Inside the "Black Box" of Private Merger Negotiations

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Abstract

This paper enables a detailed look inside the "black box" of merger and acquisition (M&A) negotiations before the first public bid is announced. We find that bid revisions are very common in the pre-public phase of a deal, and that price revisions during the private negotiation window are associated with changes in the public-market values of the acquisition target. We also investigate whether the nature of the bid process has an impact on pre-public takeover price revisions and examine the strategic difference in biding in deals that are initiated privately by a bidder other than the winning bidder. We interpret our results as consistent with the notion that the behavior of target managers in the private negotiation window appears congruent with shareholder wealth maximization.

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Introduction

Several authors (Boone and Mulherin, 2007; Aktas, de Bodt, and Roll, 2010) have noted a paradox in the mergers and acquisition (M&A) market from the 1990s onwards. The M&A market after 1990 has been characterized by a lack of competing public bidders, the absence of frequent hostile offers, and few public offer price revisions. Nonetheless, we observe substantial average premiums paid to acquire target firms.[1] On the surface, the combination of prevailing friendly deals and high premiums seems puzzling, given the notion that target management is more likely to negotiate private benefits at a cost to shareholders in friendly deals, while hostile (or contested) offers are more likely to induce multiple-bidder auctions which should theoretically yield higher premiums.[2]

In a seminal paper in the M&A literature, Boone and Mulherin (2007) argue that the vast majority of competition to acquire a target in the M&A market occurs out of the public eye (at least in real time). Specifically, using data hand-gathered from Securities and Exchange Commission (SEC) filings, Boone and Mulherin show that while there is relatively little public competition to buy a given target[3], there appears to exist a relatively robust competitive bidding environment in what the authors of that paper call the "pre-public" period in at least half of all M&A deals.

This "pre-public" period is the window of time between when a bidder decides to approach a target, or a target decides to offer itself up for sale, commonly known in practice as "seeking strategic alternatives," and when an accepted (or, sometimes, preliminary) bid is first announced

[1]See, e.g., Bebchuk, Coates, and Subramanian (2002), Dimopoulos and Sacchetto (2014), Betton, Eckbo, and Thorburn (2008), and Bates and Becher (2017).

[2] Schwert (2000) reports that auctions are related to deal hostility and Betton and Eckbo (2000) find that competition among rival bidders increases the expected payoff to target shareholders. Moeller (2005) finds that entrenched target CEOs are likely to reduce takeover premiums in exchange for bidder-provided incentives in the friendly environment of the 1990s.

[3] At least from the 1990s onward; there was more robust public competition between bidders in the 1980s and earlier.

to the market. When considering a sale of their firm, no matter how such a consideration is initiated, the board of directors of a target firm has a fiduciary duty to get the best possible deal for their shareholders. In many instances, the way that target boards of directors fulfill this duty is by, effectively, conducting a private auction of ownership of their firm. Boone and Mulherin (2007) show that this happens in approximately half the deals that they examine in detail (202 out of 400 deals).[4]

What we learn from Boone and Mulherin is that there ***is*** an active pre-public phase in the process by which firms are sold (at least for half of them), but we do not learn much ***about*** the pre-public phase of M&A negotiations. Boone and Mulherin (2007) focus their paper on reassuring the reader that the choice of conducting a private auction or one-on-one negotiation (with a single bidder) does not seem to impact target shareholder wealth outcomes from an acquisition. But we are left with the question of ***how*** bidding proceeds in this pre-public phase of an acquisition. This is the main contribution of our paper: looking inside the "black box" of pre-public merger negotiations and describing how, on average, bidding for the target evolves during this period that is shielded from public scrutiny.[5]

Our research is in the same vein as Aktas, de Bodt, and Roll (2010), in that we aim to provide some texture about why takeover premiums appear so high despite the lack of public competing bids. Rather than use broad proxies for competition, as Aktas, de Bodt, and Roll do, we specifically examine the sequence and level of competing bids before an M&A deal is publicly announced. As in Boone and Mulherin (2007), we label the period prior to first public

[4] In the other 198 deals examined in Boone and Mulherin (2007), the target's board chose to negotiate solely, or at least primarily, with a single bidder. This can also be consistent with fulfilling the board's duty to get the optimal offer for their shareholders if the board feels either that their bargaining position with the acquirer would be weakened by seeking other offers to buy the firm or that the target's strategic fit with the proposed bidder is so strong that no other offer could possibly be better**.**

[5] At least in real time: As described below (and in Boone and Mulherin, 2007), after the fact we can observe quite a lot of detail about the pre-public phase of an M&A bid via SEC filings.

announcement of a merger the "pre-public" negotiation period, and the point of our research is to attempt to describe in as much detail as we can what bidding looks like in this period and how that relates to the final bid announced to the public by the target firm (since the publicly announced bid often is the final bid that a target receives, especially in more recent decades).

We hand-gather data from SEC filings about the pre-public deal process for 1,324 acquisitions from 1994 to 2016 and collect both the incidence and value of bids submitted for the target in this pre-public phase. In almost 95% of the deals in our sample, the bidder submits their (non-binding) first offer for their target after signing a confidentiality agreement, accessing confidential information about the target firm, and having had (on average) more than 100 calendar days to assess the impact of that private information on their valuation. In other words, in the vast majority of cases, these bids, even though made in private and non-binding, are made following the opportunity for substantive analysis of the target by the bidder. Consistent with the existing literature (Boone and Mulherin, 2007) we interpret these factors as indications of the commitment of both the bidder and target to the sale process, and the resulting veracity (or seriousness) of the submitted bids.

