-continue-123851753.html>.

158. *Id.* (noting that Zacks had assigned a “buy” rating to the stock).

159. *Id.* (providing a link to “free stock analysis report”).

160. TheStreet Wire & Jamie Hodge, *Today’s Strong and Under the Radar Stock Is Norcraft Companies (NCFT)*, THE STREET (Apr. 6, 2015), <https://www.thestreet.com/story/13102125/1/todays-strong-and-under-the-radar-stock-is-norcraft-companies-ncft.html>.

161. John Jagerson & Wade Hansen, *NCFT: Here’s What You Need to Know About Norcraft*, INVESTORPLACE (Dec. 17, 2014), <https://investorplace.com/2014/12/norcraft-ncft-housing-market/>.

162. *Id.*

163. Albert H. Choi & Eric L. Talley, *Appraising the “Merger Price” Appraisal Rule*, 35 J.L. ECON. & ORG. 543 (2019).

price, rather than a DCF analysis. A chief conclusion of Professors Choi and Talley's work is that the traditional appraisal remedy (i.e., based on a DCF analysis) can be value enhancing for target shareholders by encouraging bidders to increase their offering prices up front to minimize shareholders' incentive to hold out for a higher price in appraisal. In this subpart, we summarize their important contribution, consider some of the assumptions underlying their framework, and describe where our analysis leads to different conclusions from theirs.

The core idea in Professors Choi and Talley's article is that the appraisal remedy serves as an implicit "reserve price" in the auction of the firm. Defining fair value as the deal price functionally eliminates the appraisal remedy because dissenting shareholders will receive no more than the deal price, which eliminates any economic incentive to pursue appraisal. As such, Professors Choi and Talley contend, "[a]nticipating appraisal's functional irrelevance, rational buyers disregard appraisal risk when formulating strategy, softening their bids in the process."¹⁶⁴

A simplified example might help illustrate the intuition behind their approach. Suppose that a bidder values the firm at \$20 per share but bids \$10 per share because she believes the target shareholders will accept that price. If the objective is to maximize the gains to target shareholders, there is a "potential loss" of \$10 per share: \$20 value – \$10 price = \$10 loss.

Now, suppose that the appraisal remedy gives target shareholders \$15 per share (e.g., \$15 per share is the "fair value" of the firm's shares as determined by a DCF analysis). Clearly, no shareholder will accept the \$10 bid, and the bidder will have no choice but to offer \$15 per share. The mere existence of an appraisal right increases the payoff to target shareholders. Of course, our simplified summary here is incomplete in innumerable ways, and Professors Choi and Talley rigorously consider strategic incentives, probabilistic uncertainty, and the need for shareholders to vote against the merger to receive the appraisal consideration.

Our chief quibble with their fine analysis is with the normative objective they assume, namely, maximizing the expected gains to target shareholders. Section 262 of the Delaware General Corporation Law provides that dissenting shareholders are entitled to an appraisal of the "fair value" of their shares. But nowhere does the appraisal statute refer to maximizing the expected return to target shareholders. Nor is target shareholder value maximization implied by the term "fair" in "fair value." And as we discussed previously, the notion of "fair value" does not imply that dissenting shareholders are entitled to hypothetical gains that would emerge from another acquisition. We agree with the *Aruba* court that "[t]he governing standard for fair value under the appraisal statute remains the entity's value as a going concern."¹⁶⁵

Of course, we fully admit that the shareholder value maximization norm lies at the core of corporate law but value maximization of the target company does not maximize the value of all companies, particularly in M&A transactions. In M&A

164. *Id.* at manuscript at 344–45.

165. *Verition Partners Master Fund Ltd. v. Aruba Networks, Inc.*, C.A. No. 11448-VCL, 2018 WL 922139 (Del. Ch. Feb. 15, 2018).

transactions, setting aside synergies and agency-cost reduction (which are excluded from appraisal in any event¹⁶⁶), deals are essentially transfer payments from one group of shareholders to another. If the presence of an implicit reserve price causes a firm worth \$10 per share to be sold for \$15 per share, the gains to target shareholders (\$5 per share) are exactly offset by the losses to acquirer shareholders (\$5 per share). As such, maximizing the expected payoff to target shareholders does not advance the broader purpose of shareholder value maximization because one group of shareholders benefit while the other loses out.¹⁶⁷

Professors Choi and Talley go to great lengths to address this concern in their article. First, they argue that political economy considerations will lead Delaware courts to prefer a rule that maximizes the expected payoff to target shareholders. That analysis is correct as long as Delaware anticipates having more M&A targets than acquirers—or at least that M&A targets will be politically more powerful than acquirers. Because a \$1 excess gain (i.e., over the true value of the target) to the target's shareholders is a \$1 excess loss to the acquirer's shareholders, Delaware is no more likely to prefer the former over the latter if both the acquirer and target are incorporated in Delaware. And because the vast majority of large public companies (i.e., most acquirers) are incorporated in Delaware, it is unclear why the Delaware courts would prefer to grant an implicit subsidy to target shareholders *at the expense of* acquirer shareholders. In short, "shareholder value maximization" should not be conflated with "overpayment."

