

Appraisal Arbitrage—Is There a Delaware Advantage?

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The article examines the extent to which economic incentives may have improved for appraisal arbitrageurs in recent years, which could help explain the observed increase in appraisal activity. We investigate three specific issues. First, we review the economic implications of allowing petitioners to seek appraisal on shares acquired after the record date. We conclude that appraisal arbitrageurs realize an economic benefit from their ability to delay investment for two reasons: (1) it enables arbitrageurs to use better information about the value of the target that may emerge after the record date to assess the potential payoff of bringing an appraisal claim and (2) it helps minimize arbitrageurs' exposure to the risk of deal failure. Second, based on a review of the recent Delaware opinions in appraisal matters, as well as fairness opinions issued by targets' financial advisors, we document that the Delaware Chancery Court seems to prefer a lower equity risk premium than bankers. Such a systematic difference in valuation input choices also works in favor of appraisal

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arbitrageurs. Finally, we benchmark the Delaware statutory interest rate and find that the statutory rate more than compensates appraisal petitioners for the time value of money or for any bond-like claim that they may have on either the target or the surviving entity.

Our findings suggest that, from a policy perspective, it may be useful to limit petitioners' ability to seek appraisal to shares acquired before the record date. We also posit that, absent any finding of a flawed sales process, the actual transaction price may serve as a useful benchmark for fair value. We conjecture that, while the statutory interest rate may not be the main factor driving appraisal arbitrage, it does help improve the economics for arbitrageurs. Thus, the proposal by the Council of the Delaware Bar Association's Corporation Law Section to limit the amount of interest paid by appraisal respondents—by allowing them to pay appraisal claimants a sum of money at the beginning of the appraisal action—seems like a practical way to address concerns regarding the statutory rate. However, paying appraisal claimants a portion of the target's fair value up front is akin to funding claimants' appraisal actions, which may end up encouraging appraisal arbitrage.

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I. INTRODUCTION

There has been an increase in recent years in appraisal rights actions filed in the Delaware Chancery Court. The uptick is seen both in the number of appraisal petitions being filed and the total dollar amount at stake in appraisal proceedings.¹ Commentators have linked the recent rise in appraisal actions to the emergence of appraisal arbitrageurs²—hedge funds that seek transactions where the court-appraised value is likely to be higher than the transaction price. Merion Capital and Magnetar Financial are two of the prominent appraisal arbitrageurs. For example, it is reported that as of early 2015, Merion Capital had about \$1 billion under management and was participating in several active appraisal cases.³

Appraisal arbitrageurs take relatively large positions in the common stocks of public companies that are targets of mergers or acquisitions. For example, in 2014, Merion Capital sought an appraisal of 1,255,000 shares of Ancestry.com common stock, which were worth more than \$40 million at the transaction price of \$32 per share.⁴ Arbitrageurs take a position after an M&A transaction is announced, often several months after the deal announcement.

¹ See, e.g., Minor Myers & Charles R. Korsmo, *Appraisal Arbitrage and the Future of Public Company M&A*, 92 WASH. U. L. REV. 1551, 1568 (2015).

² *Id.* at 1566.

³ Liz Hoffman, *Hedge Funds Plan to Seek Higher Price for Safeway*, WALL ST. J., (Feb. 2, 2015), <http://www.wsj.com/articles/hedge-funds-plan-to-seek-higher-price-for-safeway-1422913728>.

⁴ *In re Appraisal of Ancestry.com, Inc.*, No. 8173-VCG, 2015 Del. Ch. LEXIS 2, at *4 (Jan. 5, 2015).

They then dissent from the proposed merger, forego the merger consideration, and seek a higher value than the transaction price via an appraisal action pursuant to section 262 of the Delaware General Corporation Law.⁵

Appraisal arbitrage is not risk free. Arbitrageurs spend considerable time and resources identifying potential investment opportunities. Once an appraisal action is launched, the arbitrageurs must go through a fairly lengthy litigation process to demonstrate that the consideration offered to the target shareholders is lower than the fair value of the target stock. Of course, after that lengthy process, there is always a possibility that the court-determined value turns out to be even lower than the consideration paid in the transaction.

Market observers have devoted a fair amount of attention to possible reasons underlying the recent rise in appraisal actions. A number of commentators have connected the increase to recent rulings reaffirming appraisal rights of shares bought by appraisal arbitrageurs after the record dates of the relevant transactions.⁶ Other reasons posited for the current surge in appraisal activity include the relatively high interest rate on the appraisal award and a belief that the Delaware Chancery Court may feel more comfortable finding fair values in excess of,

⁵ DEL. CODE ANN. tit. 8, § 262 (2013). Section 262(b)(3) of the Delaware General Corporation Law also permits appraisal for target shareholders in exchange offers that conform to the merger agreement and minimum tender requirements of section 251(h).

⁶ See, e.g., Nicholas O’Keefe, *Delaware Appraisal Actions Are Likely to Continue to Increase in Frequency Following Two Recent Delaware Chancery Court Decisions*, KAYE SCHOLER (Feb. 24, 2015), <http://www.kayescholer.com/in-the-market/publications/articles/20150224-delaware-appraisal-actions-are-likely-to-continue-to-increase-in-frequency-following-two-recent-delaware-chancery-court-decisions>.

rather than below, the transaction price. This hypothesis seems to be based on the observation of recent rulings in which court-determined fair values have been mostly at or above the transaction price.⁷ Of course, one needs to be mindful of the potential selection bias when drawing conclusions based on outcomes of appraisal actions—that is, dissenting shareholders may be more likely to seek appraisal in instances where the transaction price is in fact lower than the fair value.

However, it is interesting to note that in the *Ancestry.com* matter (one recent case in which the court-appraised fair value was equal to the actual transaction price), Vice Chancellor Glasscock’s valuation result was \$31.79, but he chose to adopt the slightly higher actual transaction price of \$32 as “the best indicator of Ancestry’s fair value as of the Merger Date.”⁸ On the other hand, in the *Ramtron* matter, where the transaction at issue was the result of a hostile bid by the acquirer, Vice Chancellor Parsons deducted synergies of \$0.03 per share from the transaction price of \$3.10 and used the resulting figure (\$3.07 per share) as his

⁷ Philip Richter et al., *The Rise of Delaware Appraisal Arbitrage: A Survey of Cases and Some Practical Implications*, 28 No. 7 INSIGHTS: THE CORP. & SEC. L. ADVISOR 18 (July 2014); see also Jeremy D. Anderson & José P. Sierra, *Unlocking Intrinsic Value Through Appraisal Rights*, LAW360 (Sept. 10, 2013, 3:48 PM EST), <http://www.law360.com/articles/471057/unlocking-intrinsic-value-through-appraisal-rights>.

⁸ *In re Appraisal of Ancestry.com, Inc.*, No. 8173-VCG, 2015 Del. Ch. LEXIS 21, at *74–76 (Jan. 30, 2015). Furthermore, Vice Chancellor Glasscock stated the following in his opinion to support the adoption of the transaction price: “It would be hubristic indeed to advance my estimate of value over that of an entity for which investment represents a real—not merely an academic—risk, by insisting that such entity paid too much.” *Id.* at *74.

estimate of the target's fair value.⁹ In these recent matters in which the court-determined fair value was based on the transaction price, the court also found that the sales process was robust and fair. Decisions such as these do show that appraisal arbitrage is not without risk. However, the downside risk seems modest, and recent rulings lend support to the notion that the Delaware Chancery Court is likely to determine fair value that is at least equal to the transaction price.

In this article, we examine the extent to which economic incentives may have improved for appraisal arbitrageurs in recent years, which could help to explain the observed increase in appraisal activity. We investigate three specific issues.

First, we examine the economic implications of permitting appraisal rights to shares that were purchased after the record date. We do not question the judicial determination or legislative intent behind this law;¹⁰ instead, we simply investigate the economic implication. The ability to delay the investment allows appraisal arbitrageurs to get a better sense of the value of the target, while at the same time helping reduce their exposure to the risk of loss related to investing in a target that fails to close the transaction. It is fairly well established in

⁹ LongPath Capital LLC v. Ramtron Int'l Corp., No. 8094-VCP, 2015 Del. Ch. LEXIS 177 (June 30, 2015).

¹⁰ Permitting post-announcement buyers to exercise appraisal rights as a matter of judicial determination goes back at least as far as Vice Chancellor Berger's 1989 opinion in the *Salomon Brothers* case. See *Salomon Bros., Inc. v. Interstate Bakeries Corp.*, 576 A.2d 650 (Del. Ch. 1989).

finance that the ability to delay an investment is akin to owning a call option.¹¹ Allowing appraisal arbitrageurs to delay their investment in target company stock, therefore, is akin to giving them such an option. All else being equal, an appraisal arbitrageur is likely to wait for as long as possible prior to buying the target stock in order to reduce the risk (primarily the risk of the deal failing) and thereby to maximize the return. The goal of appraisal arbitrage is to increase the cost of acquisition, and the payoff from a successful appraisal action is borne by the acquiring company—the entity that is ultimately responsible for paying the fair value. Applying the option construct, one can say that the acquirer has written the option that the arbitrageur owns. But one key question remains: do the arbitrageurs pay the acquirers, or anyone else, for the option? We argue that appraisal arbitrageurs do not pay for this option, and, thus, the value of the option is essentially a transfer of value from the acquiring company to the arbitrageurs. Clearly, no payment (direct or indirect) is made by the appraisal arbitrageurs to the acquirer.

We also posit that the stock price of the target subsequent to the announcement of a transaction does not incorporate the value of the delay option. In other words, the arbitrageurs do not pay the targets' shareholders for the option either. We do not think the value of the option is impounded into the target stock price because, for a transaction that market participants like—the ones in which enough shareholders are expected to vote in favor of the transaction—there are potentially enough sellers, such as merger arbitrageurs, who would be

¹¹ One can think of the cost of the investment to be the strike price and the return on the investment to be the payoff from the investment. *See* AVINASH K. DIXIT & ROBERT S. PINDYCK, INVESTMENT UNDER UNCERTAINTY 6 (1994) (detailing how the ability to delay can be modeled as a call option).

happy to exit the deal at a price that is close to the merger price. From the perspective of investors who are happy with the deal, cashing out a few days or weeks earlier only results in a loss of time value of money, but it avoids the slight chance that the deal may fail. Investors who are happy with the transaction and are looking to cash out would not incorporate the value of an option to bring an appraisal action (the value of which is determined primarily by the likelihood that the court-appraised fair value of the target would be greater than the deal price).

Second, recent rulings in appraisal matters have signaled a preference by the Delaware Chancery Court for the discounted cash flow (“DCF”) valuation method in determining the fair value of the target stock. We examine the extent to which the Delaware Chancery Court’s preferences, with respect to certain inputs to the DCF method, may be affecting economic incentives for appraisal arbitrageurs. Specifically, we find that recent rulings in appraisal proceedings suggest that the court prefers to use the supply-side equity risk premium in computing the target firm’s cost of equity.¹² While use of the supply-side equity risk premium is consistent with the view generally accepted by academic researchers that, going forward, the equity risk premium is likely to be lower than was observed in the past, it may be inconsistent with the common practice of investment bankers advising M&A deals (as shown in Table 2 later). This finding implies that appraisal arbitrageurs may be able to take advantage of the wedge between the valuation inputs commonly used by investment bankers providing fairness opinions to parties in M&A transactions and those preferred by the court.