Similar to Boone and Mulherin (2007), we observe a substantial bifurcation of the pre-public process in M&A deals. On the one hand, when the sale of a target is initiated by the eventually-winning bidder (potentially mutually with the target) the median number of bidders that are contacted (or move forward in the acquisition process by, for example, signing a confidentiality agreement) is one: the eventual winning bidder. Boone and Mulherin (2007) refer to these as "negotiations." On the other hand, in situations where a deal is initiated either by the target itself or by a bidder *other than the eventual winner*, the median number of bidders contacted by the target (or, more likely, their investment banker) is between six and seven, of which two to three

(at the median) follow up by signing a confidentiality agreement or expressing a tangible interest in buying the target (called "auctions" in Boone and Mulherin, 2007). Much as in Boone and Mulherin (2007), each of these bifurcated categories represents about half our sample.

Compared to Boone and Mulherin (2007) we offer greater insight into bidding behavior in the pre-public phase of deals. When a deal is initiated either by the target itself or by a bidder other than the eventual winner (i.e., auctions) we find that the conversion from contacting a bidder to that bidder moving on in the bid process (by signing a confidentiality agreement or submitting an actual bid) is significantly higher in deals that are initiated by a third-party bidder.[6] This is notable as it suggests that bidders are less likely to move on in the bid process if the target itself attempted to arrange its own sale, consistent with a tendency for lower quality firms to "seek strategic alternatives" and higher quality firms (more popular with more bidders) to be initially approached by a third-party bidder (who we know ex-post does not win the auction).

Furthermore, "auctions" have significantly longer windows of time in the pre-public phase (199 days) relative to negotiations (134 days). Conversely, negotiations have longer windows of time between the first public announcement of a bid and the closing of the deal. This suggests that the bid processes in these two types of deals are very different: one type (auctions) spend longer behind closed doors, while the other (negotiations) play out for a longer period of time under the watchful eye of the markets. This is potentially caused by the dissolution of the board's fiduciary duty, which is more obvious following the private phase of an auction deal and therefore less time needs to be spent convincing shareholders that all possible price discovery has been exhausted.

[6] See Table 3 Panel B for more detailed information on bidder conversion for different initiation categories. In unreported results, we find that compared to third-party-initiated deals, target-initiated deals have significantly lower conversion ratios for all three measures at the 1% level.

Where our paper really begins to differentiate from the existing literature (e.g., Boone and Mulherin, 2007) is that we keep track of the prices offered by the various bidders at various points in the pre-public deal process. As is discussed in prior literature, takeover price revisions during the *public* phase of bidding are relatively rare: we observe these in only 11% of cases in our sample (9% of observations show increases in deal prices while 2% have decreases).

The private negotiation window is very different, however. In the pre-public window, before bids are known to the market, we observe takeover price revisions for well over 80% of the deals in our sample (75% increases, 8% decreases). The magnitude of bid revisions in the private phase of negotiations is also much larger (9% on average) compared to the magnitude of price revisions after the first public bid is made for a target firm (1% on average). There is clearly substantial price discovery in the pre-public phase of a deal's life, which may not be all that surprising: it is during this window, for example, that bidders typically get their first exposure to non-public information about the target after signing a non-disclosure agreement.

We next investigate potential determinants of price revisions during the pre-public phase of a deal. The first two factors we consider are changes in the *public-market* values of the targets during this period when private negotiations over the acquisition of that firm are taking place. By the nature of our data, all our targets are publicly traded firms: thus we can measure changes in public-market values over the entire pre-public negotiation window. We break the pre-public window into two distinct pieces to measure market value changes for the target: the three-days centered on an earnings announcement for the target[7], and all other days between the date on which the first takeover bid is privately submitted to the target's board and the date on which the market

[7] About 40% of the targets in our sample have an earnings announcement during this private negotiation window.

is made aware of the bid (i.e., the rest of the pre-public window excluding the days around an earnings announcement).

Price revisions during the private negotiation window are significantly correlated with both these sources of changes in target market values. Specifically, our coefficient estimates suggest that a 1% change in the market value of the target firm (whether explicitly around an earnings announcement or not) is associated with a change in the price offered for the target firm of 0.34% - 0.59% (depending on the specification).

While in theory causality could go in either direction, we believe that the practicalities of the M&A market suggest a causal interpretation of this result. Because these bids are not known to the market during this pre-public window, and the market reacts to the bid when it is announced, it is very unlikely that changes in the public market value of the target's stock in this pre-public window are being driven by knowledge of the bids. Prior studies show that insider trading on the private knowledge of a likely merger bid does get impounded into stock prices (e.g., Meulbroek, 1992; Meulbroek, 1997; Schwert, 1996). Although these prior findings suggest that the likelihood of being a takeover target affects insider trading which impacts stock prices, it is unlikely that (private) bid news would have incremental price impact around an earnings announcement, where there is another obvious source of news about the value of the publicly traded target firm. We observe, however, a significant impact on price revisions in the private period from market reactions to earnings-related news. Our interpretation of these results is, therefore, that bidders themselves observe changes in the public-market value of target firms and alter their private bids for their takeover targets in the pre-public window.

Next, we investigate whether the nature of the bid process (auction vs. negotiation) has an impact on takeover price revisions in the pre-public phase of a deal. Interestingly, bids that are

defined as auctions have significantly *lower* takeover price revisions (by three percentage points) in the private deal phase relative to bids that are defined as negotiations. Our interpretation of this evidence is that, even in bidding that is shielded from public view, bidders appear to bring competitive offers to the table for targets when they know the bidding process is competitive, and are therefore less likely to need/want to raise those offers in competition with other bidders. On the other hand, the nature of the bid process does not seem to significantly affect the public phase of the life of a deal: whether a deal is privately auctioned amongst multiple bidders or negotiated exclusively with only one bidder has no impact on the public price revision.