Indeed, Professors Choi and Talley expressly acknowledge in footnote 49 that "[o]ne plausible reading of the [appraisal] statute, for example, might constrain a judge to award no more than the status quo value of the target as measured by the representative agent."¹⁶⁸ We suggest that this reading is eminently plausible and indeed, to us, seems persuasive.

But we are grateful to Professors Choi and Talley for highlighting an important issue that our analysis has not considered thus far. They point out that selling shareholders may value the firm differently for idiosyncratic reasons; for example, some may have greater capital gains tax liability than others and may be unwilling to sell their shares below a certain price for that reason. By definition, the unaffected "market price" of the firm is determined by the shareholder who values the firm *the least* and is willing to take the lowest price offered by a buyer. We agree with Professors Choi and Talley that there is no reason to read "fair

166. See discussion at *supra* note 83 and accompanying text.

167. We concede that some view the appraisal proceeding as a "backstop" mechanism of holding the target's board accountable to maximize shareholder value in the wake of weakening substantive protections following the decisions in *Corwin* and *MFW*, which embrace a majoritarian view prioritizing deal process. For one, we are skeptical of the view that appraisal is the appropriate tool to remedy whatever perceived shortcomings there might be in recent evolutions of Delaware fiduciary duty law. Moreover, we reiterate that overpayment is a transfer payment that harms acquirer shareholders just as it benefits target shareholders. We simply do not see a normative justification for inflating deal prices *per se*. We also believe the courts should keep in mind that, by creating an incentive for appraisal arbitrage, arbitrarily inflating deal prices induces costly and potentially wasteful litigation. We would reiterate that the appraisal statute requires "fair value"—not maximum value.

168. See Choi & Talley, *supra* note 162, at 567 n.42.

value” as reflecting the *lowest possible* valuation among all shareholders. How should the appraisal remedy take into consideration the refusal of certain shareholders to sell below a higher price?

Indeed, we readily acknowledge that this is a limitation of relying on the unaffected market price of the firm. We struggle, however, to identify a way to operationalize this theoretical point in a manner that courts can utilize in an appraisal proceeding. In particular, we worry about the potential for fraud that might arise from allowing certain shareholders to claim that the reason for their refusal to tender their shares in the merger was a genuine idiosyncratic valuation of the firm’s stock far higher than the unaffected market price (e.g., due to tax reasons). We feel that this sort of claim is often unverifiable, and we worry that such dissenting shareholders would have a strong incentive to misrepresent their idiosyncratic valuation to artificially increase the appraisal award by dissenting from the merger.

We are willing, however, to consider one verifiable modification to our proposed emphasis on the market price. At any given moment, liquidity providers in listed exchanges maintain a “limit order book” that displays an inventory of shareholders who are willing to buy and sell at quantities and prices lower and higher than the current market prices. One might posit that those investors not willing to sell at current prices but who would be willing to sell at higher prices value the company more highly than those shareholders willing to transact at current prices.¹⁶⁹ To the extent that appraisal litigants are able to derive a “weighted average” of the quantity and prices that are quoted on the sell side of the limit order book for the firm’s stock prior to the M&A announcement, we think this might be persuasive evidence of pegging the fair value determination to that weighted average price.¹⁷⁰

Significantly, we note that the magnitude of this adjustment would likely be quite small. A quick look at publicly available data on the limit order book for Apple stock shows that at 10:30 a.m. on June 21, 2012 (a date for which market makers have made publicly available pricing data), the “best offer” for Apple (i.e., the lowest price that a market maker was willing to sell Apple shares) was \$585.95. An average of the top fifty offers, weighted by the volume offered, yields \$586.74—a difference of \$0.79, or 0.135 percent, which is trivial. While Apple is one of the most liquid stocks there is and this sort of deep data on a limit order book is not publicly available for many small-cap stocks, the weighted average of observed offers is unlikely to yield a price substantially higher than the current

169. In the 1980s, Hideki Kanda and Saul Levmore pointed out that “market prices are marginally determined and do not necessarily reflect real inframarginal valuations.” Hideki Kanda & Saul Levmore, *The Appraisal Remedy and the Goals of Corporate Law*, 32 UCLA L. Rev. 429, 439 (1985). Kanda and Levmore argued that the appraisal remedy can be justified as an attempt by inframarginal shareholders to ensure that they receive their real valuations, especially in the case of thinly traded targets. *Id.* at 440. Our suggestion to incorporate the valuations reflected in the limit order book is designed to address this sort of heterogeneity in shareholder valuation of the firm.