¹² As discussed in more detail below, the equity risk premium is a key input when estimating a company’s cost of equity. The supply-side equity risk premium is one of several ways to measure the equity risk premium.

Finally, we examine the Delaware statutory rate on the appraisal award. We find that during the five-year period between 2010 and 2014, the statutory interest rate, which is set at the Federal Reserve Discount Rate plus 5 percent, was higher than the yield on corporate bonds with maturity and credit risk that correspond to risk of appraisal (three-year with credit ratings of BB¹³ or higher), as shown in Table 4 and discussed later. This shows that the Delaware statutory rate compensates appraisal petitioners for significantly more than the time value in question (i.e., the risk-free rate of return). However, given that the statutory rate was designed to compensate petitioners for assuming risk, the comparison to the risk-free rate may not be appropriate.¹⁴ The comparison of the statutory rate to yields of risky bonds suggests that, in instances where the credit rating of the entity responsible for paying the court-

¹³ Throughout this paper, we use Standard & Poor's credit rating designations. Moody's credit rating equivalent to S&P's BB is Ba2.

¹⁴ By way of background, the legislative intent behind setting the Delaware statutory rate at 5 percent over the Federal Reserve discount rate seems fairly clear: it was enacted as the presumptive rate in appraisal cases in order to eliminate expensive, time-consuming "trials within trials" over the appropriate pre-judgment interest rate. The specific presumptive rate selected is drawn from the Delaware statute that generally establishes the rate of pre-judgment interest on debt obligations. The Delaware General Corporation law has long provided that "[e]xcept as otherwise provided in this Code, any judgment entered on agreements governed by this subsection, whether the contract rate is expressed or not, shall, from the date of the judgment, bear post-judgment interest of 5 percent over the Federal Reserve discount rate including any surcharge thereon or the contract rate, whichever is less." DEL. CODE ANN. tit. 6, § 2301(a) (2013). We thank the referee for pointing this out.

determined fair value to the petitioner is BB or higher, the statutory rate more than compensates the petitioner on a risk-adjusted basis as well. While the extent to which the statutory rate may drive arbitrageurs to seek appraisal is debatable, our findings are consistent with the notion that the relatively high current statutory rate does improve the economics for arbitrageurs.

A few policy implications flow from our results: First, from an economic perspective, it seems reasonable to limit a dissenting shareholder's appraisal rights to only the shares held as of the record date. This is, at least in part, because doing so would prevent situations of appraisal on shares that were voted in favor of the deal by prior owners. This concern is not new and has been made by several commentators.¹⁵ Moreover, setting the cut-off at the record date would still give investors a considerable amount of time after the announcement of a transaction to evaluate the transaction from the perspective of investing in the target's shares in order to seek appraisal. Setting the cut-off earlier—at, say, the announcement date—would give appraisal arbitrageurs virtually no time to invest in shares for purposes of seeking an appraisal later. Denying appraisal rights to shares acquired after the record date also helps limit the value transfer (i.e., the value of the delay option) from the acquirer to appraisal arbitrageurs. Assuming all shareholders are entitled to equal treatment, there seems to be little economic merit in giving appraisal arbitrageurs privileges that are not granted to others. For example, an institutional investor who has acquired the target stock prior to the announcement

¹⁵ See, e.g., Theodore N. Mirvis, *Delaware Court Decisions on Appraisal Rights Highlight Need for Reform*, HARV. L. SCH. F. ON CORP. GOVERNANCE & FIN. REG. (Jan. 21, 2015), <http://corpgov.law.harvard.edu/2015/01/21/delaware-court-decisions-on-appraisal-rights-highlight-need-for-reform/>.

of a transaction and is unhappy with the pending transaction is entitled to seek an appraisal. However, unlike appraisal arbitrageurs, the institutional investor would have to vote against the transaction on the date of record. In this case, the institutional investor's dissent would contribute to the risk that the transaction may fail to obtain shareholder approval, which may then cause the target's stock value to fall well below the price offered by the acquirer. It is unclear why appraisal arbitrageurs should not be required to carry the same risk.

Second, with respect to the potential wedge between the court's preference and investment bankers' common practices for certain valuation inputs, we do not suggest that the court should simply adopt investment bankers' valuation assumptions, as doing so would defeat the purpose of an appraisal action. The Delaware appraisal statute calls upon the court to perform an independent evaluation of "fair value." Because the core of the DCF method (which is Delaware's preferred valuation technique) involves cash flow projections and assumptions on various key valuation inputs, asking the court to simply adopt investment bankers' assumptions on such valuation inputs would be inconsistent with the statutory mandate of an independent valuation. However, our findings do indicate that the court may want to be mindful of certain systematic differences in valuation inputs that could create profit opportunities for those seeking appraisal. Conversely, investment bankers and deal lawyers should also be sensitive to these systematic differences, and they should at least be aware of the potential implication of continuing to adopt certain valuation assumptions.

Finally, our benchmarking analysis of the Delaware statutory interest rate indicates that it may be useful to contemplate a change in either the interest rate itself or the amount on which the interest rate is paid (or both). We recognize that it may not be possible to set an interest rate based on the characteristics of a particular acquirer without increasing the scope of issues

that are likely to be litigated in an appraisal proceeding. Given this consideration, it may be more practical to adopt a change that limits the amount on which the interest rate is paid. For example, one possible approach would allow an appraisal respondent to pay a certain amount of money to the petitioners early in the litigation process, thus preventing the accrual of interest on that amount. Interest would only accrue on the portion of the court-determined fair value over and above the amount already paid.

The rest of this article is organized as follows: In Part II, we discuss the value of delay. Part III explores differences in valuation inputs used by market participants and the Delaware Chancery Court. Part IV compares the Delaware statutory rate to several different benchmarks. Part V concludes the paper.

II. THE FREE OPTION

Recent opinions related to the appraisal of Ancestry.com, Inc.¹⁶ and BMC Software, Inc.¹⁷ have affirmed that, pursuant to section 262 of the Delaware General Corporation Law, an appraisal proceeding can be sought by a stockholder who acquired the stock of the target company after the record date, as long as the number of shares for which appraisal is sought does not exceed the total number of shares that voted against the M&A transaction.¹⁸

¹⁶ *In re Appraisal of Ancestry.com, Inc.*, No. 8173-VCG, 2015 Del. Ch. LEXIS 2 (Jan. 5, 2015).

¹⁷ *Merion Capital LP v. BMC Software, Inc.*, No. 8900-VCG, 2015 Del. Ch. LEXIS 3 (Del. Ch. Jan. 5, 2015).

¹⁸ *Id.* at *16; *see also In re Appraisal of Transkaryotic Therapies, Inc.*, No. 1554-CC, slip op. at 3, 5 (Del. Ch. May 2, 2007). Consistent with the provisions in section 262(a) of the Delaware General Corporation Law, the court ruled in *Transkaryotic Therapies* that for the purposes of

So, how do the *Ancestry.com* and *BMC Software* rulings help appraisal arbitrageurs? As an initial matter, we ignore legal issues surrounding the eligibility of shareholders with no ability to vote on the transaction to bring an appraisal action. Similarly, we also ignore the judicial determination or legislative intent to allow such shareholders to bring an appraisal suit. We limit our discussion to economic issues only; that is, we examine whether, and how, granting appraisal rights to shares bought after the record date helps appraisal arbitrageurs.

A. VALUE OF DELAY

It is well established in finance that the ability to delay an investment is valuable because it allows the investor to make a more informed investment decision.¹⁹ A simple hypothetical example helps illustrate the value of delay. Suppose that an investor has the opportunity to invest \$100 in an asset today. Further assume that, as of today, the best information available suggests that there is an equal chance that at the end of some period of time, say T , the \$100 will become either \$120 or \$80.²⁰ Now assume that this investor has the ability to delay investing the \$100 in the asset for some time, such that she could refine her assessment of the

determining whether appraisal can be sought by the petitioner, shares that abstained or did not vote should be treated as votes against the transaction.

¹⁹ For a detailed discussion of this topic, see DIXIT & PINDYCK, *supra* note 11, at 8.

²⁰ In economic terms, the expected gain from this investment is zero as of today. The expected gain is equal to the expected value of the asset at the end of period T minus the cost of the investment (which is \$100). When there is an equal chance that at the end of period T the \$100 could become either \$120 or \$80, the expected value of the asset at the end of period T is calculated to be \$100 (i.e., $\$120 \times 50\% + \$80 \times 50\%$). For the purposes of this illustration, we ignore the time value of money.

possible outcomes at the end of time period T using new information that may emerge after today. Suppose the new information allows the investor to figure out that the likelihood of the positive scenario—i.e., \$100 becoming \$120—is 75 percent. She can then invest her \$100 in the asset with the expectation of making a gain of \$10.²¹ Similarly, if waiting results in the revelation that the asset value at the end of period T is more likely to be \$80, then the investor can simply avoid making the investment. Thus, in either outcome of this hypothetical example, the investor benefits from the ability to delay the investment decision.

One can use a similar construct to analyze an appraisal arbitrageur's ability to delay purchasing a target's stock, and to surmise the effect that such ability has on the economics of the appraisal arbitrageur. We start by assuming that on date t_a , a target, say Company A, announces a friendly all-cash transaction at a consideration of $\$X$ per share. On the announcement date t_a , an appraisal arbitrageur learns about the transaction (along with the rest of the public). Suppose that subsequently, on date t_n (the notice date), Company A gives a notice to its shareholders that a shareholder meeting will be held on t_m (the meeting date), in which those who hold Company A stock as of t_r (the record date) will be able to vote on the

²¹ This hypothetical example assumes that waiting for some time does not result in an increase in the cost of the investment, i.e., that it remains at \$100. In the scenario where delay is possible, a revised probability of 75 percent to realize an asset value of \$120 at the end of period T , and the corresponding revised probability of 25 percent to realize only \$80, result in a new expected value of \$110 (i.e., $\$120 \times 75\% + \$80 \times 25\%$). Thus, the expected gain from the investment is \$110 minus \$100, or \$10.

transaction.²² The Delaware appraisal statute requires that the fair value determination be done as of the date of deal closing, t_c .²³ Thus, the question facing the arbitrageur is how likely it is that the fair value of Company A's stock as of t_c will be higher than the contemplated offer price of \$X.

