Merger Negotiations in the Shadow of Judicial Appraisal

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Abstract

As the volume of merger appraisal litigation has exploded over the last decade, so too has the debate over the desirability of appraisal and how this remedy should be structured. Much of this debate is based on untested assertions about appraisal's *ex-ante* effect on the structure and pricing of takeovers. Systematically investigating this effect, we find evidence that target shareholders receive higher premia as the strength of the appraisal remedy increases. We find no evidence that bidders offer a lower up-front price so they can afford to pay dissenting shareholders post-sale. Furthermore, threat of appraisal does not appear to impact method of payment or limit the amount of takeover activity. Our results are consistent with appraisal providing *ex-ante* protection in settings where public investors are most at risk, while not imposing costs on shareholders in other settings.

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1. Introduction

The explosive growth in merger appraisal claims – both in number and dollar value¹ – has been one of the most important developments in the market for corporate control over the past decade. For acquisitions of public companies, the likelihood of an appraisal challenge² is approximately five times higher than it was a decade ago. Dissenting shareholders are often hedge funds that purchase shares in the target firm after a merger is announced and then perfect their right to appraisal on the eve of the shareholder vote (Korsmo and Myers, 2015). This practice, known as appraisal arbitrage, is highly controversial because it enables hedge funds to buy their way into a lawsuit. Despite the controversy, appraisal arbitrage could provide a valuable service by aggregating and enforcing legal claims in settings where the deal price is likely to be inadequate (Korsmo and Myers, 2016a).

Existing scholarship on appraisal litigation focuses on the *ex-post* analysis of the type of deals shareholders choose to challenge (Jiang, et al., 2016) and whether such practice appears meritorious (Korsmo and Myers, 2015; 2016) or frivolous (Geis, 2011; Kesten, 2017). Prior work, has not, however, considered possible *ex-ante* effects of appraisal arbitrage on merger negotiations,³ even though each side to the debate makes various claims about these effects, with some predicting it leads to higher deal price (Korsmo and Myers, 2016; Choi and Talley, 2017), while others claiming the opposite (Lipton and Mirvis, 2016; Kesten, 2017).⁴

Understanding how deal planners negotiate merger terms in light of recent changes to the appraisal remedy is essential for understanding the normative desirability of appraisal. We address this issue by exploiting recent legal developments in Delaware that do not apply to target firms incorporated elsewhere. This distinction enables a difference-in-differences (diff-in-diff) research design with a treatment group (Delaware targets) and a control group (non-Delaware targets). We utilize multiple exogenous shocks –

¹ Dissenting shareholders held equity positions exceeding \$200 million in several recent challenges (see e.g. Hoffmann, 2015; Korsmo and Myers, 2015). These are some of the largest appraisal suits ever brought.

² In cash mergers, dissenting shareholders of the selling firm have the right to receive a judicially-determined fair value for their shares in lieu of the negotiated acquisition price. All states provide a statutory right to appraisal. Delaware's statute is limited to certain statutory merger transactions, while the Model Business Corporations Act covers a broader set of acquisitions. See e.g. DGCL § 262 and RMBCA § 13.2.

³ To our knowledge, the only study to consider appraisal from an ex ante perspective is Mahoney and Weinstein (1999), which examines whether there is a relationship between appraisal eligibility and deal premiums. This work, however, predates the modern practice of appraisal arbitrage.

⁴ See post by Martin Lipton on the Harvard Law School Forum on Corporate Governance and Regulation. Available at: <u>https://corpgov.law.harvard.edu/2016/06/03/delaware-court-of-chancery-appraises-fully-shopped-company-at-nearly-30-over-merger-price/</u>

Delaware statutes and judicial decisions – that increase or decrease the strength of the appraisal remedy in the treatment group but do not affect the control group.

There are two potentially competing ex-ante effects of stronger appraisal rights for target firm shareholders. On the hand, in response to increased threat of appraisal, bidders could raise their offer price to obtain target shareholder support. Appraisal can function as a reserve price, below which a sale cannot occur because a majority of target shareholders would vote no and dissent if the negotiated price fell below the expected appraisal award. In settings with a limited number of bidders, a strong appraisal right – similar to a reserve price in an auction – can increase acquisition premiums (Choi and Talley, 2017; Fischel, 1983). We refer to this effect as the *shareholder protection* hypothesis. There is, however, a potential downside to shareholder protection. If the expected judicial valuation approaches (or exceeds) the bidder's maximum price, then threat of appraisal could chill merger activity as it narrows (or collapses) the range of feasible agreements. If this effect is large, it would lower the returns of target shareholders, taking into account both deals that occur and deals that are thwarted

On the other hand, if information or litigation costs are sufficiently high to prevent a majority of shareholders from seeking appraisal, bidders might engage in ex-ante price discrimination. Bidders that anticipate dissention by a minority group of shareholders could lower their upfront offer price to compensate for paying off dissenting shareholders post-sale (Letsou, 1998; Kesten, 2017; Mahoney and Weinstein, 1999). This possibility emphasizes an unusual feature of appraisal as compared to other forms of shareholder litigation: only dissenting shareholders are eligible to receive the judicially-determined price. All other shareholders receive the negotiated merger price, which could be considerably less than the appraisal valuation.⁵ This feature underscores risk that a strong appraisal regime could encourage ex-ante price discrimination between passive investors and arbitrage hedge funds. We refer to this as the *price discrimination* hypothesis.

Using data from acquisitions of publicly-held US targets from 2004 to 2017, we first explore the impact of appraisal on deal pricing. We find – consistent with the shareholder protection hypothesis – that shareholders of Delaware targets receive marginally higher acquisition premiums following events that strengthen the appraisal remedy. We find limited evidence suggesting this result is stronger in management buyouts, LBOs, and controlling shareholder acquisitions, settings where minority shareholders are at greater risk of misappropriation and where an appraisal challenge is most likely to arise.⁶ Admittedly, the impact

⁵ See e.g. *In re Appraisal of Dell* in which the appraisal valuation of \$17.62/share was 28% above the negotiated merger price of \$13.75/share, and *In re Dole Foods* in which the appraisal valuation was 23% higher than the negotiated price.

⁶ See Korsmo and Myers, 2015.

on premiums is modest, and the results are muted – same direction of effect but less significant – for target abnormal returns. Nonetheless, the evidence remains consistent with the shareholder protection hypothesis.

In contrast, we find no evidence of ex-ante price discrimination. We consider three different proxies for the strength of the appraisal remedy, and yet, none of our models suggest that bidders lower their offer price in response to heightened threat of dissenters asserting appraisal. It is possible that bidders have heterogeneous strategies – with some bidders responding to an increased threat of appraisal by raising their offer price (*shareholder protection*) and others responding by lowering their offer price and paying off dissenting shareholders ex post (*price discrimination*).

To further explore this possibility, we examine arbitrage spreads in the 60-day period following the announcement of each merger. In deals that do not receive an appraisal lawsuit the average arbitrage spread is approximately 6%, meaning the stock trades for 6% less than the negotiated merger price. By contrast, the average spread is effectively zero in deals which receive an appraisal challenge. This means that, on average, arbitrageurs have to pay the full merger price – with no guarantee the deal will close – to purchase their position, whereas passive investors receive approximately 6% more if they decide to sell prior to closing (insuring against the risk of deal failure) in a deal that received an appraisal challenge. The existence of secondary market trading between deal announcement and the merger vote undercuts the feasibility of price discrimination. Our analysis suggests that ex-ante price discrimination, if any, is not widespread, and is overshadowed by bidders trying to avoid an appraisal challenge.

Next, we consider the effect of appraisal on the number of acquisition deals and the method of payment – cash versus stock. As legal developments increase the strength of the appraisal remedy, the bargaining range of feasible agreements narrows and some nascent deals could be blocked altogether, or restructured as stock-for-stock deals, which fall outside the scope of appraisal. This notion raises a concern that our deal premium results could be at least partially driven by selection effect.

To address this issue, for all publicly-traded firms, we estimate the annual hazard rate of becoming an acquisition target. We find that events increasing the strength of the appraisal remedy have no deterrent effect on the likelihood that a firm becomes a target in a given year. In fact, some models suggest a slight *increase* in the likelihood of a Delaware firm becoming a target as the threat of appraisal increases. Similarly, for announced deals the likelihood of completion is unaffected by the strength of the appraisal remedy. Furthermore, there is no change in the method of payment used in deals as the strength of the appraisal remedy increases. Notably, deal structures that fall outside the scope of appraisal (i.e. stock-forstock deals) occur with similar frequency before and after events that heighten the strength of the appraisal remedy. These findings suggest that the price protection provided by appraisal is not purely driven by selection effects.

Finally, we explore the impact of appraisal on ex-ante governance terms and outcomes. We find no evidence that bidders seek contractual protections against appraisal. Indeed, as threat of appraisal increases we find a significant *decline* in the use of appraisal out clauses (a closing condition triggered by the number of shares that seek appraisal (Subramanian, 2016)) within the treatment group. This pattern is counterintuitive: the primary contractual protection against appraisal is being used less as threat of appraisal increases. This finding suggests that bidders are less concerned about the court setting valuation above their reservation price, than targets are about the increased uncertainty, and potential for strategic misuse,⁷ created by the inclusion of an appraisal out clause. In this respect, the actions of acquirers and their counsel – failure to insist on appraisal out clauses in the actual contracts they sign – are inconsistent with their lobbying efforts bemoaning the abuse of appraisal. Implicitly, this is a strong endorsement of the appraisal valuations reached by the Delaware Chancery court.

We find no change in the use of support the vote agreements, or in the percentage of shares which vote in favor of each transaction. We do, however, find evidence within the treatment group that deal planners are more likely to use a formal auction as market check as the strength of the appraisal remedy increases. Overall, our analysis suggests that bidders protect themselves against threat of appraisal, not through contractual terms that would allow the bidder to walk away from the deal (e.g. appraisal out clause), but rather by increasing their upfront bid and improving the price-setting process (e.g. formal auctions).

One caveat is in order: the set of exogenous events (i.e. statutes and judicial decisions) that enable our analyses are still ongoing. For the past decade, there has been steady growth in the number of hedge funds and amount of money engaged in appraisal arbitrage, as well as in the number of appraisal claims filed each year,⁸ suggesting we may have yet to reach a new equilibrium. Further, increases in the level of appraisal activity could lead parties to include new governance provisions or adjust ex-ante pricing in unpredictable ways. Put another way, our results should not be interpreted to imply that a stronger appraisal regime is always beneficial. Nonetheless, at current levels we find evidence suggesting that appraisal

⁷ Through cross-voting an appraisal out clause can be strategically manipulated (Hu and Black, 2006). Shareholders who hold a large position in the bidding firm might purchase sufficient shares in the target to trigger the appraisal out and then dissent, not because they believe the deal is underpriced but rather to give the bidder the option to walk away from the transaction. This practice, assumes that the blockholder could convince the bidder's board/management to exercise the right. To date, no deal has even triggered an appraisal out clause.

⁸ See Korsmo and Myers (2015) and Jiang, et al. (2016). By contrast, Schoenfeld (2017) argues that appraisal claims declined in the first half of 2017.

provides an important protection for minority shareholders, and suggests caution to policy makers considering curtailment to the appraisal remedy.

Our study has important implications for the literature on appraisal arbitrage (Korsmo and Myers, 2015). Existing scholarship debates whether appraisal litigation is meritorious (Korsmo and Myers, 2015; 2016) or frivolous (Geis, 2011; Kesten, 2017).⁹ Empirical studies document returns to hedge funds making appraisal claims (Jiang, et al., 2016) and find that conflict of interest transactions and deals with low premiums are more likely to be challenged (Korsmo and Myers, 2015; Jiang, et al., 2016). Our analysis builds on this work by showing that a strong appraisal regime can also benefit target shareholders (even non-dissenting shareholders) ex-ante through higher premiums. The only other study to explore the impact of appraisal on deal premiums predates appraisal arbitrage (Mahoney and Weinstein, 1999). Our analysis – by exploiting longitudinal variation in the strength of the appraisal remedy – is able to better isolate the effect of appraisal¹⁰ and, contrary to Mahoney and Weinstein (1999), we find that a strong appraisal regime increases returns to target shareholders.