In our final test, we explicitly examine bids that are initiated privately by a bidder other than the winning bidder. These deal processes are relatively controversial in the academic literature. On one hand, these are amongst the most (privately) competitive deals we observe in our sample, as judged by number of bidders that the target's investment banker contacts and the proportion of those bidders that move on in a tangible way in the bid process. In traditional auction theory, greater competition results in higher bid prices, and so we might expect to observe higher publicly-revealed deal prices in these auctions. On the other hand, another stream of literature suggests that managerial entrenchment after 1990 frequently caused target managers to seek out "white knight" bidders to secure private benefits, in the process sacrificing takeover premiums for their shareholders (e.g., Bebchuk, Coates and Subramanian, 2002; Moeller, 2005).

We show that the effect of competition prevails in the private bid process. Specifically, we measure the difference between the takeover premium implied by the initial private bid for a target and the takeover premium implied by the first public bid for a target. On average, takeover premiums measured using the first public bid price for a target are 23% higher than premiums measured using initial private bid prices in the auctions initiated by third-party (i.e., non-winning)

bidders. In other words, the process of finding an alternative bidder to buy a firm appears to increase the value provided to target shareholders by 23% on average.

More importantly, while bids initiated by potential acquirers that do not end up winning the auction for a target firm do not have higher *initial* premiums than other types of bids do, bids initiated by these third-party bidders do have significantly greater *increases* in the bid price in the window prior to the first publicly-revealed ("accepted") bid compared to what we observe for other bids, suggesting that the process of finding an alternate bidder maximizes eventual realized offer premiums for target shareholders. These results are inconsistent with the notion that target managers are systematically entrenched and seeking "white knight" bidders to meet their own preferences while sacrificing wealth for their own shareholders.

The remainder of this paper is organized as follows. In Section 1 we describe our data collection and variable construction, while Section 2 provides summary statistics for our sample. In Sections 3 and 4 we provide our main results, describing the evolution and effects of the private deal negotiation process, and Section 5 concludes.

1. Sample formation and key variables

1.1. Sample formation

To construct our sample, we begin with M&A transactions announced from January 1, 1994 to December 31, 2016 from the Thomson One Banker SDC database. We only include completed deals in which there is a winning bidder in each takeover contest. We further impose the following filters to obtain our final sample: 1) the deal is classified as a "Merger (stock or asset)"; 2) the target public status is "Public" and the share price one day prior to the announcement

is higher than $5;[8] 3) the deal value reported by SDC is at least $1 million; 4) the acquirer holds less than 50% of the shares of the target firm before the deal announcement and seeks to purchase 50% or more of the shares of the target firm after the deal; and 5) the deal status is "completed." These steps yield a sample of 5,310 deals. We then merge these data with data from the Center for Research in Security Prices (CRSP) to obtain target-firm stock returns, and with data from Institutional Shareholder Service (ISS) to obtain information on poison pills and staggered boards. Finally, we require that merger documents are available on the SEC's Electronic Data Gathering and Retrieval (EDGAR) website so that we can collect detailed information on the private sale process and bid price information. Table 1 lists the steps taken to form the final sample of 1,324 observations.

For each of the 1,324 observations, we read through the merger agreement to collect information on the date the deal was first initiated, the party that initiated the deal, the first bid price submitted by the winning bidder, the date the first bid price was submitted by the winning bidder, the number of potential bidders contacted during the negotiation process, the number of potential bidders that signed a confidentiality agreement with the target firm, and the number of potential bidders that submitted a written indication of interest with a proposed acquisition price range for the target shares. For third-party-initiated deals (i.e., deals where the initiating bidder was not the winning bidder), we also collect the initial bid price submitted by the third-party bidder and the date the first bid price was submitted by the third-party bidder. Appendix D details our data collection process from the merger documents.

1.2. Measuring premiums and price revisions

[8] Removing firms with a stock price lower than five dollars ensures that the results are not driven by financially distressed target firms.

1.2.1. Calculating total premiums

We calculate total premiums as the final public offer price per share relative to the benchmark price, scaled by the benchmark price. Total premium is defined as:

$$Premium\ (total) = \frac{\text{Final public price} - \text{Benchmark price}}{\text{Benchmark price}} \quad (1)$$

where *benchmark price* is the target stock price one day prior to the private deal initiation date, and *final public price* is the final offer price reported by SDC. Prior studies show that the stock market is likely to incorporate merger-related information well before the date of a formal merger announcement (e.g., Asquith, 1983; Walking, 1985; Dennis and McConnell, 1986; Jarrell and Poulsen, 1989; Sanders and Zdanowicz, 1992; Houston and Ryngaert, 1997; Boone and Mulherin, 2011; Mulherin and Simsir, 2015; Eaton, Liu, and Officer, 2018), which is why we collect (from SEC documents) the date on which the target or bidder board of directors begins negotiating (or considering) the deal (which we call the "private deal initiation date").[9]

1.2.2. Decomposing total premiums

Figure 1 illustrates a representative timeline of bidding in an M&A deal from deal initiation to completion. To investigate bidding strategies during the negotiation process, we decompose the