Under the current statute, the arbitrageur can seek appraisal for shares bought after the record date.²⁴ In order to perfect appraisal rights, the statute also requires that a dissenting shareholder deliver (via the record holder of the shares) a written demand for appraisal to the target company, before the shareholder meeting on the at-issue transaction (i.e., before t_m).²⁵ Thus, allowing an arbitrageur to seek appraisal for shares bought after the record date effectively enables her to postpone the share purchase until at least t_m . In practice, however, the extant interpretation of the statute is that the written demand for appraisal that needs to be delivered to the target company prior to the shareholder meeting can simply be a generic one, without specifying the number of shares for which appraisal will be sought. Thus, an appraisal

²² The notice of call for a shareholders' meeting is different from the notice of setting a record date. Public companies are required to give the exchange on which their shares are listed ten days' advance notice of the setting of a record date. *See, e.g.*, NEW YORK STOCK EXCHANGE LISTED COMPANY MANUAL § 204.21 (2013).

²³ *In re Appraisal of The Orchard Enters., Inc.*, No. 5713-CS, 2012 Del. Ch. LEXIS 165, at *5 (July 18, 2012), *aff'd sub. nom.* *The Orchard Enters., Inc. v. Merlin P'rs, LP*, No. 470, 2013 Del. LEXIS 155 (Del. Mar. 28, 2013).

²⁴ *In re Appraisal of Transkaryotic Therapies, Inc.*, No. 1554-CC, 2007 Del. Ch. LEXIS 57, at *10–11 (May 2, 2007).

²⁵ DEL. CODE ANN. tit. 8, § 262(d)(1) (2013).

arbitrageur could make a demand before the shareholder vote without having established any significant position in the target's stock, thereby preserving the flexibility to acquire a larger portion of target shares at any time before the deal closing. To sum up, allowing arbitrageurs to seek appraisal for shares bought after the record date enables them, in practice, to delay the share purchase until t_c . Alternatively, if appraisal rights were available only to the shares held as of the record date, then once a target company announces the setting of the record date, an arbitrageur would have to buy the target stock during the period between the announcement of the setting of the record date and the record date (t_r) itself. So, how does allowing the appraisal arbitrageur to postpone the investment decision from t_r to t_c help her?

To understand the economic implication of such a delay, we empirically examine the typical length between t_r and t_c by reviewing the timeline of cash-only friendly deals.²⁶ For the purposes of our review, we identified 562 transactions involving U.S. targets with a deal value

²⁶ As a practical matter, the time it takes to close a friendly deal, i.e., the number of days between the deal announcement (t_a) and the deal closing (t_c), is dependent on, among other things, the amount of time required to obtain clearance or approvals from the U.S. Securities and Exchange Commission and other regulatory authorities. However, our focus here is on the length of time from the record date (t_r) to the deal closing (t_c). We recognize that looking at the average length of the periods taken to close deals may understate the length of more common timeframes for deals subject to regulatory delay. This is because, in transactions that do not face a meaningful regulatory approval hurdle, the deal closing frequently takes place immediately following the shareholder vote. However, in deals subject to regulatory delay, there may be months of holdup. In these deals, the ability to wait for regulatory approval increases the value of the option provided to appraisal arbitrageurs.

of at least \$500 million that were closed between January 1, 2010, and December 31, 2014.²⁷

We then further limited our review to transactions meeting the following criteria: (1) the initial reception of the target's board of directors to the deal was not hostile; (2) the acquirer did not own more than 50 percent of the target shares before the deal announcement, but owned more than 50 percent of the target shares after the transaction closing; (3) the consideration was paid entirely in cash; and (4) the target shareholders voted on the deal.²⁸

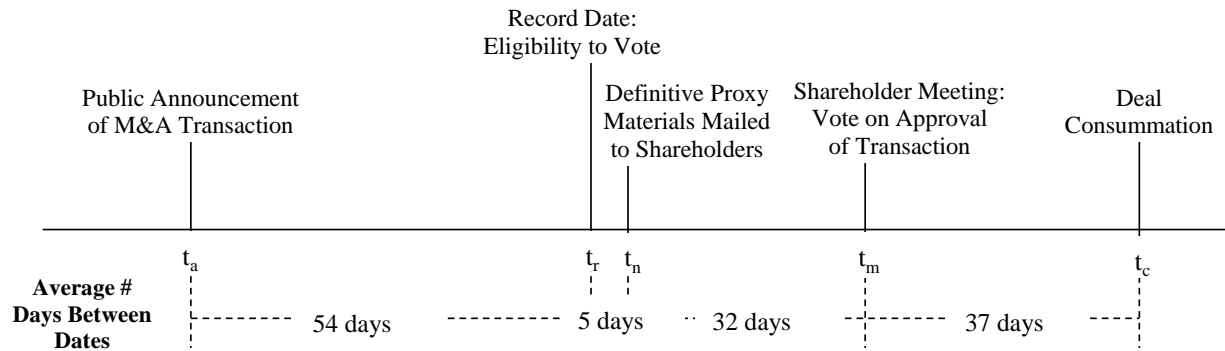
The resulting sample contains 156 transactions.

²⁷ We used the Thomson Reuters SDC Platinum M&A Database to select transactions.

²⁸ By requiring that the target shareholders voted on the deal, we effectively excluded any transactions completed through a tender offer that required no shareholder vote for approval. In a two-step transaction, an acquirer that has acquired 90 percent of the target shares in the first-step tender offer can acquire the remaining minority interest without a shareholder vote (i.e., a "short-form merger"). Traditionally, parties used so-called top-up options to give an acquirer that had consummated the first-step tender offer an option to purchase a certain number of additional target shares necessary to reach the threshold that would qualify the second step as a short-form merger. In August 2013, Delaware adopted new section 251(h) permitting a "medium-form merger," thus eliminating the need for traditional workarounds such as top-up options. *See* DEL. CODE ANN. tit. 8, § 251(h) (2013). Under the amended section 251(h), as long as certain conditions are met, even if an acquirer fails to acquire at least 90 percent of the target shares in the first-step tender offer, it may still acquire the remaining minority interest and complete the merger without a shareholder vote. *Id.* It is likely that the average timeline of a medium-form merger is considerably shorter than the deal timeframe presented in Figure 1.

Figure 1 shows the evolution of a typical cash-only friendly transaction. The chart shows that, on average, a friendly cash-only deal takes 128 days to close. The average time period between the announcement date and the record date is 54 days, and the average time period between the record date and the deal consummation is 74 days (i.e., 5 days between the record date and the notice date, plus 32 days between the notice date and the shareholder meeting date, plus 37 days between the meeting date and the deal consummation).

Figure 1: Timeline of a Typical Deal Process



Casual observation of the financial markets suggests that many things can happen during a 74-day period from t_r to t_c that may affect the valuation. While the fair value of a company is not expected to fluctuate as much or as frequently as the market value of its stock, it would nevertheless be in the economic interest of the appraisal arbitrageur to delay the investment decision for the following reasons: First, postponing the share purchase to after the record date enables the arbitrageur to take advantage of any development or new information, including any relevant information concerning the at-issue transaction that may not be available until

A related question, then, is to what extent an acquirer may limit appraisal arbitrage incentives by using the medium-form merger option. We leave that question for future research.

after the record date has been set. This, in turn, would help the arbitrageur better assess how likely it is that the fair value of the target company stock as of the deal closing will be higher than the contemplated offer price. Second, a delay may also help the arbitrageur minimize deal risk, i.e., the risk of investing in shares of a target company that later fails to close the transaction.²⁹

The Free Option

The Delaware appraisal determination is based on the valuation of the target company as of the transaction closing date (t_c in Figure 1). From an appraisal arbitrageur's point of view, it is clearly best to wait until as close as possible to the closing date t_c to make a share purchase decision. This is because, by waiting, the arbitrageur can take into consideration any developments or new information when assessing the value of the target company relative to the transaction price.

A recent example that helps illustrate the value of waiting to invest is the precipitous decline in oil prices during the second half of 2014. Lower oil prices may help reduce the production cost for manufacturers using oil as a raw material (e.g., plastic packaging makers), thereby improving their profitability. Lower oil prices may also mean more disposable income at the consumer level, which in turn would boost the outlook of retail or grocery company stocks. Thus, an arbitrageur evaluating appraisal actions for deals announced during the second half of 2014 could benefit from waiting in one of the two ways: (a) bringing actions

²⁹ In addition, keeping the return in dollar terms constant, an investor would generally prefer a shorter holding period. Allowing appraisal arbitrageurs to postpone the share purchase until the deal closing (thereby shortening the holding period as much as possible) is particularly beneficial if the appraisal matter is later resolved through a quick settlement.

against transactions where the drop in oil prices is likely to have a positive impact on the value of the target or (b) avoiding appraisal actions against transactions involving oil companies and other firms that were negatively impacted by the drop in oil prices.

Waiting could also allow the arbitrageur to take advantage of a target-specific development such as a positive quarterly earnings surprise, an upward revision to the estimated reserve size of the target's natural resource assets, or an FDA approval of the target's new drug. For example, pharmaceutical company Transkaryotic Therapies, Inc., which was the subject of a Delaware appraisal matter about a decade ago, released "extraordinarily positive" phase III clinical trial outcomes for one of its drugs ten days after the record date, but about a month before the shareholder vote on the transaction.³⁰

Even if there are no such developments within the relevant timeframe, waiting to invest may be worthwhile for the arbitrageur. This is because, as Figure 1 shows, there is a key event between t_r and t_c , namely, the target company's delivery of a notice to its shareholders and the simultaneous filing of a definitive proxy statement (e.g., Form DEFM14A) with the U.S. Securities and Exchange Commission, on t_n . In the definitive proxy statement, the target notifies its shareholders of the date, time, and place of the upcoming shareholder meeting on the transaction. More important, the definitive proxy statement provides detailed information regarding the background of the transaction, deal process, valuation, and opinions of the

³⁰ See *In re Transkaryotic Therapies, Inc.*, 954 A.2d 346, 355 (Del. Ch. 2008). Despite the new positive outcomes, the offer price for Transkaryotic Therapies was not negotiated up. In addition, no other bidder emerged after the release of the clinical trial results. Plaintiffs in the case argued that the positive clinical trial outcomes demonstrated that Transkaryotic Therapies's stock was worth more than the offer price of \$37 per share.

target's financial advisors, as well as the company's financial forecasts. While much of this information may have already been disclosed to the public in the target's preliminary proxy filings, the definitive proxy statement sometimes contains new information not available prior to the notice date, and this can help an investor better assess the target's value relative to the contemplated offer price.

Recent appraisal arbitrageurs have in fact taken advantage of this opportunity to delay investment. For example, Merion Capital started purchasing shares of Ancestry.com on December 4, 2012, the second trading day after the company's filing of the definitive proxy statement.³¹ Merion Capital continued purchasing shares through December 17, 2012, which was ten calendar days before the scheduled shareholder meeting.³² Similarly, Merion Capital began purchasing shares of BMC Software in July 2013, with its last purchase on July 17, 2013.³³ These purchases were made between BMC Software's filing of the definitive proxy statement on June 25, 2013, and the shareholder meeting on July 24, 2013.³⁴

Arbitrageurs' ability to delay investing can be viewed as equivalent to owning a call option. Specifically, in our hypothetical example above involving the acquisition of Company

³¹ *In re* Appraisal of Ancestry.com, Inc., No. 8173-VCG, 2015 Del. Ch. LEXIS 2, at *5 (Jan. 5, 2015).