170. See Choi & Talley, *supra* note 162. In terms of Talley and Choi’s model, this would more closely correspond to μ , the average shareholder valuation, rather than v , the lowest shareholder valuation.

“market price” (i.e., the best offer). But to the extent these data are available, we would urge the Delaware courts to take these into account.

Of course, the limit order book will not reflect those shareholders who are unwilling to even contemplate selling below a given price and thus does not include their offer because it is so far away from the current market price. But absent some sort of way to reliably measure the supply curve for these shares without a strategic incentive to misrepresent, we do not see a justification for including these in the appraisal calculation.

E. LOOKING AT PUBLICLY TRADED ACQUIRERS’ SHARE PRICES

Finally, we observe that until now it has not been possible to utilize market prices of any kind unless the shares of the target company trade in an efficient market. We further contribute to the literature on appraisal by efficient market where the *acquirer* is a public company whose shares trade in an efficient market. Whenever this is the case it will be possible to use market prices to guide and sometimes to determine whether fair value has been paid for the target by looking at the way that the share price of the acquirer firm reacts to the announcement of the bid. In particular, if the value of the acquirer *declines* when a deal is announced, then the bidder may have overpaid, suggesting that target company shareholders received more than fair value for their shares. In contrast, where the value of the bidder goes up by a statistically significant amount, the bidder may have underpaid, and courts should be concerned that the target company’s shares were underpriced.

Of course, we recognize that this calculation may pose a number of challenges. First, acquirer stock returns may provide information about the acquirer independent of the specific transaction. Second, it may be difficult to measure a change in the acquirer’s stock return when the acquirer is much larger than the target. Finally, the market’s anticipation of upcoming M&A activity may bias the magnitude of the stock return downward. We discuss each of these scenarios below. We also recognize that our proposal is limited to publicly traded acquirers and cannot be applied to private equity buyers.

1. Acquirer Returns in M&A

For decades, financial economists have studied how the stock prices of acquirers react to M&A announcements. The traditional view is that M&A transactions, especially among large companies, leads to a decline in acquirer share prices¹⁷¹: from 1990 to 2009, acquirer stock prices fell on average by 1.08 percent upon announcement of an M&A deal in excess of the stock market as a whole and other risk factors,¹⁷² though from 2010 to 2015, announcements were followed

171. Gregor Andrade, Mark Mitchell & Erik Stafford, *New Evidence and Perspectives on Mergers*, 15 J. ECON. PERSP. 103 (2001).

172. G. Alexandridis, N. Antypas & N. Travlos, *Value Creation from M&As: New Evidence*, 45 J. CORP. FIN. 632, 633 (2017).

by a very slight average share-price increase of 1.05 percent.¹⁷³ It is difficult to know how these trends will evolve, but, historically, large “mega-deals” were linked to bidder share-price declines.¹⁷⁴ Indeed, we show below that M&A announcements by bidders of private targets are accompanied by statistically significant negative cumulative abnormal returns.¹⁷⁵

Why might acquirer stock prices fall after announcing an M&A deal? The classic reason given in the literature is that acquirers tend to *overpay* for targets.¹⁷⁶ CEOs are often (mistakenly) certain that the business combination will unlock hidden synergies that justify the higher price, but the shareholders who stand to gain from these benefits are far more skeptical. A more natural explanation is managerial entrenchment: by agglomerating an empire, CEOs stand to enjoy ever-increasing private benefits of control. When a manager benefits personally from an acquisition, it is only rational to suppose she will pay more than the fair value of the shares. Other reasons for overpayment include overconfidence and hubris.

Putting these manager-centric theories aside, economic theory teaches a more basic reason bidders will overpay for targets, known as the *winner’s curse*.¹⁷⁷ When acquirers have similar reasons for valuing a target (e.g., due to common synergies or simply undervaluation by the market as a whole), the winner will invariably overpay for the target firm.

To see how this overpayment works, suppose that a firm currently trades at \$100 and there are two bidders who both believe its stock is cheap. Each of these bidders seeks to acquire the firm at the lowest possible price; because they share a common valuation model, the price the *other* bidder is willing to pay effectively determines the value of the firm. If bidder 1 offers \$105 and bidder 2 offers \$110, bidder 2 will win the auction but invariably conclude that she overpaid by \$5 because she could have acquired the firm at \$105. Regardless of what actions bidder 2 might take to minimize the winner’s curse, such as reducing her bid up front, the fact that bidder 2 won the auction necessarily implies that she overpaid, in light of bidder 1’s offer.