[9] Sanders and Zdanowicz (1992) also collect information on the private deal initiation date reported in proxy statements filed with the SEC and find that abnormal returns to the target's stock begin soon after this date. Liu, Mulherin, and Brown (2017), Mulherin and Womack (2015), and Eaton, Liu, and Officer (2018) argue that the standard fixed pre-announcement day of –63 (i.e., three calendar months) or –42 (i.e., three calendar months) used in the existing literature to measure benchmark (or unaffected) prices for acquisition targets likely underestimates the premiums paid to target shareholders in many circumstances because the target's share price begins to increase in anticipation of a deal well before those arbitrary dates. Following Sanders and Zdanowicz (1992), Liu, Mulherin, and Brown (2017), and Eaton, Liu, and Officer (2018), we use the target stock price the trading day prior to the private deal initiation date as a benchmark price.

premium based on the initial public price (Premium (first public)) into two components: premium (first bid) and premium (private revision). Thus, the total premium includes three components: premium (first bid), premium (private revision), and premium (public revision):

$$\textit{Premium (first public)} = \text{premium(first bid)} + \text{premium(private revision)} \quad (2)$$

$$\textit{Premium (total)} = \text{premium(first bid)} + \text{premium(private revision)} + \text{premium(public revision)} \quad (3)$$

where the three premium components are defined as:

$$Premium\ (first\ bid) = \frac{\text{First bid price} - \text{Benchmark price}}{\text{Benchmark price}} \quad (4)$$

$$Premium\ (private\ revision) = \frac{\text{Initial public price} - \text{First bid price}}{\text{Benchmark price}} \quad (5)$$

$$Premium\ (public\ revision) = \frac{\text{Final public price} - \text{Initial public price}}{\text{Benchmark price}} \quad (6)$$

Benchmark price and *final offer price* are defined in Equation (1). *First bid price* is the first private bid price submitted by the winning bidder and is obtained from merger documents filed with the SEC. *Initial public price* is the initial publicly observed offer price obtained from SDC.

Figure 2 graphically illustrates the measure of total premium and its three components. Using the merger between Dionex and Thermo Fisher detailed in Appendix C.1 as an example, the deal was initiated in a phone call made by the CEO of the bidder (Thermo Fisher) on October 13, 2010. The stock price of the target (Dionex) on October 12, 2010 was $87.38. In their formal, but private, offer on October 14, 2010, Thermo Fisher proposed acquiring Dionex's common stock for $106.50 per share. The first publicly observed offer price after private negotiation was $118.50, which is the same as the final publicly observed offer price. In this example, the benchmark price

is $87.38, the first bid price is $106.50, and both the initial public price and the final public price are $118.50. The total premium received by Dionex shareholders is 35.6% [($118.50-$87.38)/$87.38 = 35.6%]. The first bid premium is 21.9% [($106.50-$87.38)/$87.38 = 21.9%]. The private revision premium is 13.7% [($118.50-$106.50)/$87.38 = 13.7%] and the public revision premium is 0% [($118.50-$118.50)/$87.38 = 0%]. Note also that 21.9% + 13.7% + 0% = 35.6% (the three premium components sum up to the total premium).

1.3. Measuring deal initiation

The background section of the merger documents filed with the SEC reveals the party that initiates a deal and the private deal initiation date. A deal can be generally classified into one of two broad categories: bidder-initiated or non-bidder-initiated. We also separate bidder-initiated deals into three sub-groups (*bidder (formal)*, *bidder (informal)*, and *bidder (third-party)*) and non-bidder-initiated deals into two sub-groups (*target-initiated* and *mutually-initiated*).

A deal initiation is defined as *bidder (formal)* if the winning bidder approaches the target privately and delivers a formal, written acquisition proposal within three days.[10] A bidder being able to submit a written acquisition proposal within three days after contacting the target likely indicates that the bidder had the proposal already prepared before approaching the target, since three days is likely not enough time for the bidder to be able to adequately evaluate the target firm, and estimate synergies, in order to submit the formal offer.[11] Returning again to the Thermo Fisher/Dionex example provided in Appendix C.1, the bidder approached the target and submitted

[10] This is the small segment of our sample (6.9% of the observations: see Table 2, Panel C) where bidders submit opening bids for their targets typically without having had the opportunity to conduct due diligence on the firm. All the results discussed in this paper are robust to the exclusion of these deals from the analysis.

[11] Our results remain robust if we use a one, two, or seven-day cutoff instead of a three-day cutoff. Unreported results show that among the *bidder (formal)* deals, most proposals are submitted either on the private deal initiation date itself or one day later.

a proposal almost immediately (within one day) after the private deal initiation date of October 13, 2010: therefore, this bidder-initiated deal is categorized in the *bidder (formal)* sub-group.

A deal initiation is defined as *bidder (informal)* if the winning bidder approaches the target and enquires about its willingness to engage in merger talks without immediately delivering an acquisition proposal. After a certain period of communication and exchange of information, the bidder submits a proposal (normally at the invitation of the target firm). This is the most common case in the takeover transactions that we examined for this research. Appendix C.2 provides an example of a deal that fits into this sub-group. Berkshire Hathaway (the bidder) allowed its investment bank to approach Lubrizol (the target) in private to enquire whether the target CEO was interested in merger talks. The target was informed that "Berkshire Hathaway does not engage in hostile transactions, and that Mr. Hambrick (the target's CEO) should understand that if they met and nothing came of the meeting, their meeting would remain confidential." The acquisition proposal was submitted about two months after the private deal initiation date of December 13, 2010, at the invitation of the target firm.