³² *Id.*

³³ Merion Capital LP v. BMC Software, Inc., No. 8900-VCG, 2015 Del. Ch. LEXIS 3, at *3 (Del. Ch. Jan. 5, 2015).

³⁴ BMC Software, Inc., Proxy Statement Pursuant to Section 14(a) of the Securities Exchange Act of 1934 (DEFM14A) (June 25, 2013); *see also* Merion Capital LP v. BMC Software, Inc., No. 8900-VCG, 2015 Del. Ch. LEXIS 3, at *7.

A, the call option held by the arbitrageur gives her the right (but not the obligation) to purchase Company A's stock before the deal closing date t_c at a price of $\$X$ per share.³⁵ The arbitrageur will exercise the option—i.e., purchase Company A's stock and later initiate an appraisal action—if at some point before t_c she estimates, based on the information available, that the fair value of Company A's stock as of t_c will exceed $\$X$ per share.³⁶ Conversely, if the arbitrageur determines that the expected payoff from exercising the option is less than $\$X$ per share, then she will not purchase Company A's stock or initiate the appraisal action.

The option to delay purchase of shares is valuable, and our expectation is that it will likely be exercised more often by appraisal arbitrageurs after Delaware's recent reaffirmation

³⁵ For the purposes of this discussion, we have made a number of simplifying assumptions so as to better focus on the underlying intuition, while avoiding technical exposition of options. For example, we assume that the strike price (i.e., the price at which the holder of the call options can buy the underlying security when the option is exercised) is equal to the contemplated offer price. Typically, after the announcement of a friendly cash-only deal, a target company's stock trades slightly below (but close to) the offer price.

³⁶ For ease of exposition, we ignore that the arbitrageur will not be able to realize the fair value of Company A's stock immediately. As we discuss later, it usually takes about three years for appraisal awards to be determined and paid. In reality, an arbitrageur has to consider other factors—such as the time delay to receive the appraisal award, the risk of losing the appraisal case, and the potential litigation costs—when deciding whether or not to exercise the option.

of appraisal rights to shares bought after the record date.³⁷ As discussed above, arbitrageurs do not pay for this option. Thus, the Delaware appraisal statute essentially requires that companies that survive M&A transactions (and ultimately their shareholders) give such an option to arbitrageurs for free.

In addition to the option to delay, the Delaware appraisal statute also gives arbitrageurs sixty days after a deal closes to decide whether to bring an appraisal action or accept the transaction price.³⁸ The flexibility available to petitioners or arbitrageurs post-closing can also be viewed as an option. Whereas the ability to delay investment is akin to a call option, the ability to choose between bringing an appraisal action and accepting the transaction price is equivalent to a put option.³⁹ This is because, in the context of appraisal actions, the post-closing flexibility allows arbitrageurs to either sell their shares to the entity that survives the transaction and receive the transaction price (that is, exercise the put option) or bring the appraisal action with the expectation of realizing an appraisal award higher than the transaction price.

Minimizing Deal Risk

Another benefit of delaying investment in a target's stock is that it helps minimize exposure to deal risk, i.e., the risk that the announced transaction may not actually close. It is

³⁷ See *In re* Appraisal of Ancestry.com, Inc., No. 8173-VCG, 2015 Del. Ch. LEXIS 2, at *29–30 (Jan. 5, 2015); see also *Merion Capital LP v. BMC Software, Inc.*, No. 8900-VCG, 2015 Del. Ch. LEXIS 3, at *31 (Jan. 5, 2015).

³⁸ DEL. CODE ANN. tit. 8, § 262(e) (2011 & Supp. 2014).

³⁹ A put option gives the holder the right, but not the obligation, to sell an asset at a predetermined price.

in an appraisal arbitrageur's interest to avoid investing tens or hundreds of millions of dollars in shares of a target that fails to later close the deal. This is because deal failure not only derails the goal of launching an appraisal lawsuit, but also exposes the appraisal arbitrageur to a potentially significant loss.

It is well established that the announcement of a transaction attracts merger arbitrageurs who assume deal risk in exchange for realizing the arbitrage spread.⁴⁰ For all-cash deals, the arbitrage spread is the difference between the offer price of the pending transaction and the trading price of the target stock during the period between the deal announcement and the deal resolution (either successful consummation or deal failure).⁴¹ Over the last few years, the average arbitrage spread for all-cash friendly deals, as measured a few days after the

⁴⁰ See, e.g., David F. Larcker & Thomas Lys, *An Empirical Analysis of the Incentives to Engage in Costly Information Acquisition: The Case of Risk Arbitrage*, 18 J. FIN. ECON. 111 (1987); Gaurav Jetley & Xinyu Ji, *The Shrinking Merger Arbitrage Spread: Reasons and Implications*, 66 No. 2 FIN. ANALYSTS J. 54 (2010); Jan Jindra & Ralph A. Walkling, *Speculation Spreads, Arbitrage Profits and Market Pricing of Proposed Acquisitions*, 10 J. CORP. FIN. 495 (2004); Mark Mitchell & Todd Pulvino, *Characteristics of Risk and Return in Risk Arbitrage*, LVI No. 6 J. OF FIN. 2135 (2001).

⁴¹ For example, once an all-cash acquisition of a target firm at the offer price of \$100 per share is announced, the stock price of the target is likely to evolve from somewhere around \$98 immediately after the deal announcement to essentially \$100 upon the deal closing. The difference between the offer price of \$100 and the trading price of the target stock prior to the deal closing, say \$98, is called the arbitrage spread.

transaction announcement, has been around 2 percent.⁴² Thus, in the current environment, a merger arbitrageur hopes to earn about 2 percent on average (before accounting for any transaction or hedging costs and ignoring the effect of leverage).

While the chance of deal failure has historically been low in general,⁴³ failed deals do expose arbitrageurs—both merger arbitrageurs and appraisal arbitrageurs—to potentially significant losses. The potential severity of loss stems from the fact that news about a possible deal failure can result in sharp declines in the target's stock price.⁴⁴ For example, in October 2014, pharmaceutical company AbbVie Inc. withdrew its proposed acquisition of Shire Plc after the Treasury Department announced new rules taking aim at tax inversion deals.⁴⁵ In response, Shire's stock price fell by more than 26 percent during the week after the deal termination.⁴⁶

⁴² Unpublished research by the authors (available upon request).

⁴³ Studies have shown that, in the United States, well over 90 percent of deals have eventually closed successfully since 2000 (with the exception of the 2008/2009 financial crisis, during which the deal failure rate spiked). *See* Jetley & Ji, *supra* note 41, at 56. *See also* unpublished research for recent years by the authors (available upon request).

⁴⁴ Micah S. Officer, *Are Performance Based Arbitrage Effects Detectable? Evidence from Merger Arbitrage*, 13 J. CORP. FIN. 793 (2007).

⁴⁵ David Gelles, *After Tax Inversion Rules Change, AbbVie and Shire Agree to Terminate Their Deal*, N.Y. TIMES DEALBOOK (Oct. 20, 2014, 6:05 PM), http://dealbook.nytimes.com/2014/10/20/abbvie-and-shire-agree-to-terminate-their-deal/?_r=0.

⁴⁶ *Id.*

Given the deal failure risk, it is economically sensible for appraisal arbitrageurs to wait to invest, because the risk of deal failure generally declines as the closing date draws nearer. Specifically, by waiting, appraisal arbitrageurs can observe the merger arbitrage spread, which contains information concerning the market's assessment of the deal failure risk. In addition, by waiting to invest, appraisal arbitrageurs can better assess the likelihood or actuality of regulatory approval and deal financing, both of which would improve the chance of a successful close.

In summary, delaying investment until as close as possible to the date of deal closing helps arbitrageurs reduce their exposure to the risk of deal failure. This is because the ability to delay the investment allows arbitrageurs to observe the resolution of uncertainties that drive such risk.

B. POLICY IMPLICATIONS

From a public policy perspective, it seems to be a good idea to have a group of professional investors dedicated to identifying and litigating deals done at prices that might not be fair to all shareholders. If the deal announcement date was set as a cut-off for purchase of shares eligible for appraisal action, it would eliminate this "monitoring" function. However, there does not seem to be an obvious economic argument for giving appraisal arbitrageurs the ability to "free ride" during the period between the record date and the deal closing, allowing them to wait while factors that might affect the value of the target company and the deal risk evolve. Accepting the notion that some period of time after a deal announcement probably should be given to appraisal arbitrageurs to make a decision regarding whether they should invest and seek appraisal, the question is: how much time should be given?

We suggest that the record date could be used as the cut-off for determining the eligibility of appraisal claims. As Figure 1 (above) shows, in recent years, the average number of days between the deal announcement and the record date has been fifty-four days. Allowing appraisal arbitrageurs the opportunity to delay investment until the record date would give them a meaningfully long period to observe the evolution of the merger arbitrage spread and the deal process. It would also enable them to process any new information (e.g., new macroeconomic or firm-specific developments, or information concerning the deal valuation and process disseminated via the target’s preliminary proxy filings or press releases) when assessing the potential risk and reward of launching an appraisal lawsuit.

Further, setting the cut-off at the record date would also preclude the possibility of situations of appraisal on shares that were voted in favor of the deal by prior owners. This would help ensure that all shareholders of the target firm are treated equally: appraisal arbitrageurs, like other dissenting investors of the target stock, would have to vote against the deal and thus assume deal risk.

Some commentators have found that transactions with lower takeover premia or going-private transactions are more likely to face a counseled appraisal petition.⁴⁷ Others suggest that cases in which Delaware determines an appraisal award significantly higher than the transaction price tend to be “interested transactions.”⁴⁸ To the extent that such information—the takeover premium implied in a proposed transaction price, the going-private nature of a deal, or the dealing with “interested parties”—is useful for arbitrageurs to assess the merit and

⁴⁷ See, e.g., Myers & Korsmo, *supra* note 1, at 1595.

⁴⁸ Richter et al., *supra* note 7, at 22.

potential payoff of an appraisal action, it is typically known to the public well before the record date.

Furthermore, a waiting period of fifty-four days can help appraisal arbitrageurs better evaluate the deal risk. For example, in the United States, a preliminary antitrust review by the Federal Trade Commission or the U.S. Department of Justice typically takes up to thirty days.⁴⁹ According to the FTC, the vast majority of deals reviewed by these two agencies are allowed to proceed after the first preliminary review.⁵⁰ Thus, a waiting period of fifty-four days is sufficient for many deals to clear the regulatory hurdle.

III. DCF-RELATED ARBITRAGE

Valuation is central to appraisal rights cases. However, the Delaware Chancery Court does not mandate that fair valuation must be established using any particular method. The general preference is “to take a more robust approach involving multiple techniques—such as a DCF analysis, a comparable transactions analysis (looking at precedent transaction comparables), and a comparable companies analysis (looking at trading comparables/multiples)—to triangulate a value range, as all three methodologies individually have their own limitations.”⁵¹ With that said, a review of the recent Delaware opinions in appraisal matters suggests that the court often rejects the comparable transactions analysis or

⁴⁹ *See Merger Review: How Mergers Are Reviewed*, FED. TRADE COMMISSION, <https://www.ftc.gov/news-events/media-resources/mergers-and-competition/merger-review> (last visited Jan. 2, 2016).