The winner’s curse is not as clear cut when bidders have idiosyncratic, rather than commonly held, valuations. If bidder 2 is convinced the target is worth \$150 to her, she got a good deal, regardless of whether she paid \$105 or \$110. Some have characterized strategic acquisitions as involving idiosyncratic

173. *Id.* at 638.

174. *Id.* at 633.

175. As noted previously, recent studies of M&A transactions subject to appraisal petitions show that they tend to be linked to greater acquirer returns on average. *See, e.g.*, Kalodimos & Lundberg, *supra* note 42. Our argument is to exploit the information content of the acquirer stock return in any individual case rather than focusing on averages.

176. Claudia Custodio, *Mergers and Acquisitions Accounting and the Diversification Discount*, 69 J. FIN. 219, 221 (2014).

177. *See, e.g.*, Dan Levin & John H. Kagel, *The Winner’s Curse and Public Information in Common Value Auctions*, 76 AM. ECON. REV. 894 (1986). For a discussion of how to design an M&A auction to mitigate the winner’s curse, see Steven J. Brams & Joshua Mitts, *Mechanism Design in M&A Auctions*, 38 DEL. J. CORP. L. 873 (2013).

valuations, and most M&A deals likely involve a mix of common and idiosyncratic values.¹⁷⁸

Ultimately, when valuations are highly uncertain and involve intangible capital that is difficult to clearly value, it is reasonable to conclude that a bidder's willingness to pay more than any other strongly suggests overpayment. This is equally true if there is no second-highest bidder: the market's unwillingness to bid for the target may simply reflect a view that it is not worth incurring the time and expense that would be required to submit a bid in excess of the original acquirer. That further strengthens the inference that the acquirer overpaid for the target.

Why would overpayment lead to a decline in the acquirer's stock price? Following the previous example, suppose that the target is sold for \$110 when its fair value is \$105 (i.e., the price that bidder 1 was willing to pay). That means the acquirer (bidder 2) expended \$110 per share in cash for a firm that is worth \$105 per share—a cash loss of \$5 per share. Further suppose the target has 10 million shares outstanding (i.e., a market capitalization of \$1 billion). Then, the acquisition destroys \$50 million of value for the acquirer because that is the amount of the overpayment.

Translating this loss in value into a share-price decline is straightforward. Suppose the acquirer is worth \$1 billion prior to announcement of the acquisition. Then, it is easy to compute that the acquisition destroyed 5 percent of the acquirer's market value (\$50 million loss / \$1 billion = 5%), and if the acquirer's stock trades in an efficient market, one would expect that its share price would decline by 5 percent upon announcement of the deal, after adjusting for market trends and other risk factors.

It is thus a matter of simple logic that if the deal price exceeds the fair value of the target (i.e., the acquirer overpaid for the transaction), then the price of the acquirer's stock will decline in response to the announcement of an M&A transaction. And as noted previously, there is ample evidence that this happens a great deal of the time.

Surprisingly, when adjudicating appraisal actions, the Delaware courts have given zero weight to the magnitude, or even direction, of the change in the acquirer's stock price upon announcement of the M&A transaction. We conducted an exhaustive search of Delaware appraisal decisions and found none that even referenced the acquirer's stock-price change in the case under consideration.¹⁷⁹

It is not entirely clear why acquirer stock-price changes have received virtually no attention in appraisal actions. One possibility is that courts and the parties have been so focused on determining the fair value of the target firm—as required by the appraisal statute—and the plausible candidates for this determination are the DCF valuation or the unaffected market price. But, as we explain in the following subpart, the acquirer stock-price change can be incorporated into

178. See, e.g., Choi & Talley, *supra* note 162.

179. We searched Westlaw for the terms “advanced: (appraisal and ((acquirer or bidder) /5 return))” as well as “advanced: (appraisal and ((acquirer or bidder) /5 price)).”

the valuation analysis to provide an additional “reference point” against which to compare the deal price and fair value of the target as determined by the proffered DCF valuation.

Before getting into the mechanics of how to use the acquirer stock return in the appraisal process, we wish to emphasize the broad applicability of this methodology. In particular, the acquirer return can be employed even when there is no reliable indicator of the unaffected market price of the target firm’s stock, such as when the target firm trades in a highly inefficient market or *even when the target firm is a private company*.

One of the greatest challenges to appraisal litigation in private-company M&A is the absence of a market price to give any reference point for the value of the transaction. But a decline in the stock price of a publicly traded acquirer upon announcement of the transaction provides strong evidence that the deal price exceeds the fair value of the target. Conversely, an increase in the acquirer’s stock price may weigh in favor of finding that the deal price was too low, though it is essential to properly account for deal synergies and other drivers of value creation before reaching that conclusion. We discuss these issues and more in the following subpart.