A deal initiation is defined as *bidder (third-party)* if a third-party bidder (instead of the winning bidder) initiates a deal. By construction, a third-party bidder must be a losing bidder in a takeover contest. We separate these deals from winning-bidder-initiated deals to investigate how the winning-bidder's bidding strategies are affected when the deal is initiated by a competing bidder. Appendix C.3 provides an example of a deal initiated by a third-party bidder. After being approached by a different private equity firm (with what appears ex-post to be a low-ball offer), Hilton Hotels (the target) and its financial advisor negotiated with the eventual winning bidder (Blackstone). The deal initiation date in this example is June 1, 2016.

For non-bidder-initiated deals, we separate these deals into two groups: target-initiated and mutually-initiated. We classify a deal as *target initiated* if the sale process is initiated by the target firm (or, more likely, their investment banker). We classify a deal as *mutually initiated* if neither bidder nor target exclusively starts discussions about a deal, but instead representatives from each firm meet during an industry conference (or other occasion) and mutually initiate discussions about the possibility of a business combination.[12]

1.4. Sample overview and summary statistics

Table 2, Panel A presents the temporal distribution of our sample. Consistent with prior studies (e.g., Andrade, Mitchell and Stafford, 2001; Harford, 2005), we observe a large merger wave in the late 1990s / early 2000s. Panel B presents summary statistics for deal and firm characteristics. All variables are defined in Appendix A. The mean (median) deal value is $3.78 ($1.40) billion. About 22% of our deals are tender offers. Nineteen percent of the deals are financed entirely with stock and 44% of deals are financed entirely with cash. Seventy-six percent of deals have winning bidders that are publicly traded firms and less than 4% of bidders have a toehold prior to the merger announcement. Approximately 46% of targets have a poison pill in place and 55% of targets have staggered boards. Less than 3% of the deals are hostile and the average number of public bidders reported by SDC is only 1.1, indicating that for a super majority of the deals,

[12] For example, the background section of the merger document filed for the deal between Providian Financial (the target) and Washington Mutual (the bidder) in 2005 states, *"…while attending an industry conference, Joseph Saunders, Chairman, President and CEO of Providian, and Kerry Killinger, Chairman and CEO of Washington Mutual, met and had general discussions regarding the financial services industry, including the credit card industry in particular, and their respective companies. At this meeting, they determined that it would be worthwhile to have further discussions in the future*." The full merger document is available at: https://www.sec.gov/Archives/edgar/data/933136/000119312505136829/ds4.htm#toc86856_37. We also classify a deal as *mutually initiated* if the background information only says that representatives from each firm met on a certain date without specifying which party took the initiative to request the meeting.

there is only one publicly-disclosed bidder.[13] The low rates of bid competition and infrequent hostile deals are consistent with the prior studies discussed in the introduction. Overall, these summary statistics show that the intertemporal patterns and deal characteristics in our data mirror prior research using samples of publicly traded targets.

Table 2, Panel C presents summary statistics on deal initiation. Approximately 33% of the deals are initiated informally by the winning bidder. Seven percent of the deals are initiated by the winning bidder with a written acquisition proposal (i.e., bidder (formal)) and 13% of deals are initiated by a third-party bidder. About 15% of deals in our sample are initiated mutually and 32% of the deals are initiated by the target firm, comparable to other studies investigating target initiation (Heitzman, 2011; Masulis and Simsir, 2018).

2. Descriptive Statistics on Private Negotiations, Premiums and Price Revisions

2.1. Bidding behavior in the pre-public phase of deals

To investigate how deal initiation is related to the breadth of bidder participation and the competitiveness of the takeover environment, we hand-collect information on the number of bidders that participate in a takeover process, the number of bidders that sign a confidentiality agreement with the target firm, and the number of bidders that submit a written proposal with an indication of interest.

Table 3, Panel A reports summary statistics on bidder participation during the private negotiation process. On average, 9.2 bidders participate in a target firm's sale process, 4.5 of them sign a confidentiality agreement, and 2.2 submit a written indication of interest. The medians are all significantly smaller than the means, suggestive of a few large outliers in terms of number of

[13] Note that a publicly-disclosed bidder can be a publicly traded firm or a private equity firm. A publicly-disclosed bidder does not imply that the bidder's public status is 'public.'

bidders participating (i.e., suggesting that a small portion of target firms conducted full-scale auctions by reaching out a large number of bidders).[14] The results also show that bidder participation varies significantly by the type of deal initiation. Target-initiated deals (mean=15.9) and third-party-initiated deals (mean=14.3) have the highest number of bidders participating, while mutually-initiated deals have the lowest number of bidders participating (mean=1.78). As might be expected, this trend is similar for the number of bidders signing confidentiality agreements and indications of interest.

Table 3, Panel B examines bidder conversion ratios during private negotiations. Specifically, we calculate the ratio of the number of confidentiality agreements signed to the number of potential buyers contacted (*ratio (confidentiality/contact*)), the ratio of the number of indications of interest submitted to the number of potential buyers contacted (*ratio (indication of interest/contact*)), and the ratio of the number of indications of interest submitted to the number of confidentiality agreements signed (*ratio (indication of interest/confidentiality*)). For the analysis of bidder conversion, we include only the 831 deals in which the number of bidders contacted is at least two (i.e., we exclude deals in which the target firm contacts only one bidder, for which the conversion ratio is tautologically 100% in completed deals). The summary statistics reported in Table 3, Panel B show that target-initiated deals have lower conversion ratios for all three measures, compared to third-party and mutually-initiated deals.[15] However, it is worth bearing in mind that the conversion ratios for mutually-initiated deals may be skewed by small denominators: in Panel A, mutually-initiated deals have the lowest rate of bidder participation.