Second, our analyses have implications for how courts set valuation in appraisal cases. Commentators debate whether courts should adopt a strong presumption in favor of the merger price (Subramanian, 2016) or apply their own valuation when it differs from the merger price (Choi and Talley, 2017). The competing positions in this debate each filed amicus briefs in the appeal of the Chancery court's 2016 decision in *DFC Global*.¹¹ While the Delaware Supreme Court in *DFC Global v. Muirfield* (Aug 2017) refused to create a strong presumption, language in the opinion encourages the Chancery court to give considerable weight to the negotiated merger price except in unusual cases. Our results caution, to the extent this language causes future courts to give greater deference to the negotiated merger price, the supreme court decision may hurt target shareholders. Instead, our analysis is supportive of Choi and Talley (2017) arguing that a well-designed appraisal regime can increase expected merger premiums.

The remainder of this article is organized as follows. Section 2 provides background. Section 3 develops testable hypotheses. Sections 4 describe our research design and provide an overview of the data

⁹ Compared to fiduciary litigation appraisal claims are quite strong and are actively litigated rather than merely brought for settlement value (Korsmo and Myers, 2015). Yet, there is some evidence that the statutory interest rate (Fed rate + 5%) and ability to purchase post-announcement (Jetley and Ji, 2016) may artificially increase the number of appraisal suits.

¹⁰ Mahoney and Weinstein (1999) examine whether deals which are eligible for appraisal receive higher premiums than ineligible deals. Unfortunately, the primary criteria for appraisal eligibility is method of payment (cash vs stock), which is endogenously chosen by the contracting parties, and may itself impact size of premiums (Fu, Lin, and Officer, 2013).

¹¹ Add citation / discussion of the amicus filings.

we use to test the shareholder protection and price discrimination hypotheses. Section 5 reports regression results and Section 6 concludes.

2. Appraisal in Delaware

To protect minority shareholders who are sometimes forced to give up their shares without consent,¹² states created a remedy for so-called "dissenting shareholders": the right to seek judicial appraisal determining the fair value of their shares.¹³ As noted by Fischel (1983), "appraisal is best understood as an implied contractual term that sets the minimum price at which the firm ... can be sold". Viewed in this light, appraisal sets a reserve price for the sale of a firm and is designed to protect minority shareholders against misappropriation.

A number of obstacles, however, limit the use of appraisal. First, not all deals trigger appraisal. For public company acquisitions, appraisal rights only apply to cash, debt, and mixed-consideration transactions, and purely stock-for-stock deals are not eligible for appraisal. Second, a shareholder must perfect her right to appraisal prior to filing suit. In particular, a shareholder must (i) notify the corporation of her intent to seek appraisal prior to the shareholder vote, (ii) vote against the merger or abstain, (iii) continuously hold her shares through the close of the deal, and (iv) file suit within 120 after closing. Third, because appraisal is a direct claim (as opposed to a class-action or a derivative lawsuit), the dissenting shareholder must cover her own litigation expenses. Fourth, a shareholder seeking appraisal must forego the merger consideration and does not receive payment until the trial concludes (typically 1 to 3 years) or the case settles. Finally, courts historically used valuation methods (e.g. the block method) that can lead to low appraisal awards.¹⁴

Until recently, these obstacles meant that shareholders rarely exerted their appraisal rights. For example, Thomas (2000) finds only 14 appraisal claims filed from 1977 to 1997 in Delaware, and several

¹² Appraisal also created an exit right for shareholders following certain fundamental transactions that the shareholder did not approve (Thompson, 1995). For purposes of this project, we focus on the role of appraisal as price protection in cash-out mergers.

¹³ In the early 1900s most states required unanimous approval from shareholders of the target firm to sell a company or otherwise amend the corporate charter. As share ownership became more dispersed in the early twentieth century, however, the unanimity requirement proved unworkable (Thompson, 1995), and in response state codes were modified to allow a sale supported by a majority or supermajority vote. As part of the change from unanimity to majority rule, states created a right to judicial appraisal for dissenting shareholders.

¹⁴ According to statute, the court is instructed to "determine the fair value of the shares exclusive of any element of value arising from the accomplishment or expectation of the merger or consolidation." [DGCL 262(h)]. For a discussion of the limitations of the Delaware block method of valuation see Cohen (1985).

of these cases were brought by individuals without legal counsel. From 2000 to 2006, only 2% to 5% of eligible public company deals received an appraisal challenge (Jiang et. al, 2016).

In Delaware, however, several developments over the past decade have boosted the viability of appraisal. Two of the most important of these developments occurred in summer 2007. First, Delaware's legislature passed a new law [DGCL § 262(h)] creating a presumption that the interest rate applied to appraisal awards would be 5% (compounded quarterly) over the Federal Reserve discount rate in effect at the time. The statutory interest rate is viewed as a significant *increase* in the effective interest rate applied to appraisal suits, leading to claims that some shareholders dissent simply to access a corporate bond with a high yield relative to its risk profile.¹⁵

Second, in a 2007 appraisal decision involving Transkaryotic Therapies, the Delaware Chancery Court held that 10 million shares acquired after the record date for determining voting eligibility were entitled to appraisal even though the beneficial owners could not demonstrate how the particular shares had voted. The effect of *Transkaryotic* is that arbitrageurs can delay before deciding whether purchase shares and seek appraisal. Like any real option, the ability to delay exercise of the appraisal "option" is valuable (Jetley and Ji, 2016). The litigant can obtain more information before deciding to purchase shares and incurring the costs of bringing an appraisal action. The dispute at issue in *Transkaryotic* settled before a court issued a judicial valuation. Unlike most settlements, however, the terms of settlement were publicly disclosed, revealing that dissenting shareholders received a 35% premium over the negotiated merger price. Korsmo and Myers (2015) argue that the disclosure of such a large settlement encouraged some hedge funds specifically focus on appraisal arbitrage.

From 2008 to 2013 annual appraisal filings increased, though few concrete legal developments occurred during this period. But then in 2013 there were two decisions – IQ v. Am. Commercial Lines and Merion v. 3M Cogent – where the Delaware Chancery court awarded an appraisal valuation above the negotiated merger price. These cases were followed by four decisions late 2013 to early 2015 where the Chancery court treated the negotiated merger price with deference and refused to substitute its own valuation analysis for the bargained for terms. This result is perhaps most clear in Ancestry.com where the court held that in a third-party transaction with a robust sale process, the negotiated terms will be given substantial weight in determining the appraisal valuation. Then, in late 2015 and 2016 the Chancery court reversed course and decided three cases – Dole, Dell, and DFC Global – in which the appraisal valuation

¹⁵ Prior to July 2007 there was no set statutory interest rate applied to appraisal awards; instead in the pre-2007 period, the court determined the appropriate interest rate on a case-by-case basis, meaning there was extensive litigation over the interest rate as well as fair value of the shares.

was set greater than the negotiated merger. Each of these decisions attracted considerable attention from practitioners on how to advise clients regarding the risk of appraisal.

Finally, in 2016 the Delaware legislature, after considerable lobbying efforts, decided to limit appraisal in two respects. First, at any time before judgment, the surviving corporation can choose to prepay (all or a portion of) the merger price to a dissenting shareholder. In which case, the dissenting party receives interest only on the difference "between the amount so paid and the fair value of the shares as determined by the Court".¹⁶ Second, the court is required to dismiss *de minimis* appraisal claims (< \$1 million) against publicly traded firms.¹⁷ These changes were designed to curb appraisal arbitrage and filter out frivolous lawsuits. Following the legislature's lead, the Chancery court decided three cases - *Merion v. Lender Processing, PetSmart,* and *SWS Group* - in late 2016 and early 2017 in which the judicial valuation was less than or equal to the negotiated merger price. These developments, which we treat as independent shocks in our subsequent empirical analysis, are summarized in Table 1.

[INSERT TABLE 1 ABOUT HERE]

3. Theoretical Framework for Effect of Appraisal Rights

This section develops the *shareholder protection* and *price discrimination* hypotheses for the impact of the appraisal remedy on the ex-ante structure and pricing of acquisitions.

3.1 Appraisal as Shareholder Protection

To understand how target shareholders benefit from a heightened appraisal remedy, it is helpful to imagine a world without appraisal. In this case, shareholders of a target firm have only two options in response to a deal approved by their firm's board. They can either vote in favor of the deal or against it. If a proposed deal includes a premium over the existing stock price, however, it is difficult for target shareholders to credibly threaten to vote against the sale. They would be turning down the offered premium with no guarantee that a better deal would be forthcoming.¹⁸

¹⁶ See DGCL 262(h).

¹⁷ DGCL 262(g)

¹⁸ This problem exists even if the acquirer would have been willing to pay a significantly larger premium. [To be sure, a loyal target board may be able to negotiate a higher price, or competition from alternative bidders may drive up the price. But many deals have only a single bidder, and even a loyal board may be unable to capture all of the acquisition surplus].

By contrast, with a strong appraisal remedy, target shareholders have additional leverage to drive up the sale price. Instead of simply voting against a sale, they can seek appraisal. Indeed, shareholders have an incentive to seek appraisal whenever the expected payout from appraisal minus litigation costs is higher than the offered acquisition price. Recognizing this problem, a bidder could be forced to raise its upfront price to obtain sufficient shareholder support.

In this respect, threat of appraisal creates a credible "reserve price", below which a sale cannot occur. Following auction theory, the credibility of a reserve price is important to a well-designed sale process. As described by Klemperer (2004), "[i]f a reserve price is not a genuine commitment to not sell an object if it does not reach its reserve, then it has no meaning and bidders will treat it as such." While a target's board can engage in various bargaining tactics in an effort to establish a reserve price on its own, the board may find it difficult to commit to such actions. In particular, there may be rational deals that fall below the so-called "reserve price" that a target board (just like shareholders) cannot credibly reject ex post.

This situation can be illustrated with a numeric example: Suppose T is trading for \$20/share and T's shares are widely held by a dispersed group of shareholders, a majority of whom are willing to sell for any amount greater than \$22/share. A bidder "B" is willing to pay up to \$30/share. There are no other competing bidders. Suppose the parties have equal bargaining power,¹⁹ and T's board knows that B would pay up to \$30/share, and B knows that T's board (and shareholders) would accept any amount greater than \$22/share.

<u>Case 1 - No Appraisal Remedy</u>: In this case, any price between \$22 and \$30 is feasible. T's board could try to get at least \$28, but the threat to reject offers between \$22 and \$28 is not credible. Instead, following the Nash bargaining solution (Nash, 1950) the parties agree to split the acquisition surplus evenly. The outcome is a merger price equal to \$26/share, which a majority of target shareholders support.

<u>Case 2 – Strong Appraisal Remedy</u>: Suppose, instead, that the same deal is negotiated in a regime with a strong appraisal remedy. In particular, assume that a majority of target shareholders believe that they could receive \$28/share in judicial appraisal. Under this assumption, B needs to offer at least \$28/share if to obtain shareholder support. Otherwise, a majority of shareholders dissent (i.e.

¹⁹ The general analysis applies, as long as each party expects to get some portion of the merger surplus, and does not require equal bargaining power.

vote no) and the deal fails.²⁰ Recognizing this problem, B raises its offer price to between \$28 and \$30 per share. Again, following the Nash bargaining solution, the parties may agree on \$29/share. At this price, the deal would be approved by T's board and by a majority of T's shareholders.

The above example illustrates that Target shareholders can potentially benefit from a strong appraisal remedy, because it enables them to capture a larger portion of the merger gains. Provided the expected appraisal payout is less than (or equal to) the maximum amount a bidder is willing to pay, the benefit to target shareholders increases with the expected appraisal award. We refer to this account of appraisal as the "shareholder protection" hypothesis.

H1: As the right to appraisal is strengthened (all else equal) we will find increased acquisition premiums

We next explore some refinements to the basic shareholder protection hypothesis. First, the analysis assumes a single bidder. In settings with multiple bidders (e.g. a robust auction process) we expect competition between the bidders to drive up the price, regardless of the strength of the appraisal remedy. In this case, the target would already receive most or all of the merger surplus and there would be no room for a further price increase. Consequently, we expect that the shareholder protection hypothesis to be particularly relevant for negotiated sales that lack a rigorous market check / auction.

Second, as noted above, the Delaware courts are particularly suspicious of the price assigned to management buyouts, controlling shareholder acquisitions, and other transactions with potential conflicts of interest; and are more willing to award a price increase in these settings. Thus, the shareholder protection hypothesis is particularly relevant for these sorts of conflict-of-interest transactions, and less relevant to other transactions.

Third, the analysis above assumes that the expected judicial award is less than (or equal to) the maximum amount that a bidder would be willing to pay. If strengthening the appraisal remedy causes the expected award to exceed the bidder's maximum price, then threat of appraisal could discourage acquisitions altogether, or cause the parties to include an appraisal out – a contractual provision that would remove the bidder's obligation to close if more than a defined fraction (typically 10%) of outstanding shareholders seek appraisal – to protect the bidder against this possibility.