2. Mechanics of Appraisal Valuation Using the Acquirer Stock Return

Incorporating the acquirer stock return into the appraisal proceeding is a straightforward task. The first step is to estimate a single-firm event study on the stock returns of the acquirer. For this purpose, we recommend relying on the method set out by Jonah Gelbach and co-authors in a 2013 article in the *American Law and Economics Review*, which relies on the observed distribution of stock-price changes, rather than making tenuous statistical assumptions that may not hold in the data.¹⁸⁰

Because news of an impending acquisition is likely to leak well in advance of the announcement date, we recommend employing a long event window, as far back as twenty days prior to the announcement. Indeed, we find in aggregate data that acquirer returns begin to decline as early as this period. Standard estimations should be employed, such as excluding a gap period prior to the event window and utilizing a long estimation period to ensure that the model of expected returns is estimated as precisely as possible. We also recommend utilizing the standard four-factor model with momentum.

A statistically significant cumulative abnormal return (“CAR”) accompanying announcement of the return is strong evidence, on its own, that dissenting shareholders should be awarded nothing in the appraisal action. But because Delaware courts are tasked with determining the fair value of the target—and not merely that the deal price exceeds this fair value—the CAR should be multiplied

180. Jonah B. Gelbach, Eric Helland & Jonathan Klick, *Valid Inference in Single-Firm, Single-Event Studies*, 15 AM. L. & ECON. REV. 495 (2013).

by the market capitalization of the acquirer, prior to announcement of the transaction, to determine the dollar amount of overpayment. This dollar amount can be subtracted from the total deal price to arrive at the fair value of the firm.

For example, if the statistically significant announcement CAR is -1 percent and the acquirer's market capitalization is \$1 billion, the presumptive dollar amount of overpayment is \$10 million. If the total size of the transaction (i.e., the per-share deal price multiplied by the number of shares outstanding) is \$100 million, this implies that the fair value of the firm is \$90 million. Dividing that figure by the number of shares yields a per-share fair value, which can be compared to the deal price on a per-share basis.

There are several ways the implied valuation based on the acquirer's announcement return can be incorporated into appraisal litigation. In the case of a privately held target lacking a market price, a statistically significant decline in the price of the acquirer's stock, after making any necessary adjustments to the stock-price change as we describe shortly, provides conclusive evidence of overpayment. A similar conclusion holds for target firms traded in inefficient markets, such as many listed or over-the-counter small-cap stocks with low trading volume and little analyst coverage. Because the acquirer stock return provides so much information for a privately held or thinly traded target firm, we focus our empirical analysis below on those cases.

However, the acquirer stock return provides valuable information for firms that are publicly traded in efficient markets as well. This implied valuation of the target provides an additional reference point, besides the target's market price, for evaluating DCF analyses produced by expert witnesses. For example, if the valuation implied via the acquirer's stock return is closer to the publicly traded market price of the target than is the DCF analysis, this may strengthen the Delaware courts' apparent inclination to resolve the appraisal proceeding by reference to the market price, rather than to the DCF analysis. In any event, it is worth reiterating that a statistically significant abnormal decline in the share price of the acquirer, after making any necessary adjustments, may be sufficient to establish that the deal price exceeds the fair value of the target, implying that the dissenting shareholders should receive nothing in the appraisal action.

On that note, what kind of adjustments, if any, should be made to ensure that the decline in the acquirer's share price reflects only the overpayment associated with the transaction? In effect, this question asks when can we replace the "necessary" condition with a "sufficient" one; that is, it is one thing to conclude that an overpayment will be reflected in an abnormal stock-price decline by the acquirer, and it is quite another to conclude that such a price decline is *sufficient* evidence of overpayment.

We acknowledge and discuss below the point that there may be many possible interpretations to an abnormal *increase* in the share price of the acquirer upon an M&A announcement, but we can conceive of only one alternative interpretation of an abnormal share price *decline*. Specifically, it is possible that an acquirer's share price may decline for reasons unrelated to the transaction itself, for example, if the acquisition suggests a change in corporate strategy unrelated to this particular

transaction, such as a managerial preference for empire building in the future, rather than making investments in the firm's research and development.¹⁸¹

In general, we believe this is unlikely to occur very frequently. Changes in corporate strategy are often announced in advance of any single deal. But nothing in our proposal precludes the Delaware courts from considering evidence that the price decline is driven by an alternative factor, such as a market reaction to a shift in corporate strategy. However, that is likely to be a rare exception rather than the norm, and an abnormal stock-price decline by the acquirer still provides a valuable starting point for measuring overpayment.¹⁸²

We conclude this subpart by considering three more technical points. *First*, while our discussion thus far has focused on a *decline* in the price of the acquirer's stock upon the M&A announcement, a similar analysis holds in cases in which there is a statistically significant abnormal *increase* in the acquirer's share price. Here, however, courts should be cautious before concluding that such a share-price increase implies that the fair value of the target firm exceeds the deal price, or that it is justified to place a greater reliance on a DCF analysis.