[14] The maximum number of bidders contacted is 269 by Worldwide Rest Concepts Inc in 2004.
[15] The differences for all three conversion ratios between target-initiated deals and third-party-initiated deals are statistically significant at the 1% level.

Table 3, Panel C reports how the duration of the negotiation process differs by nature of the bid process. Specifically, following Boone and Mulherin (2007), we classify a deal as an "auction" if two or more potential bidders sign a confidentiality agreement with the target firm, and a "negotiation" if only one bidder sign a confidentiality agreement during the negotiation process. We find that on average, "auctions" take 199 days to negotiate in the pre-public phase and "negotiations" need only 134 days. Conversely, negotiations have longer windows of time between the first public announcement of a bid and the closing of the deal. This suggests that the bid processes in these two types of deals are very different: "auctions" spend longer behind closed doors, while the "negotiations" play out for a longer period of time under the watchful eye of the markets. This is potentially caused by the dissolution of the target board's fiduciary duty, which is more obvious following the private phase of an auction deal and therefore less time needs to be spent convincing shareholders that all possible price discovery has been exhausted.

2.2. Recent empirical evidence on deal premiums and proposed explanation

Recent studies report that on average, a substantial deal premium is received by target shareholders, yet public price revisions or competing public bids rarely happen. Dimopoulos and Sacchetto (2014) report that in a sample of M&A deals from 1988 to 2006, only 5% of deals have more than one public bidder. Similarly, Betton, Eckbo, and Thorburn (2008) report that 95% of their sample M&A deals receive only one bid. Krishnan, Masulis, Thomas, and Thompson (2012) report that for a sample of 2,512 M&A deals announced from 1999 to 2000, the average price revision is only 0.30% for 2,253 deals (90% of all their deals) without shareholder litigation.[16]

[16] For the rest (10%) of the deals with shareholder litigation, the average price revision is 2.4%.

Using preemptive bidding theory, Dimopoulos and Sacchetto (2014) propose an explanation for the phenomenon of high premiums and low levels of public competition: An initial bidder can deter a potential rival bidder from entry by making a high initial bid in the presence of entry costs. The model developed in Dimopoulos and Sacchetto (2014) is an extension of Fishman (1988)'s model, which provides a rationale for bidders to make high premium initial bids, rather than making moderate initial bids and raising those bids when facing competition. Similarly, Betton and Eckbo (2000) suggest that a relatively high initial offer premium would be able to preempt target management opposition as well as rival bids.

2.3. High premiums: a result of preemptive bidding or arm's length bargaining?

Although preemptive bidding theories seem appealing when explaining limited public competition and few price revisions, these theories raise several questions. As argued in Dimopoulos and Sacchetto (2014), because initial bidders often have higher valuations than rival bidders, a relatively low initial bid (relative to its maximum valuation of the target) is sufficient to deter a rival from entry. The authors' argument implies that target firms would prefer a simultaneous auction over preemptive bidding because preemptive bidding discourages competition, a prediction made in Bulow and Klemperer (2009). Fishman (1988) similarly argues that a preemptive bidder's gain is exactly offset by the target firm's loss; thus, target firms have a clear incentive to deter preemptive bidding. Thus it would be surprising if preemptive bidding were still a prevailing strategy in the post-1990 period, when, at least relative to the 1980s, target boards are more empowered and in control of the sale process (Liu, Mulherin, and Brown, 2017).

In this section, we provide an alternate explanation for the seemingly puzzling phenomenon of low public competition/price revisions coupled with high deal premiums by documenting that

a large number of price revisions occur during private negotiations and that the first public offer price already appears to be a result of arm's-length negotiations. The evidence presented in Table 4, Panel A confirms that the total premiums received by target shareholders are substantial, with a mean of 46% and a median of 37.7%. However, the average (median) initial bid premium offered is about 34.8% (29.4%) and target firms are able to improve the merger consideration by 8.5% on average through private negotiation. Relative to the initial bid premium of 34.8%, this 8.5% premium improvement represents an increase of 24.4%.[17] Consistent with prior studies, the public price revision observable by the market is only 1.1%.

Table 4, Panel B further shows that if we focus only on public price revisions, then close to 90% of deals do not receive any revisions, suggesting that a super majority of the deals receive a single bid based on publicly observable offer prices. However, price revisions during private negotiations paint a very different picture: 75% of deals receive positive price revisions prior to public announcements, with only 17% of deals receiving no price adjustments prior to public announcements. Negative price revisions, while uncommon, do occur; about 8% (2%) of deals receive a negative price revision during the private (public) negotiation process. Figure 3, Panel B visually illustrates the dramatic differences of the fraction of positive price revisions during the private and the public negotiation processes.

Table 4, Panel C further presents results on price revisions for auctions and negotiations. On average, bidders increase their offer price by 10% in the private phase of negotiated deals, compared to about 7% in the private phase of auctioned deals. On the other hand, the average initial bid premium is 37% for auctioned deals, compared to 31% in negotiated deals. These summary statistics provide initial evidence suggesting that even in bidding that is shielded from

[17] The smaller number of observations for premium (first bid) and premium (private revision) is due to missing information on the first bid price. See Appendix D for details about price collections from merger documents.

public view, bidders appear to initially bring competitive offers to the table for targets, resulting in a lower price revisions in auctioned deals. In contrast, public revisions average around only 1% in both auctioned and negotiated deals.