²⁰ The analysis is more complicated if target shareholders can coordinate their vote or there are large blockholders who may have a large impact on the vote outcome (Holmström and Nalebuff, 1992)

3.2 Appraisal as Price Discrimination

Several major law firms have intensely lobbied against appraisal arbitrage (Hoffman, 2015).²¹ They argue that appraisal arbitrage creates incentives for ex-ante price discrimination. This possibility stems from a key distinction between the appraisal remedy and other forms of shareholder litigation (e.g. class actions and fiduciary lawsuits). Only dissenting shareholders who file an appraisal complaint are eligible to receive an appraisal award. Shareholders not filing an appraisal claim, regardless whether they vote in favor or against a proposed sale, receive the negotiated merger price. Target shareholders – holding a single class of stock with identical legal rights – receive differing amounts of compensation to give up their shares. The non-dissenting group of shareholders collect the acquisition price, while dissenting shareholders receive the judicially determined appraisal price.

This situation creates incentives for ex-ante price discrimination. Rather than raising the price for all shareholders, a bidder could instead lower the upfront merger price, and use these cost savings to pay off dissenting shareholders. Provided the bidder expects the group of dissenting shareholders to be small (e.g. 10% of outstanding shares), this situation would not prevent the deal from being approved by a majority of shareholders. The bidder is essentially relying on some friction, such as cost of litigation, uncertainty/risk regarding appraisal outcome, or lack of information, to prevent most shareholders from perfecting their appraisal claim.

Put differently, price discrimination creates a separating equilibrium between hedge funds that dissent/seek appraisal and passive investors that accept the merger price. The most obvious friction that could create this separation is the litigation cost to seek appraisal. Litigation costs are largely fixed, and consequently appraisal is only rational if the dissenting party holds a sufficiently large share of equity to justify the fixed costs. To be sure, arbitrage hedge funds might not hold a large block (or any) shares of target stock at the time a merger is announced and only acquire their position through post-announcement trading. This begs the question, why don't passive investors follow the same strategy to overcome the fixed cost hurdle and then seek appraisal alongside the hedge funds? One possible answer is the difficulty identifying deals that are attractive candidates for appraisal arbitrage. Hedge funds engaged in appraisal arbitrage invest time and effort in finding such deals and by the time that passive investors become aware of an attractive candidate for appraisal it might no longer be feasible to purchase target stock at a sufficiently low price to justify the aggregation of shares needed to overcome the fixed cost hurdle. Regardless of the

²¹ For a description of the basic problem, see <u>http://www.wlrk.com/webdocs/wlrknew/AttorneyPubs/WLRK.23846.15.pdf.</u>

exact reason, for the price discrimination hypothesis, we assume that only a minority of shares seek appraisal.

To illustrate how this might affect merger negotiations, consider the following extension of the numeric example. Assume that 90% of T shareholdings are widely dispersed and due to the expected cost of an appraisal lawsuit these shareholders would vote in favor of a sale of target firm at any price greater than \$22/share, even if appraisal is available.²² Whereas, the remaining 10% of shareholders hold large blocks of stock and would seek appraisal if the bidder offers anything less than \$28/share.

Rather than raising the offer price from \$26/share to greater than \$28/share, a bidder may strategically push for a lower sale price (say \$25/share). The bidder still obtains majority support from shareholders, and uses the cost savings to pay off the dissenting shareholders either through settlement or by paying whatever a court orders as the appraisal valuation. We refer to this as the *price discrimination hypothesis*.

H2: As the right to appraisal is strengthened (all else equal) we will find (i)lower acquisition premiums, (ii) an increase in the number (or percent) of deals in which appraisal is sought, and (iii) a lower percentage of shareholder votes approving each sale

It is important to note a key difference between the *Price Discrimination* and *Shareholder Protection* hypotheses. The occurrence of appraisal litigation is part of the equilibrium strategy under price discrimination but not under shareholder protection. According to the shareholder protection view, the bidder raises its ex-ante price to prevent an appraisal suit from being filed and ensure the deal will be approved. By contrast, the price discrimination hypothesis suggests that all (or most) acquisitions lead to an appraisal claim, with the size of the dissenting group determined by the extent of underpricing relative to cost of litigation.

Because price discrimination invites appraisal litigation, it also encourages more target shareholders to vote against (or abstain from) each proposed acquisition, thus leading to more contestable shareholder votes, and corresponding contractual modifications to obtain shareholder support. For example, the bidder may be more likely to require a "support the vote provision" from key target shareholder before signing the merger agreement.

²² Note, post-announcement aggregation of shares by arbitrageurs can partially solve the price discrimination problem Korsmo and Myers (2016a).

4. Data and Research Design

Our sample construction begins with merger and acquisition data for U.S. public targets by U.S. acquirers (public, private or subsidiaries) announced between January 1, 2004 through April 30, 2017 from the Securities Data Corporation (SDC) Mergers and Acquisitions database. We restrict our sample to the following types of transactions as classified by SDC: mergers, tenders, private tenders, leveraged buyouts (LBOs), management buyouts (MBOs), and going private transaction. We further require that the bidder acquire more than 50% ownership of the target and that the SDC database reports the offer premium. We supplement deal-related information (e.g., auction indicators) using the FactSet Merger Metrics database.

Our initial sample consists of 3,308 mergers and acquisition transactions. After restricting our sample to target firms with disclosed accounting data, our sample consists of 2,701 transactions. We obtain accounting data and stock return for the universe of U.S. publicly listed firms from COMPUSTAT and as of the prior year before the announcement date. The sample further reduces to 2,205 transactions when we also require stock return data from Center for Research in Security Prices (CRSP).

4.1 Descriptive Statistics

Table 2 provides an overview of our sample characteristics. For the full sample, the mean target firm was acquired for \$2.3 billion, with Delaware deals slightly larger (\$2.5 billion), on average, than acquisitions of non-Delaware firms (\$1.9 billion). Target firms incorporated in Delaware have significantly higher Tobin's Q, more spending on R&D, more cash, and are more likely to be in a technology-related industry. Furthermore, acquisitions involving a Delaware target firm are more likely to be structured as a tender offer (Boone, Broughman, and Macias, 2017), or involve a financial sponsor like in an LBO.

[INSERT TABLE 2 ABOUT HERE]

4.2 Incidence of Appraisal Lawsuits

Recent studies document a large increase in appraisal suits brought in Delaware over the past decade (Korsmo and Myers, 2015; Subramanian, 2016; Jiang et. al, 2016). Consistent with this work, our data shows a jump in 2011 in both the number of appraisal claims involving public targets and in the percent of eligible deals in which an appraisal suit is brought. From 2004 to 2010 approximately 2% to 5% of eligible deals receive an appraisal challenge each year, compared to 11% to 22% each year from 2011 to 2016. These results are reported in Table 3 and illustrated in Figure 1.

[INSERT FIGURE 1 ABOUT HERE] [INSERT TABLE 3 ABOUT HERE]

Our sample of deals, as shown in Table 3, includes a total of 125 appraisal filings. Most of these claims are settled out of court, and the terms of settlement remain private. For a subset of 15 deals, however, the claim did not settle, the parties went through trial, and received a judicial valuation from the Chancery court. Table 1 reports such amounts. We find three cases in which the court awarded a valuation *below* the merger price, seven in which the court set valuation *equal to* the merger price, and five in which the court set valuation *above* the merger price.

The fact that the parties sometimes litigate through trial suggests there is uncertainty regarding how the Chancery court might rule (Priest Klein, 1984). Following each judicial decision or legislative act, deal planners update their prior beliefs regarding the strength of the appraisal remedy. We treat each case where the court set the valuation equal to or below the merger price as a negative shock to the perceived strength of the appraisal regime. Conversely, we consider each case where the court set valuation above the merger price as a positive shock to the perceived strength of the appraisal regime. We also include the *Transkaryotic* settlement and the 2007 amendments to DGCL § 262 as positive shocks to the strength of the appraisal regime and we add the 2016 amendments to DGCL § 262 as a negative shock (see Table 1). Figure 2 illustrates the number of appraisal-related positive and negative events occurring within the 12-month period prior to any given date.

[INSERT FIGURE 2 ABOUT HERE]

4.3 Research Design

We use a diff-in-diff research design, with acquisitions of Delaware firms serving as the treatment group and acquisitions of firms incorporated elsewhere serving as the control group. We take advantage of the exogenous shocks listed in Table 1 that increase (or decrease) the strength of the right to appraisal within Delaware. For a variety of dependent variables, we compare the post-event change within Delaware to the corresponding change in the control group over the same time period. An advantage of the diff-in-diff approach is that it removes time-constant unobserved differences between the treatment and control, and also reduces concerns regarding time-trends that apply to the entire takeover landscape.

For identification purposes, the diff-in-diff analysis assumes that the average post-event change in the dependent variable for the control group and treatment group would be the same if the latter group had not been treated (i.e. parallel trends). We believe the parallel trends assumption is reasonable in our setting because acquisitions involving US target firms (whether incorporated in Delaware or in another state) are subject to the same broader market forces, same federal regulations, and are structured by the same intermediaries. The key difference is that Delaware targets are subject to Delaware corporate law, including its rules pertaining to appraisal.

One challenge in measuring the *ex-ante* response to the increased risk of appraisal is that such response could show up at a variety of different points (which are not mutually exclusive) in the bargaining process. To address this concern, we divide our empirical analysis into three categories, defined by the relevant outcome measure (i.e. dependent variable): (i) acquisition pricing, (ii) level and type of takeover activity, and (iii) governance terms. For each category, we employ a similar difference-in-differences analysis, given by the generalized equation:

$$DV_i = \alpha + \beta^* Appraisal_i + \gamma^* Treatment_i + \delta^* (Appraisal_i^* Treatment_i) + \beta^* X + \varepsilon$$
(1)

where *DV* represents one of several dependent variables (described below); *Treatment_i* equals one if target firm *i* is incorporated in Delaware and 0 otherwise; *Appraisal* is a proxy variable that takes positive values after "events" which increase the strength of the appraisal remedy; *X* is a vector of control variables; and ε is the error term. The key explanatory variable in Eq. 1 is the interaction term *Appraisal*Treatment_i*, and δ is the diff-in-diff coefficient.

We use three different proxies for the strength of the appraisal remedy. Our first proxy is an indicator variable ("Post-August 2007"), which takes a value of one if the announcement date of the transaction takes place on or after August 2007, and zero otherwise. This choice is based on the central importance given to the two events of summer 2007 – the Statutory Interest Rate (Fed + 5%) and *Transkaryotic* decision (May 2007). These events are generally marked as the start of appraisal arbitrage (Geis, 2011). One limitation of August 2007, however, is that it occurred in close proximity to the financial collapse of 2008, making it harder to rule out some time-trends that may impact Delaware firms differently than the rest of the takeover market. Also, while appraisal arbitrage is often traced back to 2007, the large increase in volume of appraisal filings occurred later (in 2010), suggesting that the salience of later events – once risk of appraisal became clear to all parties – may be especially important to deal planners.

Our second proxy addresses this concern by taking advantage of all the events listed in Table 1. For each acquisition in our study we record the number of *positive* and *negative* "events" – as shown in Table 1 – within the 12 months preceding the announcement date for the acquisition. A *positive* event is one which increased the perceived strength of the appraisal remedy, whereas a *negative* event is one which decreased the perceived strength of the appraisal remedy. For ease of analysis we assume that any judicial decision which awarded a valuation above the merger price is a "positive" event, and any judicial decision which awarded a valuation at or below the merger price is a "negative" event.²³ This classification is justified on at least two grounds. First, any appraisal decision that awards a valuation greater than the merger price typically includes an explanation for why it is permissible to deviate from the merger price in the current case, providing precedent for future courts to also deviate from the merger price when they receive a similar fact pattern. Second, legal commentators demonstrate a strong reaction to each event (especially positive events) and discuss how parties should address the increased (or decreased) risk of appraisal in negotiating future deals in response to the change in the law. We end up with two proxy variables: (i) *Positive Event* which equals the count of positive events (as shown in Table 1) occurring in the 12-month period preceding an acquisition announced on date t and (ii) Negative Event, which equals the count of negative events (as shown in Table 1) occurring in the 12-month period preceding an acquisition announced on date t

Our third proxy does not examine explicit changes in the law, but rather measures the baseline level of dissenter activity in the period immediately preceding each acquisition. The likelihood of receiving an appraisal challenge – regardless the law itself – may be an independent risk factor that impacts ex ante bargaining. We measure this, for an acquisition occurring on date *t*, by setting *Appraisal Rate (6 month)*_t equal to the ratio of (i) the number appraisal lawsuits involving a Delaware target filed during over the 6 months prior to date *t*, divided by (ii) the number of appraisal-eligible acquisitions involving a Delaware target over the same six-month period. To illustrate, if a Delaware target were acquired on 7/1/2013, *Appraisal Rate (6 month)*_t would equal the number of appraisal claims filed in Delaware from 1/1/2013 to 6/30/2013 divided by the total number of appraisal-eligible acquisitions of Delaware targets over the same six-month period.