⁵⁰ *Id.*

⁵¹ *S. Muoio & Co. v. Hallmark Entm’t Invs. Co.*, No. 4729-CC, 2011 Del. Ch. LEXIS 43, at *83–84 (Mar. 9, 2011).

comparable companies analysis in favor of a DCF analysis. The court recognizes that “where the purported ‘comparables’ involve significantly different products or services than the company whose appraisal is at issue, or vastly different multiples, a comparable companies or comparable transactions analysis is inappropriate.”⁵² In *In re Appraisal of Ancestry.com*, Vice Chancellor Glasscock, when commenting on the fact that both sides’ valuation experts exclusively relied on the DCF approach, called the comparable companies and comparable transactions analyses “irrelevant and unhelpful ... given Ancestry’s unique business and the concomitant difficulty of finding comparable companies or transactions.”⁵³

With respect to the DCF analysis, Vice Chancellor Parsons explained in his order in *3M Cogent* that, in simple terms, a DCF analysis “involves three basic components: (1) cash flow projections; (2) a discount rate; and (3) a terminal value.”⁵⁴ Over the years, the Delaware Chancery Court seems to have developed a preference for certain valuation inputs into the discount rate estimation. When the court’s preference differs from the choices commonly used by investment bankers advising on the deal valuation, such a divergence can create a systematic difference between the deal price and the fair value established by the court.

⁵² *In re Appraisal of The Orchard Enters., Inc.*, No. 5713-CS, 2012 Del. Ch. LEXIS 165, at *9 (July 18, 2012), *aff’d sub. nom.* *The Orchard Enters., Inc. v. Merlin P’rs, LP*, No. 470, 2013 Del. LEXIS 155 (Del. Mar. 28, 2013).

⁵³ *In re Appraisal of Ancestry.com, Inc.*, No. 8173-VCG, 2015 Del. Ch. LEXIS 21, at *26 (Jan. 30, 2015).

⁵⁴ *Merion Capital, L.P. v. 3M Cogent, Inc.*, No. 6247-VCP, 2013 Del. Ch. LEXIS 172, at *35 (July 8, 2013).

A. EQUITY RISK PREMIUM

One key input to the discount rate estimation is the cost of the target company's equity capital. One of the most widely used models for estimating the cost of equity capital is the Capital Asset Pricing Model ("CAPM").⁵⁵ According to the CAPM, the cost of equity for any publicly traded firm is equal to the risk-free rate plus a risk premium that accounts for non-diversifiable risk.⁵⁶ Equation (1) below shows the CAPM-based formula for a firm's cost of equity.

$$\text{Cost of Equity} = R_f + \beta_e \times \text{ERP} \quad (1)$$

In this formula, R_f is the risk-free rate, β_e is the equity beta, and ERP represents the estimate of the market equity risk premium. The beta of a company's stock measures the non-

⁵⁵ For a detailed discussion of the CAPM and related concepts, *see* TIM KOLLER, MARC GOEDHART & DAVID WESSELS, *VALUATION* 293–315 (4th ed. 2005); *see also* ASWATH DAMODARAN, *INVESTMENT VALUATION* 69–71 (2d ed. 2002).

⁵⁶ *See* KOLLER, GOEDHART & WESSELS, *supra* note 56, at 294. A basic tenet of finance is that risk that is diversifiable can be easily avoided and therefore should not lead to a high expected return. In other words, one should not expect to be compensated for risk that can easily be avoided. If all of the risk associated with an investment is diversifiable, then the investment should earn a risk-free rate of return. However, in reality, the risk associated with an investment is typically not completely diversifiable because the outcomes (or payouts) of the investment are at least partially correlated with the overall market. To the extent that one faces non-diversifiable risk, one could expect to earn a return higher than the risk-free rate to compensate for that additional non-diversifiable risk. Non-diversifiable risk is also known as systematic risk.

diversifiable, or systematic, risk associated with investing in the company's stock, which is driven by the correlation of the returns of the company's stock to the returns of the market portfolio. If a stock has a beta of 1, then the expected return of the stock will match the return of the market portfolio. The expected return of a stock with a beta of less (more) than 1 will be less (more) than that of the market portfolio. ERP is typically measured as the average return over the risk-free rate that an investor expects to earn from investing in a diversified portfolio of risky assets, i.e., the market portfolio. As can be seen from Equation (1), all else being equal, a lower estimate of beta or ERP leads to a lower cost of equity.

Many academic studies have suggested that the market equity risk premium that investors should expect to receive going forward is likely to be lower than the observed historical equity risk premium, which is measured as an average excess return of the broad stock market over and above the risk-free rate over some reasonably long historical period.⁵⁷ However, in terms

⁵⁷ See, e.g., Eugene F. Fama & Kenneth R. French, *The Equity Premium*, 57 J. FIN. 637 (2002).

In this paper, Fama and French demonstrate that stock returns between 1951 and 2000 were higher than returns based on growth in dividends and earnings. Similarly, economist Jeremy Siegel claims that the forward-looking equity risk premium may be significantly lower than the historical average. See Jeremy J. Siegel, *The Equity Premium: Stock and Bond Returns Since 1802*, 48 FIN. ANALYSTS J. 28 (1992); Jeremy J. Siegel & Richard H. Thaler, *Anomalies: The Equity Premium Puzzle*, 11 J. ECON. PERSP. 191 (1997); Jeremy J. Siegel, *The Shrinking Equity Premium*, 26 J. PORTFOLIO MGMT. 10 (1999). Siegel updated his outlook on the equity premium estimate in 2011 and projected significantly lower bond returns and a much higher equity premium for the next decade, stating that “[r]eal bond returns are on track to be much lower. Ten-year TIPS are now yielding about 1 percent, so the excess returns of stocks over

of how a forward-looking ERP should be measured, there is considerable debate among academics. For example, a number of models have been proposed that seek to determine the forward-looking ERP by connecting equity returns to the production of the real economy.⁵⁸

bonds should be in the 5–6 percent range, which is higher than the historical average.” Jeremy J. Siegel, *Long-Term Stock Returns Unshaken by Bear Markets*, in 2011 RETHINKING THE EQUITY RISK PREMIUM 143, 147 (Research Found. of CFA Inst. ed., 2011).

⁵⁸ See, e.g., Jeffrey J. Diermeier, Roger G. Ibbotson & Laurence B. Siegel, *The Supply for Capital Market Returns*, 40 FIN. ANALYSTS J. 74 (1984). In this paper, the authors make a distinction between the returns that investors require to compensate them for risk (i.e., the demand for returns in the capital market) and the returns made available from macroeconomic performance (i.e., the supply of returns). They suggest that the returns available for distribution among the various claimants are set by the productivity of businesses. See also Richard Grinold & Kenneth Kroner, *The Equity Risk Premium: Analyzing the Long-Run Prospects for the Stock Market*, 5 No. 3 THE INV. RES. J. (Barclays) 7 (2002). Grinold and Kroner propose a model that links equity returns to gross domestic product (“GDP”) growth and divides equity returns into three components: income returns (the percentage of market value distributed to shareholders through both dividends and share repurchases), nominal earnings growth, and returns from the evolution of P/E ratio. By contrast, Ibbotson and Chen divide the historical equity risk premium into four factors: the income return, inflation, the growth in real earnings per share (“EPS”), and the growth (i.e., change) in the P/E ratio and claim that the first three factors of equity returns are generated by “the productivity of the corporations in the real economy,” or the “supply side,” while the fourth factor stems from investor demand and is unrelated to the supply side of the economy. Ibbotson & Chen, *infra*, at 94. Ibbotson and Chen

Over the past few years, the Delaware Chancery Court seems to be moving away from using a historical ERP in favor of one that reflects the growing academic opinion that the forward-looking ERP is likely to be lower than the ERP that has been observed in the past. For example, in *Global GT LP v. Golden Telecom, Inc.*,⁵⁹ then-Vice Chancellor Strine adopted a 6 percent ERP, which was 1.1 percent lower than the comparable historical ERP. In explaining his reasons for selecting the 6 percent over the historical 7.1 percent ERP, he referred to academic studies on forward-looking ERPs, including, in particular, the studies that proposed estimation of ERPs by linking equity returns to productivity of the real economy. For example, the *Golden Telecom* opinion stated that:

Although it is true that Ibbotson does not disavow the use of the Historic ERP as a basis for valuing corporations on a going forward basis, the text is utterly devoid of any explication of why the Historic ERP should be used. By contrast, the 2003 article by Ibbotson and Chen explains that “investors’ expectations for long-term equity performance should be based on the supply of equity returns produced by corporations” because “[t]he supply of stock market returns is generated by the productivity of the corporation in the real economy.” And, Ibbotson’s 2008 Valuation

introduced a supply-side equity risk premium that includes only the first three components of equity returns. *Id.* at 94–95. Put differently, the supply-side equity risk premium is equivalent to the historical equity risk premium excluding the returns from growth in the P/E ratio. See Roger G. Ibbotson & Peng Chen, *Long-Run Stock Returns: Participating in the Real Economy*, 59 FIN. ANALYSTS J. 88 (2003).

⁵⁹ 993 A.2d 497 (Del. Ch. 2010), *aff’d*, 11 A.3d 214 (Del. 2010).

Yearbook makes a strong argument for the supply side method by stating that “over the long run, equity returns should be close to the long-run supply estimates.”

Ibbotson’s reasoning comports with the strong weight of professional and academic thinking . . . that the most responsible estimate of ERP is closer to 6.0% than 7.1%.⁶⁰

As Table 1 (below) shows, subsequent to the *Golden Telecom* decision, other Delaware Chancery Court judges have also embraced, to varying degree, supply-side ERP⁶¹ measures that are lower than the historical ERPs. We reviewed all Delaware appraisal opinions issued since 2010 and found eight (including *Golden Telecom*) that discussed and disclosed the choice of the ERP by the court. In five of them, the opinions explained that the ERPs adopted by the court were based on a supply-side estimate.⁶² Additionally, in *IQ Holdings, Inc. v. American Commercial Lines, Inc.*, Vice Chancellor Laster used a 5.5 percent ERP estimate

⁶⁰ *Id.* at 517 (citations omitted).

⁶¹ The term supply-side ERP refers to equity risk premium that is based on stock market returns driven by factors that can be linked to the productivity of firms. A measure of supply-side ERP used in DCFs done in connection with appraisals is based on a decomposition of the historical ERP into ERP that is based on inflation, income return, growth in real earnings, and growth in the marketwide P/E ratio. The supply-side ERP is then the historical ERP less the growth in the P/E multiple. For a detailed discussion of the supply-side ERP, see Ibbotson & Chen, *supra* note 59.