For one, as we discussed previously, the Delaware courts have long held that the fair value obtained in the appraisal proceeding should exclude synergies created by the bidder.¹⁸³ Thus, if the fair value of the target actually lies below the deal price but the acquirer's stock return is positive due to the presence of synergies specific to that transaction, it would be erroneous for a court to conclude that the bidder paid less than fair value. For this reason, the implications of a stock-price increase for an appraisal action are far more ambiguous, even if the positive stock return is statistically significant.

Second, our discussion thus far has not given much guidance on how to interpret a statistically *insignificant* change in the price of the acquirer's stock. Theoretically, unless the deal price is exactly equal to the fair value of the target, the transaction has some implication for the value of the acquirer, no matter how small. However, because stock prices can vary for random reasons, a price change that is too small (i.e., relative to historical price changes) may be statistically indistinguishable from random chance.

The most likely reason that the change in the price of the acquirer's stock might be statistically insignificant is substantial disparity in the market value of the acquirer relative to the deal price. If the acquirer is substantially larger than the target, a given-sized overpayment in dollar terms translates into a

181. Similarly, in the rare situation that an acquirer announces negative performance results in its own business simultaneously with its announcement of a value-enhancing acquisition, the positive stock-price effects attributable to the acquisition may be drowned out by the negative stock-price effects attributable to the negative results being reported at the same time.

182. Moreover, the literature on acquirer price reactions has long shown that negative returns typically follow stock issuances, suggesting a negative signaling effect to issuing new stock. See, e.g., Gregor Andrade, Mark Mitchell & Erik Stafford, *New Evidence and Perspectives on Mergers*, 15 J. ECON. PERSP. 103 (2001). Because the appraisal remedy is limited to cash transactions, any stock-price decline is unlikely to be driven by a signaling effect arising from the issuance of new stock.

183. See *In re Appraisal of Solera Holdings, Inc.*, C.A. No. 12080-CB, 2018 WL 3625644, at *12 (Del. Ch. July 30, 2018).

much smaller percentage change in the value of the acquirer. For example, suppose that an acquirer worth \$1 billion pays \$20 million for a target whose fair value is \$18 million. That overpayment of \$2 million is worth only 0.2 percent of the acquirer's market value. But because stock prices tend to fluctuate more than 0.2 percent in general, we probably could not conclude with confidence that a decline of that magnitude was not caused by random chance.

Third, we recognize that some firms announce that they intend to commence a strategy of acquisitions, which leads to an immediate change in the stock price that reflects the market's view as to the average effect of these anticipated acquisitions, discounted by the probability that they will occur. This anticipation may attenuate the price reaction to the announcement of individual acquisitions.¹⁸⁴

For example, suppose that, upon such an announcement, the market anticipates a 20 percent chance of the acquirer overpaying by 5 percent of its market value. The acquirer's stock price will decline by 1 percent, which is the anticipated effect of the M&A strategy on its market value ($20\% \times 5\% = 1\%$). Now, suppose that the acquirer announces an acquisition with an overpayment equal to 2 percent of market value. The stock price will decline by 1 percent, which is the difference between the *expected* overpayment of 1 percent and the *actual* overpayment of 2 percent.

We recognize that this sort of market anticipation has the potential to mute the stock-price reaction to individual acquisition announcements. However, we think the magnitude of such anticipation is likely to be small. It is difficult to infer a high probability of future acquisitions from the mere announcement of an M&A strategy. For this reason, we expect that the market reaction to an M&A strategy will be conservative and that the market reaction to individual announcements of particular transactions will remain substantial even for companies that previously have announced a general strategy to pursue M&A transactions.

Lastly, our analysis thus far takes "as given" the propensity of acquirers to overpay for targets and focuses solely on measuring this overpayment for purposes of an appraisal action. But as Professors Choi and Talley explain, the *equilibrium* implications of courts deferring to the merger price are complex and, under certain conditions, may have the effect of depressing acquisition prices and shareholder welfare.¹⁸⁵ Choi and Talley give an example of an equilibrium analysis, and their framework identifies some important considerations for our proposal as well.