²³ This assumption follows from Priest and Klein (1984), which suggests that plaintiffs will win approximately 50% of the cases selected for litigation, with stronger and weaker cases selected out for settlement. To be sure, the definition of a "win" in the context of appraisal litigation may be less clear than in settings where plaintiff wins a financial judgment or receives nothing.

5. Regression Results

This section tests the *shareholder protection* and *price discrimination* hypotheses. We divide the remainder of this section into three categories, defined by the relevant dependent variable: (i) acquisition pricing, (ii) level of takeover activity and method of payment, and (iii) governance terms.

5.1 Acquisition Pricing

We begin by exploring the impact of appraisal on deal pricing. Our first dependent variable is *Acquisition Premium*, which equals the percentage difference between (i) the announced acquisition price per share and (ii) the target's share price 4 weeks prior to announcement. Figure 3 shows the average *Acquisition Premium* for the deals in our sample over the period 2004 to the start of 2017. Results are separately displayed for Delaware and non-Delaware targets. The graph shows that, prior to 2007, premiums followed parallel trends. Starting in 2008, however, we find higher premiums in both groups, but the increase is larger within Delaware as compared to the control group of non-Delaware targets. The extra increase in premiums within Delaware after 2007 is consistent with the shareholder protection hypothesis. Some variation in this pattern persists throughout the post-event period of 2007 to 2016.

[INSERT FIGURE 3 ABOUT HERE]

Next, Table 4 presents diff-in-diff models estimating equation (1). In panel A, our dependent variable is *Acquisition Premium*. The main coefficients of interest are the interactions between the *DE* indicator and our proxies for the strength of the appraisal remedy. To proxy for the strength of the appraisal remedy, models 1 and 2 use the indicator variable, *Post-August 2007*, models 3 and 4 use the number of *Positive Events* (events that strengthen appraisal in Delaware) and *Negative Events* (events that weaken appraisal remedy in Delaware), and models 5 and 6 use *Appraisal Rate (6 month)*. We also control for a number of factors known to impact deal premiums from the existing literature on mergers and acquisitions, including Target size, Tobin's Q, measures of accounting performance, capital structure, market returns for the prior 6 months, volatility, industry. In models (2), (4), and (6) we include industry fixed effects based on Fama and French (1997) classification of SIC codes into 48 industries. In panel B of Table 4, we reestimate models 1 to 6, but use the target's short term cumulative abnormal return, *Target CAR*, as the dependent variable, measured from one day prior to one day after the merger announcement [-1, +1].

[INSERT TABLE 4 ABOUT HERE]

The models reported in Panel A are consistent with the *shareholder protection* hypothesis. With the exception of model (2), we find a significant positive coefficient on the key interaction term in each model: (i) *DE* * *Post-August 2007*, (ii) *DE* * *Positive events*, and (iii) *DE* * *Appraisal Rate (6 month)*. As the strength of the appraisal remedy in Delaware increases we find significantly larger increase in acquisition premiums in Delaware deals as compared to the control group over the same period. This result holds whether we look at actual changes in the law (proxies 1 & 2) or the intensity of dissenter activity in the period immediately prior to each deal.

In models 3 and 4, we find no effect on the interaction term *DE* **Negative events*. This emphasizes that our support for shareholder protection is not driven simply by the occurrence of appraisal-related events, but rather by events which specifically increase the strength of the appraisal remedy. The non-result regarding *Negative Events* is not surprising given that even negative events emphasize that appraisal is being litigated more often than preciously. Also, many of the negative events are decisions in which the court set valuation equal to the negotiated merger price, and consequently market participants may not have interpreted these decisions to weaken the appraisal remedy so much as to reaffirm the status quo.

We find similar, though muted, results when the dependent variable is *Target CAR* (panel B, Table 4). The diff-in-diff interaction term remains positive in all models reported in Panel B, and significant in models (1), (2) and (6). Together with panel A, these results suggest that increasing the strength of the appraisal remedy had a small positive effect on target shareholder returns.²⁴

Next, we use subsample analysis to examine two settings where the appraisal remedy could be particularly important. First, we consider conflict-of-interest transactions, such as management buyouts and controlling shareholder acquisitions.²⁵ In these settings, shareholders are more likely to file an appraisal challenge (Korsmo and Myers, 2015; Jiang et al., 2016) and judges are more likely to award a valuation

²⁴ Given the nature of our data we cannot tell whether this benefit came at the expense of acquirer returns or had other social welfare impacts.

²⁵ These settings often lack a legitimate bargaining process and the minority shareholders are unable to block such transactions. To be sure, deal planners form a committee of independent directors to represent the non-controlling party (Boone and Mulherin, 2017) and disclose various risks to targets shareholders. But at core, such transactions involve a heightened risk of self-dealing, since a controlling party is squeezing out the minority.

above the negotiated merger price.²⁶ Second, we consider whether appraisal operates differently in multibidder/auction settings as opposed to negotiated single-bidder deals.

We report subsample results in Panels C and D of Table 4. We first divide our data into high-risk and low-risk deals. High-risk deals include management buyouts, going private deals, and LBOs. While this proxy might not perfectly capture all deals with a greater risk of shareholders asserting appraisal rights, it depicts the set of deals that prior studies find are more likely to receive an appraisal challenge (Korsmo & Myers, 2015). We re-estimate model 6 from Panel A on a subsample of high-risk (n=736) deals (models 1-3 in panel C) and a subsample of low-risk (n=1,790) deals (models 4-6 in panel C). Second, we repeat this analysis for a subsample of negotiated (n=1,326) deals (models 1-3 in Panel D) as compared to a subsample of formal auction (n=815) deals (models 4-6 in Panel D).

We find limited evidence suggesting the increased premiums are amplified in High-risk deals. For example, the point estimates on the key interaction terms are larger in models (1) and (2) [Panel C] as compared to models (4) and (5). The interaction term DE * Positive events yields a significant positive coefficient in the High-risk sample [model (2)] but not in the Low-risk subsample [model (5)]. On the other hand, we do not find a significant result in models (1) and (3). Whether this is due to limited power of the empirical test on a smaller subsample, or other factors we cannot say for sure. We do note, however, that many of the *Positive Events* themselves arise from high-risk deals. So, the fact that DE * Positive events is significant in the High-risk subsample but not in the Low-risk subsample is unsurprising.

In Panel D, we find some evidence that the beneficial impact of appraisal is amplified for negotiated as compared to formal auctions. Indeed, the point estimate on the interaction term is larger in each model within the negotiation subsample as compared to the formal auction subsample, and the result is significant in models (1) and (3) [Panel D]. To be sure, the result only shows up at the 10% level. This could reflect limited power of the empirical test, difficulty observing informal auctions (Boone and Mulherin, 2007) or competition from nascent bidders that impacts deal pricing. Nonetheless, the basic evidence in Panel C and D [Table 4] is consistent with the *shareholder protection* hypothesis.

By contrast, we find no evidence of ex-ante price discrimination. Bidders acquiring a Delaware target do not appear to lower their price in response to events that increase the threat of appraisal. It is possible that bidders have heterogeneous strategies – with some bidders responding to an increased threat

²⁶ For example, see Fried Frank client memo (May 2015) showing that most cases awarding an appraisal value greater than the merger price are conflict of interest deals (<u>https://corpgov.law.harvard.edu/2015/05/01/over-reaction-to-use-of-merger-price-to-determine-fair-value</u>).

of appraisal by raising their offer price (*shareholder protection*) and others responding by lowering their offer price and paying off dissenting shareholders ex post (*price discrimination*).

To further explore the possibility of price discrimination, we examine arbitrage spreads in the 60day period following the announcement of each merger. The arbitrage spread on day *t* equals:

$\frac{Trading \ price_t - Merger \ price}{Merger \ price}$

where t = 0 is the public announcement day for the acquisition. The arbitrage spread measures the market's post-announcement reaction to a proposed deal, and is a proxy for likelihood of deal completion. In our setting, the spread can also give us some indication of wealth transfers between (i) arbitrage hedge funds who purchase after a deal is announced and (ii) pre-existing shareholders who may sell during this period to insure against risk of deal failure.

[Insert Figure 4 about here]

Results are illustrated in Figure 4, which plots the average (mean) arbitrage spreads for the 60 days after public announcement of each acquisition. Data are separately reported for deals which received an appraisal challenge (n=80) and deals without an appraisal challenge (n=2219).²⁷ To facilitate comparison, Figure 4 only includes completed transactions.²⁸

Figure 4 illustrates a large post-announcement pricing gap between deals which received an appraisal challenge and those that did not. The average arbitrage spread for uncontested acquisitions is approximately 6%, meaning the stock trades for 6% less than the negotiated merger price. By contrast, the average spread is effectively zero in deals which receive an appraisal challenge. This means that, on average, arbitrageurs have to pay the full merger price – with no guarantee the deal will close – to purchase their position. Indeed, we find that in more than half of deals with an appraisal challenge (45 out of 80) the arbitrage spread was *negative* for at least one day during the 60-day period after announcement. This means

²⁷ While our sample includes a total of 125 acquisitions which received an appraisal challenge, due to unreported information for price or premium or inability to match observations between SDC, Compustat & CRSP we are only able to observe arbitrage spreads for 80 deals of the 125 deals receiving an appraisal challenge and 2,200 of the acquisition in the full sample of over 3,300.

²⁸ Deals that are withdrawn will typically have much larger spreads. Yet, appraisal claims are filed in the 120 days after a deal closes. To avoid bias due to withdrawn deals, we limit Figure 4 to completed deals.

that many arbitrageurs paid a premium above the merger price to buy their position. This gives pre-existing investors in such firms have the option to receive approximately 6% more if they decide to sell prior to closing (insuring against the risk of deal failure). This implies that some of the gains from merger arbitrage (Jiang, et. al. 2006) are shared with passive investors.²⁹

At a broader level, the existence of secondary market trading between deal announcement and the merger vote undercuts the feasibility of price discrimination. If a bidder were too aggressive in setting a low ex ante price this could lead to a negative arbitrage spread, making it difficult to get majority shareholder support for the transaction. We believe this helps explain why none of our models show a decrease in acquisition premia as the threat of appraisal increases. Our analysis suggests that ex-ante price discrimination, if any, is not widespread, and is overshadowed by bidders trying to avoid an appraisal challenge.

5.2 Level of Takeover Activity and Method of Payment

The strength of the appraisal regime could impact more than just pricing. Indeed, a strong appraisal regime can be expected to narrow the bargaining range of feasible agreements, possibly blocking some nascent deals altogether. This could happen, for example, if bidders expect the court to award a valuation that is higher than the maximum price that a bidder is willing to pay. Because of the enticement of a high appraisal award target shareholders may be unwilling to approve any transaction below a bidder's maximum offer. Alternatively, the bargaining parties may restructure a cash merger into a stock-for-stock deal so that the transaction falls outside the reach of judicial appraisal.

These possibilities raise a concern that our results regarding deal premiums could be driven (in part) by selection effect. To address this issue, for all publicly held firms, we estimate the annual hazard rate of becoming an acquisition target. Our unit of analysis for these purposes is the firm-year pair. We collect firm-year data from COMPUSTAT for all US-based publicly traded firms covering January 1, 2004 through April 30, 2017. This gives us 90,746 firm-year observations. The sample is larger here because we are looking at all potential acquisition targets not merely deals that actually occur.

Using a regression set-up similar to equation (1), we estimate a logit model and a hazard model for our first two proxy variables. The goal is to test whether events increasing the strength of appraisal lead to a decline in the likelihood that a Delaware firm is acquired in a given firm-year. Results are reported in

²⁹ The gains received by pre-existing shareholders as a result of merger arbitrage are difficult to measure. For example, the deals which receive an appraisal challenge may be unusual and might have had lower spreads even without an appraisal suit.

Table 5. In general, the strength of the appraisal remedy appears to have little impact on the likelihood of becoming a target in a given firm-year. Counter to our concern, models (1) and (2) suggest that Delaware firms are actually *more* likely to be targeted as the strength of the appraisal remedy increases. Risk of appraisal does not chill deal activity within Delaware. Because the hazard models reported in Table 5 include a diff-in-diff set-up, this result is not driven by a higher baseline hazard rate in Delaware, but rather by a change in the likelihood of Delaware firms being targeted post-event relative to the control group over the same period.