⁶² These five are *Golden Telecom*, *Just Care*, *Orchard Enterprises*, *3M Cogent*, and *Ancestry.com*.

and stated that this measure was based on “several sources, including Duff & Phelps, Ibbotson Associates, and Pratt & Grabowski.”⁶³ Even though the court did not explicitly label the 5.5 percent estimate as a supply-side ERP, we note that the figure was much closer to the applicable supply-side measure than to the historical ERP.⁶⁴ In *Laidler v. Hesco Bastion Environmental, Inc.*, an ERP of 6.14 percent, based on Ibbotson’s estimate for the years 1926 through 2011, was adopted by the court.⁶⁵ Here again, the court did not explain in the opinion whether the chosen ERP was a supply-side or historical measure. However, an examination of the applicable Ibbotson publication shows that 6.14 percent was Ibbotson’s supply-side ERP estimate for the years 1926 through 2011.⁶⁶ Lastly, in *Rural Metro Corp. Stockholders Litigation*, Vice Chancellor Laster gave consideration to both the historical ERP and the supply-side ERP.⁶⁷

⁶³ No. 6369-VCL, 2013 Del. Ch. LEXIS 234, at *12 (Mar. 18, 2013), *aff’d*, 80 A.3d 959 (Del. 2013).

⁶⁴ For example, in 2010 (i.e., the year when the American Commercial Lines transaction was closed), the historical ERP calculated by Ibbotson for the period from 1926 to 2009 was 6.7 percent, whereas its supply-side measure for the same period was 5.2 percent. *See* IBBOTSON SBBI 2010 VALUATION YEARBOOK 66 (2010).

⁶⁵ *Laidler v. Hesco Bastion Environmental, Inc.*, No. 7561-VCG, 2014 Del. Ch. LEXIS 75, at *48 (May 12, 2014), *modified*, 2014 Del. Ch. LEXIS 105 (Del. Ch. June 25, 2014).

⁶⁶ IBBOTSON SBBI 2010 VALUATION YEARBOOK 66 (2010).

⁶⁷ *In re Rural Metro Corp. Stockholders Litig.*, 88 A.3d 54, 108 (Del. Ch. 2014), *appeal dismissed*, 105 A.3d 990 (Del. 2014), *aff’d sub nom.*, *RBC Capital Mkts., LLC v. Jervis*, 2015 Del. LEXIS 629 (Del. Nov. 30, 2015).

Table 1: The Equity Risk Premium Measures Adopted by the Delaware Chancery Court in Appraisal Matters Since *Golden Telecom*

Case Name	Decision Date	Delaware Chancery Court Judge	ERP Adopted by Court
Global GT LP v. Golden Telecom, Inc.	4/23/2010	Leo Strine	6%
Gearreald v. Just Care, Inc.	4/30/2012	Donald Parsons, Jr.	5.73%
<i>In re</i> Appraisal of The Orchard Enterprises, Inc.	7/18/2012	Leo Strine	5.2%
IQ Holdings, Inc. v. American Commercial Lines, Inc.	3/18/2013	Travis Laster	5.5%
Merion Capital, L.P. v. 3M Cogent, Inc.	7/8/2013	Donald Parsons, Jr.	5.20%
Laidler v. Hesco Bastion Environmental, Inc.	5/12/2014	Sam Glasscock, III	6.14%
<i>In re</i> Rural Metro Corp. Stockholders Litigation	10/10/2014	Travis Laster	Both 6.7% and 6% were considered
<i>In re</i> Appraisal of Ancestry.com, Inc.	1/30/2015	Sam Glasscock, III	6.11%

While the purpose of this article is not to participate in the ERP debate, we do investigate the extent to which Delaware’s recent shift away from the historical ERP might have created an opportunity for appraisal arbitrageurs. We start by comparing the ERP estimates commonly

used by target financial advisors to contemporaneous measures of the supply-side ERP measure. For this analysis, we focus on M&A deals that were closed between 2010 and 2014. We further limit our sample to transactions involving a U.S. publicly traded target with a transaction value of at least \$500 million.⁶⁸

Out of the 268 deals reviewed, only 25 targets disclosed the ERP that the financial advisors used in their DCF analyses. These are presented in Table 2.

⁶⁸ Similar to our analysis underlying Figure 1 above, we also limited our review to observations meeting the following criteria: (1) the initial reception of the target's board of directors to the deal was not hostile; (2) the acquirer did not own more than 50 percent of the target shares before the deal announcement, but owned more than 50 percent of the target shares after the transaction closing; and (3) the consideration was paid entirely in cash. However, for the fairness opinion review, we did not limit the data to deals that required target shareholder voting. Our sample for this analysis contains 268 deals.

Table 2: ERP Inputs Used by Target Financial Advisors in Selected Transactions

Date of Target Fairness Opinion	Target Financial Advisor	Acquirer Name	Target Name	ERP Used by Target's Banker [A]	Supply-Side ERP [B]	Spread⁶⁹ of [A] Over [B]
12/17/2009	Goldman Sachs	72 Mobile Holdings LLC	Airvana Inc	6.47%	5.70%	0.77%
4/11/2010	Goldman Sachs	Cerberus Capital Management LP	DynCorp International LLC	6.67%	5.20%	1.47%
9/17/2010	Jefferies	Hellman & Friedman Capital	Internet Brands Inc.	6.70%	5.20%	1.50%
11/14/2010	Qatalyst Partners	EMC Corp.	Isilon Systems Inc.	5.20% – 6.70%	5.20%	0.75%
11/14/2010	Morgan Stanley	EMC Corp.	Isilon Systems Inc.	6.00%	5.20%	0.80%
11/8/2010	Jefferies	Chevron Corp.	Atlas Energy Inc.	7.10%	5.20%	1.90%
11/22/2010	Perella Weinberg	J Crew Group Inc. SPV	J Crew Group Inc.	6.70% – 10.05%	5.20%	3.18%

⁶⁹ In instances where more than one ERP was used by a target's banker, the spread represents the difference between the supply-side ERP and the midpoint of the range of ERPs used by the banker.

	Partners					
3/31/2011	Houlihan Lokey	Providence Equity Partners LLC	SRA International Inc.	5.25%	6.00%	(0.75%)
4/25/2011	Barclays	Saleen Acquisition Inc.	SMART Modular Technologies	6.70%	6.00%	0.70%
5/9/2011	Gleacher & Company	Apollo Global Management LLC	CKx Inc.	7.17%	6.00%	1.17%
8/3/2011	Morgan Stanley	Blackstone Capital Partners VI	Emdeon Inc.	4.00% – 6.00%	6.00%	(1.00%)
3/9/2012	Sandler O'Neill	MUFG Americas	Pacific Capital Bancorp, CA	6.10%	6.14%	(0.04%)
3/18/2012	Moelis & Company	Zayo Group LLC	AboveNet Inc.	6.60%	6.14%	0.46%
7/2/2012	Macquarie Capital	One Equity Partners LLC	MModal Inc.	6.50%	6.14%	0.36%
7/8/2012	JPMorgan	Thomson Reuters Corp.	FX Alliance Inc.	7.50% – 8.50%	6.14%	1.86%
7/3/2013	Peter J. Solomon Company	Investor Group	American Greetings Corp.	6.70%	6.11%	0.59%
5/9/2013	Guggenheim Securities	TowerBrook Capital Partners LP	True Religion Apparel Inc.	5.50% – 6.50%	6.11%	(0.11%)

12/17/2012	Guggenheim Securities	Nielsen Holdings NV	Arbitron Inc.	5.50% – 6.50%	6.14%	(0.14%)
1/30/2013	Macquarie Capital	Scientific Games Corp.	WMS Industries Inc.	6.14%	6.11%	0.03%
3/6/2013	Guggenheim Securities	Sycamore Partners LLC	Hot Topic Inc.	5.50% – 6.50%	6.11%	(0.11%)
8/11/2013	Lazard	Investor Group	Dole Food Co. Inc.	6.70%	6.11%	0.59%
6/21/2013	JPMorgan	Tenet Healthcare Corp.	Vanguard Health Systems Inc.	6.50% – 7.50%	6.11%	0.89%
7/15/2013	Macquarie Capital	Bally Technologies Inc.	SHFL entertainment Inc.	6.14%	6.11%	0.03%
11/18/2013	BMO Capital Markets	DSM Pharmaceutical Products	Patheon Inc.	6.10%	6.11%	(0.01%)
6/8/2014	Deutsche Bank	Analog Devices Inc.	Hittite Microwave Corp.	6.90%	6.11%	0.79%
7/31/2014	Macquarie Capital	Scientific Games Corp.	Bally Technologies	6.11%	6.11%	0.00%

In one of the 25 deals, the targets retained two separate financial advisors and disclosed the ERP choice by each financial advisor; therefore, Table 2 lists 26 entries. Of the 26 observations, bankers' ERPs exceeded the contemporaneous supply-side ERPs published by

Ibbotson in its valuation yearbooks in 18 instances, or 70 percent of the time.⁷⁰ When bankers' ERPs exceeded the contemporaneous supply-side ERPs, the median spread⁷¹ was 78 basis points.

Information presented in Table 2 suggests that the academic community and the Delaware Chancery Court may have moved towards ERP measures that are lower, on average, than those used by investment bankers when valuing target companies. Such a gap in the ERP estimates between the chancery court and investment bankers seems to be favorable to appraisal arbitrageurs because, all else being equal, a lower ERP results in a lower discount rate, which in turn leads to a higher valuation outcome under a DCF valuation approach. Of course, we do not claim that the use of the historical ERP by a target's financial advisor can help predict, with any degree of certainty, that the fair value of the target company appraised by the Delaware Chancery Court will be higher than the transaction price. Rather, the inference we draw from Table 2 is that when the chancery court uses a lower ERP (e.g., the supply-side ERP) to compute the cost of equity, but adopts all other valuation assumptions used by a target's financial advisor, the DCF-based estimate of the target's value is likely to be higher than that calculated by the financial advisor.⁷²

⁷⁰ In one of the 18 observations, the contemporaneous supply-side ERP fell within the range of the banker's ERP choices but was lower than the midpoint of the range.

⁷¹ For the observed instances in which the midpoint of the ERP range exceeded the supply-side ERP, the spread represents the extent to which the midpoint exceeded the supply-side ERP.

⁷² Of course, even if the DCF-based value determined by the court is higher than that estimated by the target's financial advisor, whether this means that the court-appraised fair value will be

The existence of a wedge in the ERP estimates between the Delaware Chancery Court and investment bankers raises some interesting questions. For example, why is it that investment bankers seem to prefer higher ERP estimates? The question becomes all the more intriguing if one recognizes that there is little reason to doubt that institutional investors, equity analysts, and other sophisticated market participants should be generally aware of the academic literature that questions the market's ability to deliver an equity risk premium in the future that is in line with the historical risk premium. Does all of this imply that acquirers will get a good deal if they can get targets to accept valuation numbers based on a higher ERP? Or does the higher ERP used by bankers suggest some skepticism regarding the cash projections (often provided by target management) used for determining a target's DCF value? We leave these and related questions for others to explore.