Figure 3, Panel A plots initial bid premiums, private revisions, and public revisions over time. Total premiums and private revisions appear stable over time. Panel A shows lower initial premiums as well as total premiums from 2004 to 2007 and during 2002 and 2008, possibly due to the second leveraged buyout boom from the mid-2000s to 2007, the Internet bubble crash in 2002, and the financial crisis in 2008.[18] Consistent with results presented in Table 4, Figure 3 provides visual evidence that private price revisions are substantially higher compared to the public price revisions.

Collectively, evidence presented in Table 4 and Figure 3 suggests that target firms routinely resist initial bids in hopes of improving merger terms during private negotiations. Assuming that an initial *public* offer price is the same as the first bid price submitted by a potential bidder would, in the majority of deals, be misleading. In fact, the results suggest that target firms have successfully eliminated a preemptive bidding strategy in most cases, as predicted in Fishman (1988). Indeed, as noted in Hansen (2001) and Boone and Mulherin (2007), a typical early step during private negotiation is for the bidder to sign a confidentiality/standstill agreement with the target firm to receive nonpublic information.[19] Standstill provisions prevent potential buyers from announcing a bid without the target's prior consent, buying shares, or lunching a proxy contest for

[18] Kaplan and Stromberg (2009) document that from the mid-2000s to 2007, a record amount of capital was committed to private equity, causing an unprecedented leveraged buyout boom. Bargeron, Schlingemann, and Stulz (2008) report that the average premium for target shareholders when the bidder is a public firm is 46.5%, while this average premium is reduced to 28.5% when the acquirer is a private equity firm. Similarly, Officer, Ozbas, and Sensoy (2010) report significantly lower premiums for deals involving private equity bidders or clubs of private equity bidders, compared to premiums paid by public bidders.

[19] In untabulated results, we find that over 90% of bidders signed a confidentiality agreement with the target firm during the private negotiation process.

a period of time from the conclusion of the sale process (Sautter, 2012; Hwang, 2015).[20] Since the 1990s, a majority of bidders have *contractually relinquished* the opportunity to publicly make a preemptive bid or a hostile offer by signing a standstill agreement in the private phase of a deal in exchange for confidential information from the target firm.

Although potential bidders are prevented from making a preemptive bid publicly after signing a confidentiality agreement, they can still attempt to make a preemptive bid for the target in private during the negotiation process. However, the strategy of making a preemptive bid in private is fundamentally different from the preemptive-bidding theory developed in Fishman (1988) and Dimopoulos and Sacchetto (2014). A key assumption in these studies is that a preemptive bid must be made *publicly* by the initial bidder to signal a high valuation to rival bidders and thus deter them from competing. In their setting, the target firm has no control over the public preemptive bid, the main effect of which is to reduce takeover competition. In contrast, a preemptive bid made in private clearly has no such effect, since competing bidders do not observe the preemptive bid price. The target firm, at its own discretion, can choose whether or not to disclose this preemptive bid to other potential bidders as part of its negotiation strategy.

3. Target Price Runup and Offer Price Revision

Schwert (1996) investigates the causes of pre-bid runups and the associated effects on total takeover premiums and finds no evidence of substitution between pre-bid runups and post-bid markups. This implies that total premiums paid to target shareholders are higher if there is a large

[20] In more recent years, a "don't ask/don't waive" standstill provision is sometimes found in a confidentiality agreement. This provision prevents a potential bidder from making a private approach to the target and from requesting any waiver of the standstill provision itself, which can effectively preclude a previous bidder that participated in a sale process from ever providing a topping bid after the target signs a merger agreement with another party. See Noked (2013) for more discussion on a "don't ask/don't waive" provision.

price runup before the public merger announcement. In contrast, Betton, Eckbo, and Thompson (2014) find that short-term toehold purchases that positively affect target stock price runups have no effect on offer premiums. The authors conclude that although short-term toehold purchases increase runups, the bidder identifies this effect and does not raise its offer in response.

Given the mixed empirical evidence reported in prior studies, in this section, we directly examine how changes in market value affect offer price revisions during the private phase of M&A negotiations. Indeed, Schwert (1996) calls for further research on how price runups affect negotiation outcomes and specifically suggests researchers track changes in the offers made by bidders as the market price of the target firm changes.[21] Our hand-collected data on private offer price revisions enable us to shed light on the question of how the outcome of takeover negotiations is affected by changes in the market value of the target. Specifically, we test how the change of the market capitalization between the first bid date and the public merger announcement date affects offer price revisions during the private negotiation period.[22]

In untabulated results, we find that the average (median) number of calendar days between the first bid date and the public announcement date is approximately 58 (36) days.[23] We decompose the change in the target's equity market capitalization during this period into two components: changes likely caused by information about firm fundamentals and changes likely caused by other market factors (potentially including takeover rumors or insider trading). These two components

[21] In his conclusion (p. 189), Schwert (1996) states, "*If the market price of the target stock rises, how does that affect the bargaining strategies of the bidder and the target? Tracking the history of offers and counteroffers as the market price of the target firm changes would be an interesting way to examine this question…I am not aware of anyone who has studied a time series of valuations concerning a specific transaction during a period when the target's stock price rose substantially."*

[22] We use the change of target market value between the first bid date (instead of the private initiation date) and the merger announcement date to better match the timing of the private price revision, which is calculated as the difference between the first public offer price and the first bid price.