[INSERT TABLE 5 ABOUT HERE]

[INSERT TABLE 6 ABOUT HERE]

Next, we explore a related question: does threat of appraisal impact the likelihood that an announced acquisition will be completed? Threat of appraisal could interfere with deal completion because shareholders who seek appraisal cannot vote in favor of the transaction, potentially making it harder to obtain the necessary votes. To investigate this possibility, we re-estimate equation 1 with *Completion*, which equals one if a deal closes and zero otherwise, as the dependent variable. As reported in table 6, we find no evidence that threat of appraisal interferes with deal completion. Similarly, Table 2 shows a similar likelihood of deal completion in Delaware (81%) and outside Delaware (81%).

Finally, we consider whether the strength of the appraisal remedy has an impact on the method of payment. If a bidder does not want to be exposed to appraisal it could restructure a cash merger as a stock-for-stock deal. To be sure, this option might only be available to strategic acquirers who have publicly listed shares to use as acquisition currency. Furthermore, changing the method of payment can impact tax treatment, among other business considerations. Nonetheless, if appraisal is a serious concern to bidders, we might expect some deals to be restructured as purely stock-for-stock. We explore this possibility in Table 7, using a similar diff-in-diff setup, with *Appraisal eligibility* as the dependent variable. *Appraisal eligibility* equals one if the method of payment is cash or a mix of cash and consideration, and equals zero if the deal is 100% stock-for-stock.

If anything, we find the opposite result. Models 1 and 2 report a significant positive coefficient on the interaction term DE * Post-Aug 2007. Counter to expectations, this result implies that acquisitions of Delaware targets are *more* likely to be structured as cash-deals (or at least appraisal eligible) as the strength of the appraisal remedy increases. We do not find an increased use of deal structures that fall outside the scope of appraisal (i.e. stock-for-stock deals). Panel B, for example, shows that 87% of Delaware

acquisitions were eligible for appraisal prior to August 2007, compared to 89% after August 2007. By contrast, the control group experienced a slight decline (82% to 78%) in use of appraisal eligible deals over the same time period. The price protection provided by appraisal does not appear to be limited by selection effects.

[INSERT TABLE 7 ABOUT HERE]

5.3 Voting, Contractual Provisions, and Sales Process

In this section, we explore the impact of appraisal risk on voting, contractual provisions, and the sales process. Deal planners could respond to risk of appraisal by adding contractual protections or altering the sales process, and shareholders may respond by abstaining or voting against the merger agreement. To investigate these issues, we create several new dependent variables and re-estimate equation (1) for a series of governance-related outcomes

5.3.1. Voting Outcomes

First, we examine shareholder voting. The *price discrimination* hypothesis predicts that, as risk of appraisal increases, bidders reduce their upfront offer price. In turn, this action makes shareholder approval of acquisitions more contested, with a lower percentage of "for" votes and a higher percentage voting "against" votes. To explore this possibility, we collect data on the percentage of mutual funds that cast a "for" vote on each merger and the percentage that cast an "against" vote on each merger using data from Institutional Shareholder Services (ISS).³⁰ We also collect data from FactSet SharkWatch database on campaigns by activist investors to encourage an "against" vote on a merger (Jiang, et. al 2016b).

Results are reported in Panels A through C of Table 7. We find no effect. Neither shareholder voting nor activist campaigns appear to be impacted by the risk of appraisal. To be sure, there are concrete examples, like *Dole Foods*, in which an appraisal challenge was associated with a very low shareholder vote (Dole only received 51% support), and a null result does not imply that appraisal has zero effect on voting, as our result may be limited by the power of test. Nonetheless, based on our data we do not find a significant impact on voting outcomes. This result is consistent with shareholder protection, which suggests

³⁰ Relying on ISS data restricts our sample size to just over 300 acquisitions.

that bidders raise their upfront price rather than risk a large no vote and costly appraisal challenge, and inconsistent with price discrimination, which predicts more contested vote outcomes.

5.3.2. Contractual Protections against Appraisal

Next, we explore contractual protections against appraisal. In particular, we collect data from merger metrics on whether the merger agreement includes an appraisal out clause. An appraisal out is a closing condition placed in the merger agreement, that allows a bidder to not close the deal if a certain percentage (typically 10%) of shareholders exercise their appraisal rights. If triggered, the acquirer could choose to (i) walk away from the deal, (ii) try to renegotiate the existing terms, or (iii) proceed with the deal under the current structure. An appraisal out is the primary contractual device used to limit the risk of appraisal. We would expect increased inclusion of an appraisal out clause in the merger agreement, if bidders are concerned that either (i) a large percentage of shareholders might dissent or (ii) a court might set valuation above the maximum amount that a bidder is willing to pay.

Figure 5 shows the percentage of merger agreements that include an appraisal out clause over time. Data are separately presented for targets incorporated in Delaware (dotted blue line) and outside Delaware (solid red line). In Delaware, we observer a large drop in the percentage of deals which include an appraisal out clause in the later part of the sample period. Prior to 2007 approximately 20% to 30% of Delaware deals included this provision, compare to less than 5% of Delaware deals from 2012 to 2016.³¹ By contrast, the control group shows little change in the use of the appraisal out clause over time.

To investigate in a multivariate setting, we estimate equation (1) with Appraisal Out, which equals one if the merger agreement contains an appraisal out closing condition and zero otherwise, as the dependent variable. As threat of appraisal increases we find a significant (1% level in all models) *decline* in the use of appraisal out clauses within the treatment group. Results are reported in Panel D of Table 8. This pattern is counterintuitive: the primary contractual protection against appraisal declines in use as threat of appraisal increases. The trend is also a strong endorsement of the appraisal valuations reached by the Delaware Chancery court, as it suggests that bidders are less concerned about the court setting valuation above their reservation price, than targets are about the increased uncertainty (and potential for strategic misuse) created by the inclusion of an appraisal out clause.

 $^{^{31}}$ Subramanian (2017) notes that from May 2016 to early 2017 there has been an uptick in the use of appraisal out clauses in Delaware deals. Whether this recent uptick – which can be seen in Figure 5 – reflects a meaningful change is too early to say. The broader trend over the past 13 years, however, is contrary to Subramanian's (2017) analysis.

Targets' uncertainty, however, is moderated by the fact that an appraisal out clause has never been triggered (Subramanian, 2016). It is doubtful that targets are demanding huge concessions (pricing or otherwise) to agree to a clause that has never been triggered, especially when existing research suggests that appraisal is more likely to arise when the acquisition premium appears abnormally low (Korsmo & Myers, 2015). Put differently, an appraisal out is most likely to be triggered in cases where the bidder got very good deal (i.e. low price), which is precisely the setting where a bidder has no reason to walk away from the deal. The actions of acquirers and their counsel – failure to insist on appraisal out clauses in the actual contracts they sign – are inconsistent with their lobbying efforts bemoaning the abuse of appraisal. Implicitly, this is a strong endorsement of the appraisal valuations reached by the Delaware Chancery court.

[INSERT TABLE 8 ABOUT HERE]

[INSERT FIGURE 5 ABOUT HERE]

A shareholder support agreement (tendering or voting) provides an alternative contractual protection against appraisal. The bidder may insist that a defined insider (or key stockholders) sign a contract promising to vote their shares in support of the merger agreement, or to tender their shares if the deal is structured as a two-step transaction. The benefit of this approach is that it locks in a defined number of positive votes and minimizes the possibility that appraisal will interfere with completion of the deal. To investigate, we estimate equation (1) with support agreement (which equals one if the deal included a support agreement and zero otherwise) as the dependent variable. Multivariate analysis of support agreements is provided in Panel E of Table 8. Threat of appraisal appears to have no effect the use of support agreements.

5.3.3. Deal Process

Finally, in panel F we explore the use of formal auctions as an alternative strategy to reduce risk of appraisal. Several judicial decisions [Huff ... Ancestry...] suggest that the Delaware courts are more likely to defer to a negotiated merger price if it is supported by a formal auction or other market check. Using our diff-in-diff setup we find increased use of formal auctions as the threat of appraisal increases. It is unclear

whether such "auctions" are merely an effort to procedurally cleanse a negotiated deal or whether the auction actually creates increased competition that could drive up merger premiums Here we find a

We find no change in the use of support the vote agreements, or in the percentage of shares which vote in favor of each transaction. We do, however, find evidence within the treatment group that deal planners are more likely to use a formal auction as market check as the strength of the appraisal remedy increases. Overall, our analysis suggests that bidders protect themselves against threat of appraisal, not through contractual terms that would allow the bidder to exit (e.g. appraisal out clause), but rather by increasing their upfront bid and improving the price-setting process (e.g. formal auctions).

6. Discussion and Conclusion

Our paper examines changes in the perceived strength of appraisal rights in Delaware to study the effects on takeover deals. We find that target shareholders receive higher premiums, and to some extent experience greater announcement returns, after events that increase the strength of appraisal remedy. Thus, our results suggest that bidders do not systematically offer a lower upfront price to pay off dissenting shareholders. We find that events increasing the strength of the appraisal remedy have no deterrent effect on the likelihood that a firm becomes a target in a given year. Further, we find no evidence that events increasing the strength have any deterrent effect on the likelihood that a firm becomes a target in a given year. Other governance and voting provisions also do not suggest that bidders use contractual terms that allow them to walk away from a deal with more shareholders asserting appraisal rights. Instead, our work suggests that bidders respond by increasing the offer terms. Our results, overall, indicate that appraisal provides enhanced protection when shareholders are more at risk, while not necessarily resulting in significant costs to target shareholders.

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Figure 1: Acquisitions of Delaware Public Targets with an Appraisal Challenge

Figure 2: Count of Negative and Positive Appraisal Events within Prior 12 months





Figure 3: Acquisition Premium

This graph plots a lowess curve to illustrate the average acquisition premium for deals involving target firms incorporated in Delaware (treatment group) and outside Delaware (control group) from 2004 to 2017.



Figure 4: Evolution of Arbitrage Spreads

For completed acquisitions, this figure graphs the average (mean) arbitrage spreads for the 60 days after public announcement of the acquisition. Data are separately reported for deals which received an appraisal challenge (n=80) and deals without an appraisal challenge (n=2219). Day 0 is the public announcement of the transaction. To facilitate comparison with deals that receive an appraisal challenge, this graph is limited to completed transactions.





Figure 5: Use of Appraisal Out Clause – Sorted by Target's State of Incorporation

Table 1: Events Impacting Strength of Appraisal Remedy in Delaware

This table contains a list of events – statutes and judicial decisions – that feasibly impacted the value of appraisal claims for acquisitions of Delaware targets between 2004 to 2017.

Date	Event	Award relative to deal price	Classification	Premium over merger price represented by appraisal amount	Number of years from merger to appraisal decision	Merger consideration (per share)	Court's valuation (per share)
8/1/2007	2007 Amendments to DGCL § 262	N.A.	Positive				
8/17/2007	Highfields v. AXA Financial	-19.00%	Negative	-19.00%	3.1	\$31.00	\$25.00
11/15/2007	Hildreth v. Castle Dental Centers, Inc.	0.00%	Negative	0.00%	3.4	\$0.15	\$0.16
11/1/2008	Transkaryotic Settlement	N.A	Positive				
3/18/2013	IQ v. Am. Commercial Lines	15.60%	Positive	15.60%	2.2	\$33.00	\$38.16
7/8/2013	Merion v. 3M Cogent	8.50%	Positive	8.50%	2.6	\$10.50	\$10.87
11/1/2013	Huff v. CKx	0.00%	Negative	0.00%	2.4	\$5.50	\$5.50
1/30/2015	In re ancestry.com	0.00%	Negative	0.00%	2.1	\$32.00	\$32.00
4/30/2015	Merlin Partners v. Autinfo	0.00%	Negative	0.00%	2.0	\$1.05	\$1.05
6/30/2015	Longpath v. Ramtron	-1.00%	Negative	-1.00%	2.6	\$3.10	\$3.07
8/27/2015	In re Dole Food	23.50%	Positive	23.49%	1.8	\$13.50	\$16.24
10/21/2015	Merion v. BMC Software	0.00%	Negative	0.00%	2.1	\$46.25	\$46.25
5/31/2016	In re Appraisal of Dell	28.10%	Positive	28.10%	2.6	\$13.75	\$17.62
7/8/2016	In re Appraisal of DFC Global	7.50%	Positive	7.50%	2.1	\$9.50	\$10.21
8/1/2016	2016 Amendments to DGCL § 262	N.A.	Negative				
12/16/2016	Merion v. Lender Processing	0.00%	Negative	0.00%	3.0	\$37.14	\$37.14
5/26/2017	In re Appraisal of PetSmart	0.00%	Negative	0.00%	2.2	\$83.00	\$83.00
5/26/2017	In re SWS Group	-8.50%	Negative	-8.46%	2.4	\$6.92	\$6.38

Table 2: Descriptive Statistics

This table presents descriptive statistics of the sample of 2,701 merger and acquisition transactions of U.S. public targets announced by public, private and subsidiary strategic and financial acquirers from January 1, 2004 through April 30, 2017. Appendix A defines the variables. We report descriptive statistics after splitting the sample between targets incorporated in the state of Delaware and in Non-Delaware states. The asterisks ***, **, * denote significance at the 1%, 5%, and 10% levels respectively, based on a t-test of difference in means.