For the purposes of this article, we point to the wedge between bankers' ERP assumptions and those used by the chancery court (as shown in Table 2) and posit that the existence of such a wedge may have contributed to the recent surge in appraisal arbitrage. We do not suggest that the court should adopt investment bankers' ERP choices—for them to do so would defeat the purpose of an appraisal action (which calls upon the court to perform an independent evaluation of “fair value”).⁷³ However, our findings do indicate that the court

higher than the transaction price will depend on how the transaction price compares to the DCF-based value calculated by the financial advisor.

⁷³ In appraisal practices, the Delaware Chancery Court typically does not consider valuation inputs used by investment banks advising parties to an M&A transaction during a negotiation process. Similarly, experts hired by both parties also tend to develop their own independent assumptions regarding inputs to a DCF model or other valuation methods.

may want to be mindful that its embrace of a lower ERP, such as the supply-side ERP, could create opportunities for appraisal arbitrageurs. This is because valuations done in connection with appraisals are predicated on the assumption that there exists a point estimate, to the penny, of the target company's fair value, while valuations done in the marketplace are the product of negotiation around a range of reasonable values for the firm. Thus, a finding of a lower or higher fair value based on valuation inputs such as ERP gives appraisal arbitrageurs an opportunity to exploit differences in valuations caused by varying preferences for modeling assumption between the Delaware Chancery Court and the marketplace. Conversely, investment bankers and deal lawyers should also be sensitive to the use of a higher ERP, such as the historical ERP, and should at least understand the potential implications of such a choice.

B. POINT ESTIMATE

Delaware's appraisal statute provides that, through the appraisal proceeding, "the Court shall determine the fair value of the shares exclusive of any element of value arising from the accomplishment or expectation of the merger or consolidation."⁷⁴ We understand that, under the appraisal statute, the term "fair value" is a legal concept. There may be an issue equating fair value to a transaction price, as the latter is likely to reflect some synergies associated with the transaction, whereas fair value is not supposed to include synergies.⁷⁵ With that said, however, it is clear that an observed M&A transaction price is the result of negotiations around a given set of valuation estimates. When this is the case, the transaction price will, at

⁷⁴ DEL. CODE ANN. tit. 8, § 262(h) (2011 and Supp. 2014).

⁷⁵ See Lawrence A. Hamermesh & Michael L. Wachter, *The Fair Value of Cornfields in Delaware Appraisal Law*, 31 J. CORP. L. 119, 148 (2005).

least in part, reflect the negotiating skills of the parties involved in the deal. For example, an acquirer and a target could agree that the value of the target's stock is somewhere between \$16 and \$20 per share, but ultimately consummate the deal at \$17.25 due to the superior negotiating ability of the acquirer or its advisors.

Delaware's appraisal statute requires the court to determine a point estimate, rather than a range, of the fair value of the target company. An implication of this requirement is that the court may determine a fair value that is higher than the transaction price but still within the range of values considered by the transaction parties. In the example above, this would happen if the court-appraised fair value of the target stock were somewhere between \$17.26 and \$20 per share.

So, what is the potential implication for appraisal arbitrage? We argue that transactions consummated at a price that is on the lower end of the DCF value range established by the target's financial advisors might be more attractive to appraisal arbitrageurs, because arbitrageurs could start by showing that the fair value of the target is at least equal to the midpoint of the target financial advisor's DCF value range.

A review of recent M&A transactions shows that transaction prices are frequently below the midpoint of the DCF price range. Table 3 (below) displays the details of this analysis. The information shown in the table is collected from the same sample as that used for Table 2. Table 3 contains more observations than Table 2 because DCF ranges are disclosed much more often in targets' proxy filings than ERP values. Specifically, out of the 268 deals reviewed, all but nine reported the DCF ranges.

Table 3: Deal Prices Relative to DCF Price Ranges Established by Target Financial Advisors⁷⁶

Year of Deal Closing	# of Deals	Deal Price Below Lower Bound of Range	Deal Price Within Lower Half of Range	Deal Price Within Higher Half of Range	Deal Price Above Higher Bound of Range
2010	49	0%	24%	53%	22%
2011	59	2%	34%	49%	15%
2012	53	2%	40%	40%	19%
2013	59	3%	36%	49%	12%
2014	39	3%	23%	54%	21%
Total	259	2%	32%	49%	17%

As Table 3 demonstrates, over the period from 2010 to 2014, over one third of the deals were consummated at a price below the midpoint of the DCF range established by the target’s financial advisor(s). In some years, this was true for over 40 percent of the deals. Of course, this fact alone does not mean that the Delaware appraisal statute gives appraisal arbitrageurs any particular advantage. However, a combination of various factors—including Delaware’s preference for the ERP, the statutory requirement for determining a point estimate of value,

⁷⁶ When a target company hired multiple bankers to value the proposed transaction, we combined the valuation outcomes of all bankers to establish a DCF price range.

and the court's general practice of relying on valuation methodologies such as DCF—does present a favorable environment for appraisal arbitrageurs.

The court's preference for independent valuations over the merger price in determining fair value seems to be based on the statutory requirement that fair value be computed without giving any consideration to the anticipated gains from the merger.⁷⁷ Clearly, it would not make sense, economic or otherwise, to give weight to the actual transaction price if a sales process is found to be flawed. However, in the absence of such a finding, it might be useful for the court to keep the actual transaction price in mind when appraising the fair value of a publicly traded target company.

Recently, there have been several instances in which the Delaware Chancery Court has relied on the actual transaction price. For example, in *Huff Fund Investment Partnership v. CKx, Inc.*, the chancery court did “rely on the merger price as the best and most reliable indication of CKx's value.”⁷⁸ In *In re Appraisal of Ancestry.com, Inc.*, the court also ultimately deferred to the actual transaction price.⁷⁹ In April 2015, Vice Chancellor Noble ruled in the *AutoInfo, Inc.* appraisal that the deal price in the transaction was a strong indicator of the target's value and, accordingly, set the fair value of the target company at the transaction price.⁸⁰ Similarly, in *LongPath Capital LLC v. Ramtron International Corp.*, Vice Chancellor Parsons ruled that the transaction price minus estimated synergies provided the

⁷⁷ Hamermesh & Wachter, *supra* note 76, at 148.

⁷⁸ No. 6844-VCG, 2013 Del. Ch. LEXIS 262, at *36 (Oct. 31, 2013).

⁷⁹ No. 8173-VCG, 2015 Del. Ch. LEXIS 21, at *74–76 (Del. Ch. Jan. 30, 2015).

⁸⁰ *Merlin Partners LP v. AutoInfo, Inc.*, No. 8509-VCN, 2015 Del. Ch. LEXIS 128 (Apr. 30, 2015).

most reliable method for determining the fair value of Ramtron's shares.⁸¹ In several of the cases mentioned above, the court determined that none of the traditional valuation methodologies, including DCF, could be reliably applied for the purposes of conducting a valuation.⁸² In these recent matters in which the court-determined fair value was based on the transaction price, the court also found that the sales process was robust and fair. In sum, recent decisions do show that appraisal arbitrage is not without risk. However, the downside risk seems modest, as recent rulings continue to lend support to the notion that the Delaware Chancery Court is likely to determine fair value that is at least equal to the transaction price.

Even in instances in which the sales process is less than ideal, it may still be useful to subject the DCF value of a publicly traded target to some form of a market check. While it is possible that market participants, including institutional investors, may not fully understand the value of the target's assets or strategy, it is unlikely that the value of a public company can remain hidden from sophisticated investors.⁸³

IV. INTEREST RATE

Under the current Delaware appraisal statute, absent good cause (e.g., appraisal petitioners pursuing claims in bad faith), a petitioner is awarded interest, regardless of whether the court-appraised fair value is higher or lower than the transaction price. The statute

⁸¹ No. 8094-VCP, 2015 Del. Ch. LEXIS 177 (Del. Ch. June 30, 2015).

⁸² *CKx, Inc.*, 2013 Del. Ch. LEXIS 262, at *44; *AutoInfo, Inc.*, 2015 Del. Ch. LEXIS 128, at *54; *Ramtron Int'l Corp.*, 2015 Del. Ch. LEXIS 177, at *83.

⁸³ For additional discussion of the concept of hidden value, see Reinier Kraakman & Bernard Black, *Delaware's Takeover Law: The Uncertain Search for Hidden Value*, 95 NW. U. L. REV. 521 (2002).

provides that “interest from the effective date of the merger through the date of payment of the judgment shall be compounded quarterly and shall accrue at 5 percent over the Federal Reserve discount rate.”⁸⁴ Recently, market observers have devoted a fair amount of attention to the Delaware statutory interest rate. Some argue that in today’s low-interest-rate environment, the relatively generous statutory interest rate may have encouraged appraisal cases.⁸⁵

Benchmarking the statutory rate against market rates may shed some light on the extent to which the statutory rate could facilitate appraisal arbitrage. For the purposes of benchmarking, we focus on both the risk-free rate and the yield on U.S. corporate bonds, both with a maturity of three years. Our reason for benchmarking to three-year rates is that, in recent years, the resolution of an appraisal matter has typically taken about three years.⁸⁶ To

⁸⁴ DEL. CODE ANN. tit. 8, § 262(h) (2011 & Supp. 2014).

⁸⁵ See, e.g., KIRKLAND & ELLIS, APPRAISAL RIGHTS — THE NEXT FRONTIER IN DEAL LITIGATION? (May 1, 2013).

⁸⁶ We identified thirteen appraisal matters from 2010 through January 2015 for which the Delaware Chancery Court determined a fair value: *Sunbelt*, *Golden Telecom*, *Just Care*, *Orchard Enterprises*, *American Commercial Lines*, *AT&T Mobility Wireless Operations*, *Cox Radio*, *3M Cogent*, *Trados*, *CKx*, *Hesco Bastion*, *Rural Metro*, and *Ancestry.com*. For these thirteen cases, the time to resolution ranges from 1.9 years to 12.1 years, with an average of 3.6 years. The case that took 12.1 years to resolve was *In re Sunbelt Beverage Corp. Shareholder Litigation*, which was stayed for a number of years pending the outcome of a related matter in a different jurisdiction. Excluding *Sunbelt*, the average time to resolution is estimated to be 2.9 years.

approximate the risk-free rate, we use the three-year constant maturity Treasury (“CMT”) rate.⁸⁷ As stated above, comparing the statutory rate to the risk-free rate may not be useful, as the statutory rate is designed to compensate petitioners for more than the time value of money only. On the other hand, the yields of corporate bonds with three years to maturity serve as useful benchmarks for the purpose of examining the extent to which the statutory rate compensates petitioners for having a bond-like claim on the acquiring entity (or the entity that will be responsible for paying the fair value). A bond-like claim is more appropriate than an equity-like one, because the risk faced by a petitioner is mostly idiosyncratic. Aside from litigation risk, the remaining risk is that the post-transaction entity is unable to pay the judgment from the appraisal action.