To begin, it is entirely possible that the unavailability of the appraisal remedy in the event of overpayment will lead bidders to lower their prices, aware that the appraisal remedy no longer serves as a "de facto reserve price," in the words of Choi and Talley, as long as a negative abnormal acquirer return can be shown. Of course, perhaps that is precisely the normative goal (i.e., that M&A prices

184. See, e.g., Katherine Schipper & Rex Thompson, *Evidence on the Capitalized Value of Merger Activity for Acquiring Firms*, 11 J. FIN. ECON. 85 (1983).

185. See Choi & Talley, *supra* note 162. By "equilibrium," we mean the market outcome that is implied by parties' incentives, rather than temporary deviations from the market equilibrium.

would hew closer to the target's fair value, rather than yielding target shareholders a windfall).

In any event, the acquirer announcement return is largely out of the control of target shareholders; rather, it turns on the market's estimation of the amount of overpayment. This raises a host of interesting questions, such as whether there might be strategic incentives to manipulate the share price of the acquirer prior to the M&A announcement to make the appraisal remedy available. While it might seem that shorting the bidder's stock to drive down the stock price would not change the market's estimation of the value loss from overpayment, it is possible that the M&A announcement would inform market participants that the decline was artificially induced, thereby leading arbitrageurs to buy the stock at that point. This would lead to a sharp increase in the price of the acquirer's stock, thereby leading to the (incorrect) inference that the deal price was too low.

We acknowledge that there is a theoretical possibility that our proposal could create an incentive for manipulation of acquirer shares. Our response is twofold. First, we point out the magnitudes involved: M&A acquirers are typically large firms with sufficient market capitalization and trading volume to make it difficult to amass sufficient capital to move the stock price in such a manner.

Second, manipulative trading of the magnitude required, such as by way of derivatives markets,¹⁸⁶ may lead to an enforcement investigation and the possibility of civil and criminal penalties. While we admit that, relying on enforcement is hardly a foolproof solution, we believe the combination of required capital, threat of liability, and uncertainty of the appraisal process itself should deter most manipulators from this sort of activity. Indeed, evidence of manipulation could be brought to bear at the appraisal hearing itself, which would reduce the likelihood of an appraisal award.

We leave a more detailed exploration of equilibrium effects for future work. We are, however, skeptical of the concern that our proposal will lead to a substantial change in bidder behavior simply because the fundamental dynamics of an M&A transaction—the value gain from the acquisition, shopping the firm to potential suitors, and so forth—are unlikely to be substantially affected by the presumptions employed in the appraisal setting. In the following subsection, we discuss some examples of how our proposed methodology might be applied.

3. Examples

In this subpart, we discuss two examples of applying our methodology to the valuation of M&A transactions involving private-firm or thinly traded public targets. We begin by considering a case of clear overpayment: MTS Systems Corporation's acquisition of PCB Group for \$580 million. We then reexamine the ac-

186. One of us documents this sort of trading in derivatives markets preceding attacks by pseudonymous short sellers. See, e.g., Mitts, *supra* note 43.

quisition of Norcraft by Fortune Brands, considering how the result of the appraisal action might differ when employing our methodology.

i. *MTS Acquisition of PCB*. On April 6, 2016, MTS Systems Corp. (NASDAQ: MTSC), a supplier of “high-performance test systems and position sensors,” announced that it would acquire PCB Group Inc., a privately held manufacturer of sensor technologies, for \$580 million.¹⁸⁷ On that day, MTS’s stock price fell by 7 percent; the day before (April 5), it closed at \$59.25, and on April 6 it closed at \$52.05. On April 6, the S&P 500 *increased* by 1.03 percent. As such, this was an extraordinary decline in the price of MTS’s stock.

A stock-price decline of this magnitude suggests that MTS overpaid for PCB to the tune of \$70–80 million. This is consistent with contemporaneous evidence: in April 2017, less than a year after the announcement of the acquisition, a Seeking Alpha article analyzed the transaction and pointed out that, “based on the information provided at the time when the deal was announced, PCB would add some \$200 million in sales, *which implied that MTS paid a rather steep 2.9 times sales multiple*.”¹⁸⁸ The author further noted that 2017 was a “lost year” for MTS and concluded that, “while the company claims that the PCB deal is right on track and the prospects for the business are good, this is not backed up in terms of the [earnings] guidance.”¹⁸⁹

In short, MTS clearly overpaid for PCB, whether one relies on ex-ante information—the high sales multiple—or the poor ex-post of the firm following the acquisition. The decline in MTS’s stock price shows that the market understood this at the time of the acquisition announcement. While MTS is a relatively small public company with a market capitalization of \$1 billion, it does appear that the market price incorporated this information.