	Т	otal		Ι	DE			nDE	Diff.	
	Ν	mean	sd	Ν	mean	sd	Ν	mean	sd	DE-NonDE
Target size (bln \$)	2,691	2.314	9.941	1,652	2.544	11.991	1,039	1.949	5.211	-0.595 *
Target Tobin's Q	2,670	1.665	0.921	1,637	1.798	0.989	1,033	1.453	0.755	-0.345 ***
EBITD/Assets	2,572	0.099	0.252	1,624	0.065	0.268	948	0.159	0.210	0.094 ***
Public acquirer	2,701	0.679	0.467	1,652	0.679	0.467	1,049	0.681	0.466	0.002
Tender offer	2,701	0.165	0.372	1,652	0.203	0.403	1,049	0.106	0.308	-0.098 ***
R&D/Assets	2,691	0.055	0.105	1,652	0.073	0.121	1,039	0.026	0.063	-0.046 ***
Leverage	2,675	0.175	0.214	1,638	0.178	0.219	1,037	0.172	0.206	-0.006
Cash and Cash equiv./Assets	2,691	0.200	0.221	1,652	0.242	0.240	1,039	0.132	0.166	-0.110 ***
Target in Financial industry	2,691	0.228	0.419	1,652	0.123	0.328	1,039	0.395	0.489	0.272 ***
Target in Technology industry	2,691	0.245	0.430	1,652	0.284	0.451	1,039	0.184	0.388	-0.100 ***
Completed	2,701	0.809	0.393	1,652	0.806	0.396	1,049	0.814	0.389	0.008
Pending	2,701	0.036	0.186	1,652	0.035	0.184	1,049	0.037	0.189	0.002
Acquirer includes management	2,701	0.020	0.139	1652	0.018	0.134	1,049	0.022	0.147	0.004
Buyouts or financial sponsor involvement	2,701	0.289	0.453	1,652	0.327	0.469	1,049	0.229	0.420	-0.098 ***
High-risk label	2,701	0.291	0.454	1652	0.331	0.471	1,049	0.229	0.420	-0.102 ***
Appraisal Out Clause	2,318	0.143	0.350	1,424	0.146	0.353	894	0.139	0.346	-0.007
Formal Auction	2,283	0.384	0.486	1,403	0.371	0.483	880	0.405	0.491	0.033

Table 3: Delaware Transactions Involving a Shareholder-Filed Appraisal Claim

This table describes the appraisal litigation activity among the Delaware acquisitions in our sample. In particular the table reports for each year (i) the total number of acquisitions involving a Delaware target, (ii) the number of appraisal eligible acquisitions involving a Delaware target, (iii) the number of eligible Delaware deals in which a shareholder filed an appraisal claim, and (iv) the number of final appraisal decisions resulting from the filed claims.

	Total Number of Delaware Acquisitions	Deals Eligible for M Appraisal	Number of Deals with Appraisal Claim	Percent of Eligible Deals with Appraisal Claim	Number of Final Appraisal Decisions	Avg. # of years from announcement to decision
Total	1652	1483	125	8.4	15	2.7
2004	143	122	4	3.3	1	3.6
2005	152	133	4	3.0	1	3.6
2006	179	159	6	3.8	0	N/M
2007	164	147	8	5.4	0	N/M
2008	120	109	3	2.8	0	N/M
2009	115	99	3	3.0	0	N/M
2010	127	121	3	2.5	2	2.6
2011	119	111	13	11.7	1	2.5
2012	103	96	11	11.5	2	2.7
2013	95	89	18	20.2	4	2.6
2014	98	82	13	15.9	3	2.7
2015	111	101	17	16.8	1	0.6
2016	100	92	20	21.7	0	N/M
2017	26	22	2	9.1	0	N/M

Table 4: Regressions on Premiums and Target CARs

This table contains regressions for acquisition premiums and target cumulative abnormal returns. Panel A contains the acquisition premium measured over the four weeks prior to the deal announcement. Panel B uses the cumulative abnormal return of the target over the [-1,+1] window centered on the deal announcement date. Panels C & D re-estimate the results for premiums bifurcated based on low versus high appraisal risk deals, defined as MBOs, LBOs, and going private deals (panel C), or formal auction versus negotiation, defined based on whether the target deals exclusively with a single bidder during the sales process (panel D). The asterisks, *** p<0.01, ** p<0.05, * p<0.1, describe the significance level of the coefficients.

Proxy for risk of appraisal	Post-Aug 2007 Post-Aug		# of +/- events	# of +/- events	# of Appr. Challenges	# of Appr. Challenges
Model	(1)	(2)	(3)	(4)	(5)	(6)
DE	-1.937	-4.273**	0.297	-2.996	-1.106	-4.516*
	(2.133)	(1.925)	(1.765)	(1.960)	(2.285)	(2.559)
Post-August 2007	7.479***	1.011				
	(2.392)	(4.069)				
DE * Post-August 2007	6.743**	5.191				
	(3.043)	(3.274)				
# Negative events			-1.241	-3.800***		
			(0.973)	(0.974)		
DE * # Negative events			0.086	-0.067		
			(1.564)	(1.312)		
# Positive events			0.024	-1.130		
			(1.859)	(1.759)		
DE * # Positive events			5.297*	4.383*		
			(2.856)	(2.344)		
Appraisal Rate (6 month)					-0.373	-1.018***
					(0.237)	(0.260)
DE * Appraisal Rate (6 month)					0.737**	0.696**
		0.400.111		0.454444	(0.365)	(0.313)
Firm size (\$ billions)		-0.188***		-0.174***		-0.188***
		(0.056)		(0.049)		(0.053)
Firm Tobin's Q		-2.832**		-2.668*		-2.874**
		(1.380)		(1.3/5)		(1.384)
EBITD/Assets		-15.339***		-15.124**		-14.847**
		(5.490)		(5.648)		(5.811)
Tangibility		-2.159		-2.254		-2.001
		(5.739)		(5.760)		(5.747)
R&D/Assets		21.680		22.460		22.426
т		(15.563)		(16.2/1)		(16.205)
Leverage		2.037		2.309		1.893
Cash and Cash amin (Assate		(0.005)		(0.049)		(0.074)
Cash and Cash equiv./Assets		2.929		2.834		2.515
Einen siel in destaut		(7.289)		(7.394)		(7.575)
Financial industry		(1.380)		2.085		1.510
Technology industry		(1.380)		(1.737)		(1.005)
recimology muusuy		(1.077)		(1.547)		(1.008)
US T-bill 10vr vield		(1.077)		(1.347) _/ /83***		-5 378**
es r-bin toyr yield		(1.772)		(1.628)		(2,027)
Market return prior 6 months		(1.772)		-24 680**		-16 383*
Market leturn prior 6 months		(9.960)		(9.838)		(9 365)
Volatility index		0.280		0.317*		0.269
volutility index		(0.234)		(0.189)		(0.186)
Decade 2000s		2 125		0.496		0.158
20000		(6.455)		(5.276)		(5.872)
Intercept	32.249***	48.765***	37.331***	55.805***	38.559***	63.467***
	(2.351)	(6.664)	(1.700)	(5.452)	(2.237)	(6.837)
Industry FE	No	Yes	No	Yes	No	Yes
Adjusted R2	0.022	0.064	0.004	0.069	0.002	0.066
Number of observations	2.526	2.526	2.526	2.526	2.526	2.526

Panel A. OLS Regression using Premiums

Proxy for risk of appraisal	Post-Aug 2007	Post-Aug 2007	# of +/- events	# of +/- events	# of Appr. Challenges	# of Appr. Challenges
Model	(1)	(2)	(3)	(4)	(5)	(6)
DE	-0.012 (0.012)	-0.029** (0.013)	0.002 (0.014)	-0.026 (0.017)	-0.005 (0.019)	-0.035 (0.022)
Post-August 2007	0.082*** (0.011)	0.049** (0.024)				
DE * Post-August 2007	0.042*** (0.015)	0.030** (0.014)				
# Negative events			0.002 (0.007)	-0.019*** (0.006)		
DE * # Negative events			0.013 (0.016)	0.011 (0.014)		
# Positive events			0.005 (0.014)	-0.005 (0.014)		
DE * # Positive events			0.020 (0.022)	0.023 (0.020)		
Appraisal Rate (6 month)					0.000 (0.002)	-0.006** (0.002)
DE * Appraisal Rate (6 month)					0.004 (0.003)	0.005** (0.002)
Firm size (\$ billions)		-0.001 (0.001)		-0.001 (0.001)		-0.001 (0.001)
Firm Tobin's Q		-0.021*** (0.006)		-0.021*** (0.006)		-0.022*** (0.005)
EBITD/Assets		-0.072* (0.039)		-0.072* (0.039)		-0.071* (0.042)
Tangibility		-0.081** (0.039)		-0.082** (0.039)		-0.079** (0.038)
R&D/Assets		0.389*** (0.120)		0.392*** (0.125)		0.390*** (0.123)
Leverage		0.011 (0.042)		0.010 (0.041)		0.008 (0.042)
Cash & Cash equiv./Assets		0.030 (0.043)		0.029 (0.041)		0.029 (0.043)
Financial industry		0.040*** (0.013)		0.056*** (0.015)		0.056*** (0.013)
Technology industry		0.027** (0.010)		0.038*** (0.012)		0.037*** (0.010)
US T-bill 10yr yield		-0.003 (0.008)		-0.017* (0.009)		-0.023** (0.010)
Market return prior 6 months		-0.176* (0.097)		-0.191** (0.090)		-0.164* (0.084)
Volatility index		0.002 (0.002)		0.003** (0.001)		0.003** (0.001)
Decade 2000s		-0.011 (0.022)		-0.034* (0.017)		-0.034* (0.020)
Intercept	0.193*** (0.009)	0.204*** (0.044)	0.240*** (0.010)	0.271*** (0.043)	0.245*** (0.015)	0.312*** (0.058)
Industry FE	No	Yes	No	Yes	No	Yes
Adjusted R2	0.041	0.097	0.005	0.095	0.003	0.096
Number of observations	2,082	2,082	2,082	2,082	2,082	2,082

Panel B. OLS Regression of Target CARs

Subsample		High-Ris	k		Low-Risk				
Model	(1)	(2)	(3)	(4)	(5)	(6)			
DE	-6.361**	-3.972	-5.369	-3.100	-1.914	-1.571			
	(3.061)	(3.948)	(5.086)	(2.637)	(2.216)	(3.075)			
Post-August 2007	2.001			-0.451					
	(7.594)			(5.183)					
DE * Post-August 2007	6.580			5.541					
	(5.570)			(4.327)					
# Negative events		-0.681			-4.659***				
		(2.243)			(1.166)				
DE * # Negative events		-3.692			1.034				
		(3.018)			(2.042)				
# Positive events		-5.002			-0.293				
		(3.658)			(1.950)				
DE * # Positive events		9.097**			3.478				
		(4.077)			(2.881)				
Appraisal Rate (6 month)			-1.259**			-1.091***			
			(0.522)			(0.332)			
DE * Appraisal Rate (6 month)			0.625			0.643*			
			(0.495)			(0.364)			
Same controls as in Table 4 Panel A	Yes	Yes	Yes	Yes	Yes	Yes			
Industry FE	No	No	No	No	No	No			
Adjusted R2	0.054	0.057	0.056	0.063	0.068	0.066			
Number of observations	736	736	736	1,790	1,790	1,790			

Panel C. OLS Results of Target Premium by High Appraisal Risk vs Low Appraisal Risk Subsamples

Subsample		Negotiatio	n		Formal Auct	ion
Model	(1)	(2)	(3)	(4)	(5)	(6)
DE	-2.910	0.576	-1.571	-0.814	-2.878	-0.803
	(2.902)	(2.409)	(3.075)	(2.234)	(3.131)	(3.304)
Post-August 2007	1.059			8.453		
	(5.516)			(5.791)		
DE * Post-August 2007	7.602*			1.521		
-	(4.239)			(3.775)		
# Negative events		-3.024**			-5.866***	
		(1.335)			(2.006)	
DE * # Negative events		-1.205			1.348	
		(2.128)			(2.425)	
# Positive events		-1.933			3.347	
		(1.975)			(2.714)	
DE * # Positive events		3.461			1.592	
		(3.206)			(3.577)	
Appraisal Rate (6 month)			-1.091***			-0.687
			(0.332)			(0.559)
DE * Appraisal Rate (6 month)			0.643*			-0.120
			(0.364)			(0.482)
Same controls as in Table 4 Panel A	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	No	No	No	No	No
Adjusted R2	0.099	0.100	0.099	0.051	0.058	0.053
Number of observations	1,326	1,326	1,326	815	815	815

Panel D. OLS Results of Target Premium by Formal Auction vs Negotiation Subsamples

Table 5: Likelihood / Hazard of Becoming a Target

This table presents the analysis on the hazard of becoming a target using the whole universe of US public firms in COMPUSTAT based on firm-year as unit of observation. Panel A presents coefficient estimates and standard errors for four multivariate models. Models 1 and 3 are logistic models on the probability of becoming a target and includes year fixed effects. Models 2 and 4 are semi-parametric COX models that assess the hazard risk of becoming a target. A positive coefficient means risk of "Failure" increases. Panel B presents the predicted probability of becoming a target in a given year estimated from the marginal effects (Stata's margins command) after running Model 1 in Panel A. The sample is based on 90,746 firm-year observations between January 1, 2004 and April 30, 2017. Variable definitions are in Appendix A. The asterisks, *** p<0.01, ** p<0.05, * p<0.1, describe the significance level of the coefficients.