Table 4 compares the Delaware statutory rate to selected benchmark interest rates for the years 2010 through 2014. We benchmark the statutory rate against the yields of a broad range of corporate bonds, issued by either industrial or financial firms in the United States, with credit ratings between AA and BB.⁸⁸ For a given year, the statutory rate is based on the average Federal Reserve discount rate for the year. The table shows that, based on the average Federal Reserve discount rate, the Delaware statutory interest rate was between 5.72 percent

⁸⁷ A constant maturity Treasury rate is an interpolated yield based on the yields of the recently auctioned U.S. Treasury securities. A three-year CMT rate is the yield on Treasury securities with a three-year term. On any given day, a three-year CMT rate represents an estimate of what the yield on a three-year Treasury security would be if it were issued on that day.

⁸⁸ Based on Standard & Poor’s credit rating designations. Moody’s credit ratings equivalent to S&P’s AA to BB are Aa2 to Ba2. Under each rating in our analysis, we include the half-plus notch and the half-minus notch as well. For example, the A rating covers A+, A, and A-.

and 5.75 percent during the period from 2010 to 2014. During the same period, the risk-free rate (i.e., the yearly average three-year CMT rate) went from a high of 1.11 percent in 2010 to a low of 0.38 percent in 2012, with a recent climb up to 0.90 percent in 2014. A comparison of the statutory rate to the risk-free rate unsurprisingly shows that the former compensates appraisal petitioners for much more than the time value of money.

Table 4: Benchmarking the Delaware Statutory Rate Against Selected Benchmark Interest Rates, 2010 to 2014⁸⁹

Interest Rate	2010	2011	2012	2013	2014
<i>Avg. Delaware Statutory Rate</i>	5.72%	5.75%	5.75%	5.75%	5.75%
Avg. 3-Year CMT Yields	1.11%	0.75%	0.38%	0.54%	0.90%
Avg. Yields on Industrial Bonds					
3-Year AA Industrial Bonds	1.72%	1.29%	0.81%	NA	NA
3-Year A Industrial Bonds	1.63%	1.38%	0.91%	1.06%	1.27%
3-Year BBB Industrial Bonds	2.14%	2.03%	1.60%	1.64%	1.70%
3-Year BB Industrial Bonds	4.49%	4.05%	3.45%	2.56%	2.28%
Avg. Yields on Financial Bonds					
3-Year AA Financial Bonds	1.95%	1.71%	1.26%	1.16%	1.25%
3-Year A Financial Bonds	2.40%	2.03%	1.47%	1.43%	1.47%
3-Year BBB Financial Bonds	3.36%	2.83%	2.32%	1.89%	1.83%
3-Year BB Financial Bonds	6.56%	5.03%	3.97%	2.87%	3.09%

Table 4 also presents a comparison of the statutory rate to the yields of three-year corporate bonds issued by U.S. industrial or financial firms. Between 2010 and 2014, the

⁸⁹ Data are from Bloomberg LP and the Federal Reserve Bank.

average yields on BBB bonds issued by industrial firms ranged from 1.60 percent to 2.14 percent, compared to the relatively stable statutory rate of around 5.75 percent. Thus, the Delaware statutory rate easily exceeded the yield of investment-grade corporate bonds (i.e., those with credit ratings of BBB-⁹⁰ or higher) in recent years. In fact, the statutory rate has also been higher than the BB-rated yield (which is below investment grade). In 2013 and 2014 in particular, the Delaware statutory rate was more than twice the average yield of the BB-rated credit. Thus, in cases where the credit of the acquiring company (or the entity responsible for paying the fair value awarded to the petitioner) is rated BB or higher, the statutory rate appears to overcompensate petitioners for a bond-like claim.

The lower panel of Table 4 repeats this comparison but uses the yield of corporate bonds issued by financial, instead of industrial, firms. In general, the yields of corporate bonds issued by financial firms are higher than those issued by industrial firms.⁹¹ Assuming the objective of the pre-judgment interest rate is to cover the required rates of return on bond-like claims, and given that a large fraction of acquirers are financial buyers, as opposed to strategic ones, it seems reasonable to benchmark the statutory rate to the yields of bonds issued by financial firms.⁹² Table 4 shows that, with the exception of 2010,⁹³ the yields on BB-rated

⁹⁰ Moody's equivalent rating is Baa3.

⁹¹ See, e.g., Edwin J. Elton et al., *Explaining the Rate Spread on Corporate Bonds*, 56 J. FIN. 247 (2001).

⁹² In our sample of 268 transactions, about one third of the acquirers were financial firms (based on the first two digits of their SIC codes falling between 60 and 67).

⁹³ In 2010, yields of bonds issued by financial firms likely still reflected the market's concerns related to the 2008/2009 financial crisis. As Table 4 shows, the annual average yield of BB-

corporate bonds issued by financial firms were lower than the statutory rate. The table also shows that, for 2013 and 2014, the Delaware statutory rate exceeded the yields of BB-rated financial bonds by more than two percentage points. These results also support the notion that, in recent years, the statutory rate has compensated appraisal petitioners for more than the time value of money and for more than a bond-like claim. While the extent to which the statutory rate drives arbitrageurs' decision to seek appraisal may be debatable, the data presented above do demonstrate that the Delaware statutory rate, at least during the period from 2010 to 2014, was higher than the rate commensurate with the risk of a bond-like claim on an entity with a credit rating of BB or higher.

From a policy perspective, we recognize that it may not be possible to set an interest rate based on the characteristics of a target or an acquirer without increasing the scope of issues that are likely to be litigated in an appraisal proceeding. Given this consideration, it may be more practical to adopt a change that limits the amount on which the interest rate is paid. In this regard, a recent legislative proposal presented by the Council of the Delaware Bar Association's Corporation Law Section recommended that respondents to an appraisal proceeding be given "the option to cut off the accrual of interest by paying to the appraisal claimants a sum of money of the corporation's choosing. Thereafter, with respect to the amount paid, interest would not accrue. Interest would only accrue if the judicial award exceeded the amount paid, and then would accrue only on the excess."⁹⁴ On one hand, the

rated financial bonds never exceeded that of BB-rated industrial bonds by more than 100 basis points after 2010, but that spread was much higher in 2010, at 207 basis points.

⁹⁴ DEL. STATE BAR ASS'N COUNCIL OF THE CORP. LAW SECTION, SECTION 262 APPRAISAL AMENDMENTS, at 5 (Mar. 16, 2015).

Council's proposal appears to be a practical way to limit the extent to which the statutory rate may serve to improve the economics for appraisal arbitrageurs. On the other hand, however, prepaying part of the fair value at the beginning of an appraisal proceeding might further encourage appraisal arbitrage. This is because paying appraisal claimants a portion of the target's fair value up front effectively supplies capital to claimants to pre-fund their appraisal pursuits, which in turn is likely to reduce the cost of bringing an appraisal action.

Recent discussion around the statutory rate has also focused on its possible compensation of petitioners for their litigation risk.⁹⁵ From an economic perspective, and under the assumption that parties to a lawsuit are expected to bear their own costs and risks, we see little reason to expect the statutory rate to defray any part of the litigation risk or costs associated with appraisal litigations (e.g., the risk that the court-appraised fair value may be lower than the transaction price).⁹⁶

V. CONCLUSION

In the article, we explore three possible reasons for the observed increase in appraisal actions. First, we examine the extent to which appraisal arbitrage may be facilitated by petitioners' ability to bring an appraisal claim based on shares acquired after the record date of the at-issue transaction. Relying on basic finance principles, we argue that allowing a petitioner to delay the purchase of shares on which appraisal is sought does in fact favor

⁹⁵ Myers & Korsmo, *supra* note 1, at 1580–1581.

⁹⁶ This holds true unless the intent of the statutory rate is for target companies (or the surviving combined entities) to either subsidize a portion of petitioners' litigation costs or to absorb some of their litigation risk. As mentioned above, it is beyond the scope of this article to explore the legislative intent of the statutory rate.

appraisal arbitrage—that, by delaying their investment in the target’s stock until as close to the valuation date (that is, the date on which the transaction closes) as possible, arbitrageurs are able to benefit from better information about the value of the target and, potentially, to avoid taking on a deal with a high risk of failure. One way to rebalance the playing field would be to allow appraisal only on shares acquired prior to the record date. Setting the record date as a cut-off would give sophisticated investors that specialize in appraisal arbitrage nearly two months after a deal is announced, on average, to evaluate the transaction. At the same time, it would force arbitrageurs to assume some of the deal risk, including the risk that the fair value of the target may fall between the record date and the date of deal closing.

A review of recent Delaware Chancery Court opinions suggests that Delaware currently prefers the DCF method to other valuation methods in determining the fair value of a corporation. In the article, we document the emergence of a systematic difference between the ERP used in DCF value determination by the court and that used by investment banks advising target companies. We show that the ERP used by the court is typically lower than that used by the targets’ bankers. Fundamental finance theory informs us that, all else being equal, the lower the ERP, the lower a firm’s measured cost of capital and, consequently, the higher the DCF valuation. We posit that the wedge between the ERPs used by bankers and the ERP that the Delaware Chancery Court apparently prefers may have also contributed to the recent rise in appraisal arbitrage.

We recognize that the ERP continues to be one of many unsolved puzzles in corporate finance and, thus, ERPs used by different people are likely to vary. From a policy perspective, it clearly does not make sense for courts to simply adopt valuation assumptions made by targets’ bankers, as this would defeat the purpose of the appraisal process. However, it may be

useful to keep the merger price in mind when determining the fair value of publicly traded targets. The merger price is likely to be a useful benchmark in instances where the sale process that resulted in the transaction was fair, and, in general, it would be reasonable to assume the merger price to be higher than the standalone value of the target. This is because numerous studies have concluded that, on average, targets are able to extract a good share, if not most, of the expected benefits of the transaction from the acquirer.⁹⁷ Even in instances in which the sales process may be deficient, a DCF method-based valuation of a public firm could benefit from a market check.

Finally, we examine the extent to which the Delaware statutory interest rate may encourage appraisal arbitrage. Benchmarking the statutory rate against an array of recent bond and CMT yields shows that the statutory rate more than compensates appraisal petitioners for the time value of money or for a bond-like claim on the surviving entity, so long as the debt of the entity bearing the appraisal claim is rated at least BB. Our conjecture is that, while the statutory rate may not be the main factor driving appraisal arbitrage, it does help improve the economics for arbitrageurs. The proposal by the Council of the Delaware Bar Association's Corporation Law Section to limit the amount of interest paid by appraisal respondents—by allowing them to pay appraisal claimants a sum of money at the beginning of the appraisal action, on which no interest would accrue—seems like a practical way to address concerns

⁹⁷ George Andrade, Mark Mitchell & Erik Stafford, *New Evidence and Perspectives on Mergers*, 15 J. ECON. PERSP. 103 (2001); Gregg A. Jarrell, James A. Brickley & Jeffrey M. Netter, *The Market for Corporate Control: The Empirical Evidence Since 1980*, 2 J. ECON. PERSP. 49 (1988); Michael C. Jensen & Richard S. Ruback, *The Market for Corporate Control: The Scientific Evidence*, 11 J. FIN. ECON. 5 (1983).

regarding the statutory rate. However, at the same time, such a practice might further encourage appraisal arbitrage, because paying appraisal claimants a portion of the target's fair value up front would effectively supply capital to claimants to pre-fund their appraisal pursuits.