Had there been appraisal litigation following this acquisition, our data and analysis show that courts could rely on the statistically significant decline in the stock price of MTS (the *acquirer*) to conclude that the deal price was fair for shareholders of PCB (the *target*), even though the target was a private company with no market price itself.

ii. *Fortune Brand’s Acquisition of Norcraft*. We now return briefly to the case that we discussed previously, namely, Fortune Brand’s acquisition of Norcraft. When the transaction was announced on March 30, 2015, for \$600 million—an 11.4 percent premium over Norcraft’s market price—the stock price of Fortune Brands (the *acquirer*) increased by 6.1 percent, a 4.9 percentage point gain over the S&P 500, which increased by 1.2 percent that day.

187. MTS Sys. Corp., *MTS Signs Definitive Agreement to Acquire Sensor Producer PCB Group Inc. for \$580 Million*, PR NEWSWIRE ASS’N LLC (Apr. 6, 2016), <https://www.prnewswire.com/news-releases/mts-signs-definitive-agreement-to-acquire-sensor-producer-pcb-group-inc-for-580-million-300246991.html>.

188. The Value Investor, *MTS: Challenging Guidance Makes Investors Rightfully Cautious*, SEEKING ALPHA (Apr. 12, 2017), <https://seekingalpha.com/article/4062092-mts-challenging-guidance-makes-investors-rightfully-cautious> (emphasis added).

189. *Id.*

At first glance, this stock-price increase may suggest that Fortune Brands underpaid for Norcraft. However, as we described previously, while a *decline* in the acquirer's stock price unambiguously indicates overpayment (thus, suggesting that courts should dismiss an appraisal action), the interpretation of a stock-price *increase* is less straightforward. In particular, an increase in the acquirer's stock price can imply that the transaction will lead to synergies that benefit the acquirer. But, under Delaware law, these synergies should be *excluded* from any appraisal proceeding—dissenting shareholders are not entitled to value created by the merger itself.

Indeed, the contemporaneous evidence suggests that such synergies were likely to have been substantial. On March 31, 2015, a research report prepared by CL King & Associates credited the increase in Fortune Brands' stock price to the anticipated accretion in value ("in FY15 by at least \$0.06 per share"), not including potential cost savings that had not yet been quantified, as well as the removal of a leading competitor from the market and elimination of the risk that Norcraft would be purchased by Masco or American Woodmark.¹⁹⁰

In light of these deal-specific synergies, CL King & Associates concluded that "FBHS [Fortune Brands Home & Security Inc.] is paying a full price for Norcraft. By our estimate, FBHS is purchasing Norcraft for 16.1x trailing EBIT, 11.5x trailing EBITDA and 1.6x FY14 sales." In particular, they noted that Norcraft's business is subject to substantial long-term risks and the transaction is likely to succeed only if the economic recovery continues apace with "high ticket remodeling spending" alongside low interest rates.¹⁹¹ These risks lower the going-concern value of Norcraft's business and suggest that Fortune Brands may actually be *overpaying* for Norcraft's shares, especially if there are substantial synergies that are unrelated to Norcraft's going-concern value.

V. CONCLUSION

In recent years, the M&A landscape has seen a rising tide of appraisal actions intended to deliver a handsome payoff to hedge funds that dissent from a merger and claim the target's shares were undervalued. The engine of the new appraisal economy is the DCF analysis, which is so flexible as to deliver wildly varying estimates of firm value. In this article, we argue that the Delaware courts should pay greater attention to market efficiency in the appraisal setting.

We began with the premise that share prices are an unbiased estimate of firm value in an informationally efficient market. The unaffected market price is thus a natural starting point for determining "fair value" in appraisal litigation. Stock prices may deviate from their fundamental value when there is material nonpublic information not yet impounded into the firm's share price. For this reason, we favor an adjustment when subsequent disclosures lead to a more accurate price. But we disagree with the view, sometimes espoused by the Delaware courts, that

190. CL King & Assocs., *FBHS Pays Up for Quality; Buys Norcraft at 11.5x EBITDA* (Mar. 31, 2015) (on file with *The Business Lawyer*).

191. *Id.*

any imperfections in market efficiency justify preferring the DCF methodology. DCF analyses are subject to a host of subjective assumptions and have thus yielded wildly varying estimates of fair value. For this reason, the target's unaffected market price is the best estimate of value, but the deal price may be useful when there are reasons to believe the unaffected market price is distorted in some way, such as when there is material nonpublic information not yet impounded into the price.

Finally, we argue that, in the case of thinly traded or private targets, the Delaware courts can rely on changes in the *acquirer's* stock price as presumptive evidence of over- or underpayment for the target. For example, as decades of literature in financial economics has recognized, a statistically significant decline in the acquirer's stock price upon announcement of the transaction is *prima facie* evidence of overpayment. A statistically significant increase in the acquirer's stock price is more difficult to interpret but justifies an appraisal action after removing synergies and agency-cost reduction, to which dissenting shareholders are not entitled.