Table 5 continued.

Panel A. Regressions

Model	Logit Hazard mode		Logit	Hazard model		
	(1)	(2)	(3)	(4)		
DE	0.525***	0.506***	0.558***	0.574***		
	(0.026)	(0.054)	(0.064)	(0.059)		
After-Aug 2007	-0.746	-1.212***				
C	(0.553)	(0.298)				
DE * After-Aug 2007	0.129*	0.162**				
C	(0.072)	(0.076)				
# Negative events			-0.043	-0.313***		
			(0.124)	(0.082)		
DE * # Negative events			0.076***	0.066		
			(0.027)	(0.041)		
# Positive events			-0.152	-0.120		
			(0.460)	(0.159)		
DE * # Positive events			0.047	0.039		
			(0.053)	(0.051)		
Firm size (\$ billions)	-0.013***	-0.012**	-0.013***	-0.012**		
Thin size (\$ bintons)	(0.005)	(0.012)	(0.005)	(0.012)		
Firm Tohin's O	(0.003) 0.242***	0.245***	(0.005) 0.242***	0.245***		
Thim rooms Q	(0.025)	(0.026)	(0.025)	(0.026)		
EDITD/Assots	(0.023) 0.047***	(0.020)	(0.023) 0.047***	(0.020)		
EDITD/Assets	(0.047)	(0.049^{+++})	(0.047)	(0.049^{+++})		
DDE / A secto	(0.010)	(0.010)	(0.010)	(0.017)		
PPE/Assets	-0.292**	-0.354***	-0.291**	-0.34/***		
	(0.145)	(0.112)	(0.146)	(0.116)		
K&D/Assets	0.698***	0.//9***	0.701^{***}	0.///***		
.	(0.245)	(0.220)	(0.248)	(0.225)		
Leverage	0.176	0.185	0.176	0.192		
	(0.116)	(0.115)	(0.117)	(0.119)		
Financial industry	0.137	0.118	0.136	0.137		
	(0.190)	(0.181)	(0.190)	(0.180)		
Technology industry	-0.158**	-0.151*	-0.155**	-0.146*		
	(0.073)	(0.085)	(0.073)	(0.078)		
US T-bill 10yr yield	0.206*	0.233**	0.207*	0.226**		
	(0.116)	(0.105)	(0.116)	(0.105)		
Volatility index	0.053	0.326**	0.061	0.526***		
	(0.230)	(0.152)	(0.240)	(0.144)		
Market return prior 6 months	0.575	0.260	0.562	-0.536		
	(0.660)	(0.520)	(0.664)	(0.684)		
log(larger firms in industry)	0.023	0.019	0.021	0.014		
	(0.015)	(0.013)	(0.016)	(0.014)		
log(N of larger firms in industry.)	0.156***	0.156***	0.155***	0.156***		
	(0.035)	(0.034)	(0.034)	(0.033)		
% M&A trans / Num firms in ind.	0.093*	0.072*	0.093*	0.072*		
	(0.048)	(0.043)	(0.048)	(0.043)		
Firm Age	0.004**	0.005**	0.004**	0.005***		
	(0.002)	(0.002)	(0.002)	(0.002)		
Intercept	-4 938***	(0.002)	-5 550***	(0.002)		
mercept	(0.913)		(0.481)			
Year FE	Yes	No	Ves	No		
	100	110	105	110		
Pseudo R2	0.040	0.027	0.040	0.026		

uner Der reuneten i robubinty of Deconning u Turget in u Orten Feur												
			Diff. DE -									
Total	DE	NonDE	NonDE									
1.43%	1.85%	1.01%	0.84%	***								
2.10%	2.65%	1.58%	1.07%	***								
1.25%	1.65%	0.87%	0.78%	***								
-0.86%	-1.01%	-0.72%	-0.29%									
***	***	***										
	Total 1.43% 2.10% 1.25% -0.86% ***	Total DE 1.43% 1.85% 2.10% 2.65% 1.25% 1.65% -0.86% -1.01% *** ***	Total DE NonDE 1.43% 1.85% 1.01% 2.10% 2.65% 1.58% 1.25% 1.65% 0.87% -0.86% -1.01% -0.72% *** *** ***	Total DE NonDE NonDE 1.43% 1.85% 1.01% 0.84% 2.10% 2.65% 1.58% 1.07% 1.25% 1.65% 0.87% 0.78% -0.86% -1.01% -0.72% -0.29% *** *** *** ***								

Panel B. Predicted Probability of Becoming a Target in a Given Year

Table 6: Probability of Completion

This table contains logit regressions for the probability that an announced deal is completed. The asterisks, *** p<0.01, ** p<0.05, * p<0.1, describe the significance level of the coefficients.

Proxy for risk of appraisal	Post-Aug 2007	Post-Aug 2007	# of +/- events	# of +/- events	# of Appr. Challenges	# of Appr. Challenges
Model	(1)	(2)	(3)	(4)	(5)	(6)
	b/se	b/se	b/se	b/se	b/se	b/se
DE	-0.140 (0.197)	-0.191 (0.199)	-0.022 (0.175)	-0.046 (0.146)	-0.054 (0.230)	-0.084 (0.203)
Post-August 2007	-0.281 (0.175)	-0.711*** (0.249)				
DE * Post-August 2007	0.104 (0.213)	0.166 (0.238)				
# Negative events			0.124 (0.133)	0.152 (0.145)		
DE * # Negative events			-0.207 (0.144)	-0.268* (0.156)		
# Positive events			-0.379** (0.175)	-0.556*** (0.208)		
DE * # Positive events			0.134 (0.137)	0.237 (0.158)		
Appraisal Rate (6 month)					-0.016 (0.018)	-0.069*** (0.025)
DE * Appraisal Rate (6 month)					-0.005 (0.021)	0.002 (0.022)
Intercept	1.668*** (0.252)	0.887* (0.477)	1.598*** (0.209)	1.206*** (0.376)	1.576*** (0.245)	1.530*** (0.468)
Industry FE	No	Yes	No	Yes	No	Yes
Same controls as in Table 4 Panel A	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R2	0.002	0.062	0.009	0.069	0.002	0.065
Number of observations	2,526	2,512	2,526	2,512	2,526	2,512

Logit Results on Probability of Deal Completion

Table 7: Appraisal Eligible Deals

This table presents analysis of whether a deal is eligible for dissenters to assert appraisal rights based on the method of payment. The dependent variable equals one if the deal is cash or mixed payment and equals 0 if the payment is 100% stock.

Proxy for risk of appraisal	Post-Aug	Post-Aug	# of +/- ever	# of Appr.		
	2007	2007			Challenges	Challenges
Model	(1)	(2)	(3)	(4)	(5)	(6)
	b/se	b/se	b/se	b/se	b/se	b/se
DE	0.337*	-0.072	0.567**	0.173	0.533*	0.226
	(0.202)	(0.189)	(0.252)	(0.168)	(0.281)	(0.200)
Post-August 2007	-0.279	-0.457				
<u> </u>	(0.220)	(0.329)				
DE * Post-August 2007	0.566*	0.602**				
C	(0.340)	(0.300)				
# Negative events			-0.103	-0.133		
C C			(0.080)	(0.086)		
DE * # Negative events			0.140	0.158		
C			(0.143)	(0.165)		
# Positive events			-0.189	-0.106		
			(0.166)	(0.153)		
DE * # Positive events			0.091	0.062		
			(0.260)	(0.272)		
Appraisal Rate (6 month)			· · /		-0.026*	-0.024
ri					(0.015)	(0.016)
DE * Appraisal Rate (6 month)					0.029	0.012
(********************************					(0.027)	(0.025)
Firm size (\$ billions)		-0.021*		-0.020*	(0.02.)	-0.020*
		(0.011)		(0.010)		(0.010)
Firm Tobin's O		-0.080		-0.078		-0.078
· ····· · · · · · · · · · · · · · · ·		(0.147)		(0.147)		(0.144)
EBITD/Assets		0.129		0.175		0.158
		(0.336)		(0.307)		(0.314)
Tangibility		-0.813		-0.802		-0.811
Tungionity		(0.612)		(0.602)		(0.602)
R&D/Assets		-1 627**		-1 563**		-1 569**
RCD/HSSCB		(0.699)		(0.667)		(0.691)
Leverage		0.167		0.180		0.188
Leverage		(0.550)		(0.537)		(0.543)
Cash and Cash equiv./Assets		-0.005		-0.022		-0.011
Cubil and Cubil equily, Tibbels		(0.583)		(0.583)		(0.589)
Financial industry		-0.350*		-0.301		-0.334*
i manerar maasa y		(0.189)		(0.189)		(0.187)
Technology industry		0.816***		0.830***		0.807***
reemonogy maasay		(0.215)		(0.215)		(0.207)
US T-bill 10yr vield		0.237*		0.209		0.220
		(0.141)		(0.138)		(0.145)
Market return prior 6 months		-0.683		-0.859		-0.814
France recurs prior o monuto		(0.806)		(0.899)		(0.850)
Volatility index		0.003		-0.001		-0.004
volucinty mach		(0.012)		(0.001)		(0.001)
Decade 2000s		-0 756***		-0.655**		-0 731***
Decade 20003		(0.266)		(0.000)		(0.260)
Intercept	1.688***	1.326**	1.657***	1.276**	1.650***	1.355*
mercept	(0.327)	(0.625)	(0.384)	(0.601)	(0.384)	(0.716)
Industry FE	No.	Yes	No	Yes	No	Yes
Pseudo R2	0.019	0.124	0.020	0.123	0.018	0.122
Number of observations	2.526	2.362	2.526	2.362	2.526	2.362

Panel A. Logit Regressions of Deal being Appraisal Eligible

Panel B. Number of Appraisal Eligible Deals

Total			DE			NonDE						
All	Non	Elig	Percent	All	Non	Elig	Percent	All	Non	Elig	Percent	Diff Percent
	Elig		App-		Elig		App-		Elig		App-	App-Elig
			Elig				Elig				Elig	DE - NonDE
2,348	345	2,003	85.3%	1,445	166	1,279	88.5%	903	179	724	80.2%	8.3%
905	132	773	85.4%	532	68	464	87.2%	373	64	309	82.8%	4.4%
1,443	213	1,230	85.2%	913	98	815	89.3%	530	115	415	78.3%	11.0%
538	81	457	-0.2%	381	30	351	2.0%	157	51	106	-4.5%	
	All 2,348 905 1,443 538	All Non Elig 2,348 345 905 132 1,443 213 538 81	Total All Non Elig Elig 2,348 345 2,003 905 132 773 1,443 213 1,230 538 81 457	All Non Elig Percent All Non Elig App- Elig 2,348 345 2,003 85.3% 905 132 773 85.4% 1,443 213 1,230 85.2% 538 81 457 -0.2%	Total Total All All Non Elig Percent All Elig App- Elig Percent All 2,348 345 2,003 85.3% 1,445 905 132 773 85.4% 532 1,443 213 1,230 85.2% 913 538 81 457 -0.2% 381	Image: Non Keing Ke	Image: Sector of the system Total DE All Non Elig Percent All Non Elig All Non Elig Percent App- Elig Elig Elig 2,348 345 2,003 85.3% 1,445 166 1,279 905 132 773 85.4% 532 68 464 1,443 213 1,230 85.2% 913 98 815 538 81 457 -0.2% 381 30 351	Total DE All Non Elig Percent All Non Elig Percent App- Elig 2,348 345 2,003 85.3% 1,445 166 1,279 88.5% 905 132 773 85.4% 532 68 464 87.2% 1,443 213 1,230 85.2% 913 98 815 89.3% 538 81 457 -0.2% 381 30 351 2.0%	$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	$ \begin{array}{c c c c c c c c c c c c c c c c c c c $

Panel C. Number of Appraisal Eligible Deals by Annual Segment

		Total			DE			NonDE	
		Non Elig	Elig		Non Elig	Elig		Non Elig	Elig
	Total			Total			Total		
Total	2,394	356	2,038	1,476	173	1,303	918	183	735
Aug03toJul04	154	38	116	102	18	84	52	20	32
Aug04toJul05	190	34	156	110	14	96	80	20	60
Aug05toJul06	241	32	209	144	21	123	97	11	86
Aug06toJul07	320	28	292	176	15	161	144	13	131
Aug07toJul08	179	29	150	102	15	87	77	14	63
Aug08toJul09	132	27	105	93	15	78	39	12	27
Aug09toJul10	139	15	124	91	9	82	48	6	42
Aug10toJul11	191	22	169	124	8	116	67	14	53
Aug11toJul12	130	10	120	90	6	84	40	4	36
Aug12toJul13	147	21	126	86	8	78	61	13	48
Aug13toJul14	130	21	109	78	9	69	52	12	40
Aug14toJul15	143	21	122	91	9	82	52	12	40
Aug15toJul16	163	25	138	101	10	91	62	15	47
Aug16toJul17	89	22	67	57	9	48	32	13	19

Table 8: Voting Outcomes, Contractual Provisions, and Sales Process

This table contains regressions for voting outcomes in mergers, certain contractual provisions and the sales process. Panel A contains the percentage of votes in favor of the deal ("For" votes), while Panel B uses the percentage of votes against the deal ("Against" votes). Panel C uses an indicator variable equal to one if an activist launches a campaign encouraging shareholders to vote against the deal, and zero otherwise. Panels D and E examine contractual provisions. Panel D includes an indicator equal to one if the merger agreement contains an appraisal out closing condition, and zero otherwise. Panel E includes an indicator variable equal to one if the bidder obtains a voting agreement of some target shareholders, and zero otherwise. Panel F uses whether the target ran a formal auction as part of the sales process, defined based on whether the target deals exclusively with a single bidder during the sales process. The asterisks, *** p<0.01, ** p<0.05, * p<0.1, describe the significance level of the coefficients.

Proxy for risk of appraisal	Post-Aug	Post-Aug	# of +/-	# of +/-	# of Appr. Challenges	# of Appr. Challenges
Model	(1)	(2)	(3)	(4)	(5)	(6)
	b/se	b/se	b/se	b/se	b/se	b/se
DE	0.010 (0.069)	-0.022 (0.048)	0.018 (0.030)	0.006 (0.027)	0.017 (0.037)	0.001 (0.024)
Post-August 2007	0.096 (0.072)	0.039 (0.065)				
DE * Post-August 2007	0.012 (0.080)	0.054 (0.060)				
# Negative events			0.002 (0.012)	-0.020 (0.014)		
DE * # Negative events			0.037** (0.018)	0.062*** (0.015)		
# Positive events			0.010 (0.015)	-0.004 (0.009)		
DE * # Positive events			-0.009 (0.020)	0.004 (0.019)		
Appraisal Rate (6 month)					0.005 (0.004)	0.001 (0.003)
DE * Appraisal Rate (6 month)					0.001 (0.004)	0.003 (0.002)
Intercept	0.659*** (0.065)	0.759*** (0.093)	0.728*** (0.025)	0.800*** (0.074)	0.705*** (0.037)	0.734*** (0.097)
Industry FE	No	Yes	No	Yes	No	Yes
Adjusted R2	0.069	0.082	0.002	0.078	0.024	0.077
Number of observations	354	354	354	354	354	354

Panel A. OLS Results for Percentage of "Fort" Votes

Proxy for risk of appraisal	Post-Aug	Post-Aug	# of +/-	# of +/-	# of Appr.	# of Appr.
	2007	2007	events	events	Challenges	Challenges
Model	(1)	(2)	(3)	(4)	(5)	(6)
	b/se	b/se	b/se	b/se	b/se	b/se
DE	-0.029	0.001	-0.011	-0.002	-0.017	-0.004
	(0.063)	(0.035)	(0.026)	(0.010)	(0.038)	(0.016)
Post-August 2007	-0.084	-0.061*				
	(0.062)	(0.036)				
DE * Post-August 2007	0.033	-0.011				
C C	(0.065)	(0.038)				
# Negative events			-0.002	0.006		
C .			(0.007)	(0.011)		
DE * # Negative events			-0.013	-0.033**		
C C			(0.011)	(0.013)		
# Positive events			-0.016	-0.002		
			(0.016)	(0.006)		
DE * # Positive events			0.019	0.006		
			(0.017)	(0.009)		
Appraisal Rate (6 month)					-0.004	-0.003
••					(0.004)	(0.002)
DE * Appraisal Rate (6 month)					0.002	0.000
					(0.004)	(0.002)
Intercept	0.115*	0.123**	0.058**	0.062	0.072*	0.129***
-	(0.061)	(0.045)	(0.025)	(0.037)	(0.037)	(0.045)
Industry FE	No	Yes	No	Yes	No	Yes
Adjusted R2	0.065	0.207	-0.008	0.197	0.008	0.203
Number of observations	316	316	316	316	316	316

Panel B. OLS Results for Percentage of "Against" Votes

Panel C. Logit Results for Activist Campaign to Vote Against Merger

Proxy for risk of appraisal	Post-Aug 2007	Post-Aug 2007	# of +/- events	# of +/- events	# of Appr. Challenges	# of Appr. Challenges
Model	(1)	(2)	(3)	(4)	(5)	(6)
	b/se	b/se	b/se	b/se	b/se	b/se
DE	0.164 (0.246)	0.100 (0.267)	0.294 (0.200)	0.187 (0.214)	0.178 (0.266)	0.049 (0.288)
Post-August 2007	-0.256 (0.243)	1.134*** (0.333)				
DE * Post-August 2007	0.317 (0.298)	0.190 (0.296)				
# Negative events			-0.013 (0.133)	0.219 (0.173)		
DE * # Negative events			0.098 (0.177)	0.103 (0.190)		
# Positive events			-0.065	0.185		
DE * # Positive events			0.009	-0.082 (0.195)		
Appraisal Rate (6 month)			(0.000)	(0.00)	-0.070* (0.040)	-0.029 (0.044)
DE * Appraisal Rate (6 month)					0.043 (0.042)	0.039 (0.045)
Intercept	-2.885*** (0.224)	-4.639*** (0.737)	-2.998*** (0.186)	-4.237*** (0.568)	-2.725*** (0.228)	-3.066*** (0.637)
Industry FE	No	Yes	No	Yes	No	Yes
Same controls as in Table 4 Panel A	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R2	0.004	0.066	0.004	0.063	0.008	0.055
Number of observations	2,526	2,439	2,526	2,439	2,526	2,439

Proxy for risk of appraisal	Post-Aug	Post-Aug	# of +/-	# of +/-	# of Appr.	# of Appr.
	2007	2007	events	events	Challenges	Challenges
Model	(1)	(2)	(3)	(4)	(5)	(6)
	b/se	b/se	b/se	b/se	b/se	b/se
DE	0.415**	0.533**	0.140	0.300	0.440**	0.588**
	(0.174)	(0.233)	(0.154)	(0.231)	(0.218)	(0.262)
Post-August 2007	-0.268*	0.157				
-	(0.143)	(0.283)				
DE * Post-August 2007	-0.842***	-0.816***				
e	(0.225)	(0.252)				
# Negative events			-0.418**	-0.372*		
6			(0.175)	(0.203)		
DE * # Negative events			0.054	0.132		
6			(0.234)	(0.234)		
# Positive events			0.285*	0.505***		
			(0.165)	(0.187)		
DE * # Positive events			-0.530***	-0.603***		
			(0.162)	(0.172)		
Appraisal Rate (6 month)				. ,	-0.005	0.071***
					(0.021)	(0.020)
DE * Appraisal Rate (6 month)					-0.112***	-0.111***
II and an (1					(0.022)	(0.023)
Intercept	-1.559***	-2.731***	-1.649***	-2.667***	-1.684***	-3.355***
1	(0.145)	(0.508)	(0.127)	(0.552)	(0.185)	(0.628)
Industry FE	No	Yes	No	Yes	No	Yes
Same controls as in Table 4 Panel A	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R2	0.029	0.097	0.019	0.099	0.022	0.098
Number of observations	2.172	2.127	2.172	2.127	2.172	2.127

Panel D. Logit Results with Appraisal Out Clause Proxy for risk of appraisal Post-Aug Post-Aug

Panel E. Logit Results for Voting Support Agreement

Proxy for risk of appraisal	Post-Aug	Post-Aug	# of +/-	# of +/-	# of Appr.	# of Appr.
	2007	2007	events	events	Challenges	Challenges
Model	(1)	(2)	(3)	(4)	(5)	(6)
	b/se	b/se	b/se	b/se	b/se	b/se
DE	0.021	0.058	0.061	0.098	0.184	0.180
	(0.139)	(0.189)	(0.127)	(0.115)	(0.141)	(0.154)
Post-August 2007	0.365	0.276				
	(0.378)	(0.470)				
DE * Post-August 2007	-0.209	-0.163				
	(0.385)	(0.376)				
# Negative events			0.024	0.026		
			(0.106)	(0.096)		
DE * # Negative events			-0.096	-0.121		
			(0.111)	(0.113)		
# Positive events			0.313*	0.236		
			(0.190)	(0.190)		
DE * # Positive events			-0.267	-0.204		
			(0.207)	(0.213)		
Appraisal Rate (6 month)					0.056	0.051
					(0.036)	(0.035)
DE * Appraisal Rate (6 month)					-0.056	-0.046
					(0.035)	(0.034)
Intercept	-0.049	-0.377	0.029	-0.255	-0.112	-0.678
-	(0.100)	(0.385)	(0.108)	(0.378)	(0.103)	(0.428)
Industry FE	No	Yes	No	Yes	No	Yes
Same controls as in Table 4 Panel A	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R2	0.003	0.088	0.004	0.090	0.005	0.090
Number of observations	2,151	2,144	2,151	2,144	2,151	2,144

Proxy for risk of appraisal	Post-Aug 2007	Post-Aug 2007	# of +/- events	# of +/- events	# of Appr. Challenges	# of Appr. Challenges
Model	(1)	(2)	(3)	(4)	(5)	(6)
	b/se	b/se	b/se	b/se	b/se	b/se
DE	-0.313*	-0.272	-0.288*	-0.251*	-0.273*	-0.279**
	(0.177)	(0.165)	(0.161)	(0.129)	(0.148)	(0.126)
Post-August 2007	0.216*	0.419				
	(0.113)	(0.255)				
DE * Post-August 2007	0.276	0.382*				
	(0.183)	(0.195)				
# Negative events			-0.118	-0.111		
			(0.085)	(0.099)		
DE * # Negative events			0.175*	0.204*		
			(0.102)	(0.117)		
# Positive events			0.196	0.115		
			(0.226)	(0.256)		
DE * # Positive events			0.153	0.279		
			(0.211)	(0.227)		
Appraisal Rate (6 month)					0.027	0.020
					(0.020)	(0.035)
DE * Appraisal Rate (6 month)					0.028	0.047***
					(0.018)	(0.018)
Intercept	-0.537***	-0.065	-0.429***	0.029	-0.546***	-0.338
	(0.093)	(0.443)	(0.130)	(0.439)	(0.149)	(0.697)
Industry FE	No	Yes	No	Yes	No	Yes
Same controls as in Table 4 Panel A	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R2	0.007	0.044	0.010	0.048	0.010	0.045
Number of observations	2,141	2,116	2,141	2,116	2,141	2,116

Panel F. Logit Results for Formal Auction in Sales Process