[23] The average (median) number of calendar days between the deal initiation date and the first bid date is 116 (88) days.

might have substantially different effects on bid price revisions during private negotiations, as bidders may be much more likely to change their bids in reaction to information about target-firm fundamentals than they are in reaction to changes in target public market values that are potentially associated with information leaking about their own bid (Betton, Eckbo, and Thompson, 2014). Our regression model is specified as:

$$Private\ revision = \alpha + \beta 1 \Delta Mkt(earnings) + \beta 2 \Delta Mkt(runup) + \varepsilon \qquad (7)$$

where $\Delta Mkt(earnings)$ is the change in the target's public equity market value in the (-1, +1) window surrounding an earnings release during private M&A negotiations. We use $\Delta Mkt(earnings)$ to capture the change in market value that is related to target-firm fundamentals, as earnings releases reveal new information to the market which causes investors to update their valuation of the firm. $\Delta Mkt(runup)$ is the change in the target's public equity market value between the first bid date and the public merger announcement date *excluding* $\Delta Mkt(earnings)$. We use $\Delta Mkt(runup)$ to capture market value changes that are less likely to be related to firm fundamentals. For target firms that do not have earnings release during this private negotiation period, we assign a value of zero to $\Delta Mkt(earnings)$ in the regression analysis.

Table 5, Panel A reports summary statistics of the total in the target's public equity market value between the first bid date and the merger announcement date and the two components described above ($\Delta Mkt(earnings)$ and $\Delta Mkt(runup)$). On average, the market value change around an earnings release is 2.1% for the 421 target firms that made earnings announcement

during this period. The average non-earnings related change in target market value is 7.5% and the total change averages 8.3%.[24]

Table 5, Panel B reports the regression results. Model (1) includes only the non-earnings related change in target market value as an explanatory variable, Model (2) includes only the earnings-related change of market value as an explanatory variable, and Model (3) includes both components as explanatory variables. The results show that both components significantly affect offer price revisions during private negotiations to acquire the target firm. Specifically, a 1% increase in the target's public market value around an earnings release leads to a 0.59% higher price revision and a 1% increase in the target's public market value in the absence of earnings release leads to a 0.41% higher price revision. The R-square of Model (3) is over 33%, suggesting that the changes in the target's public market value explain a significant portion of negotiating outcomes in our sample.

Model (4) further separates the changes in the two components into positive versus negative changes to test whether bid revisions are similarly affected when the change is negative or positive. We find stronger results for positive changes, and insignificant results for negative changes, suggesting that a negative offer price adjustment in the private negotiation window is not common even if the target firm experiences a negative earnings shock or a decrease in market value after the first bid is received.

Collectively, these results suggest that the prices that acquirers offer in private negotiations to buy targets are significantly correlated with changes in the public market values of those targets,

[24] Note that the average total change in market value of 8.3% is not the sum of the earnings-related change (2.1%) and non-earnings related change (7.5%) because the average earnings-related change in market values is based on the subsample for which target firms made earnings announcements between the first bid date and the merger announcement date (i.e., we exclude all of the zeroes that are assigned to observations for which the target firm *does not* make an earnings announcement in that window).

changes that are both related to fundamentals and those that are (potentially) not related to fundamentals.[25] This may be a case of private valuations reacting to the same information that public markets do, or even something as simple as acquirers recognizing in private bids that they must offer a premium over public market values to complete a deal (hence when public market values increase the value of private bids must also increase). It does undermine, however, the notion that an acquirer having signed a confidentiality agreement and conducted due diligence is then privy to a wealth of private information about the target that allows them to make offers based on a superior information set. If anything, this evidence suggests that private offers are influenced by public market values, an argument that is consistent with the conclusion in Schwert (1996) that public market price runup is an added cost to a bidder.[26]

4. Nature of the Bid Process and Price Revisions

4.1. Auctions and price revisions

In this section we examine how the nature of the bid process (auctions vs. negotiations) affects price revisions during the private phase of a deal using a regression framework. The results are reported in Table 6. We control for deal and firm characteristics and industry and year fixed effects in all regression models. For our regression analysis of the private price revision, we also

[25] While in theory causality could go in either direction, we believe that the practicalities of the M&A market suggest a causal interpretation of this result. Because these bids are not known to the market during this pre-public window, and the market reacts to the bid when it is announced, it is very unlikely that changes in the public market values of the target's stock in this pre-public window are driven by knowledge of the bids (via insider trading, for example), especially around the time when another obvious source of fundamental information about the target firm is released (an earnings announcement). Our interpretation of these results is, therefore, that bidders themselves observe changes in the public-market values of target firms and alter their private bids for their takeover targets in the pre-public window.

[26] Notably, while the conclusion in Schwert (1996) is based solely on observing target returns in public markets, our evidence is the first that we are aware of for this conclusion being supported by a correlation between private bids and public market valuations.

control for the changes in target public market values because of its significant impact documented in Table 5.

Consistent with summary statistics reported in Panel C of Table 4, the regression results in Table 6 show that auctions are associated with significantly lower private price revisions after controlling for deal and firm characteristics. The coefficients on the "Auction" explanatory variable in both Models (1) and (2) in Table 6 are about -3% and statistically significant at the 1% level, suggesting that in auctions bid increases during the private deal window are approximately 3% lower (than in one-on-one negotiations). In contrast, Model (3) shows that there is no significant difference between auctions and negotiations in terms of public offer price revisions.

The results reported in Table 6 are consistent with the summary statistics reported in Table 4 that deals conducted as private auctions receive significantly higher initial bids, but lower private price revisions. The higher initial bid premiums observed in private auctions are consistent with Hansen (2001), who argues that sellers select bidders on the basis of their first-round bids, and thus bidders have incentives to submit relatively higher initial bids to make sure that they are selected to remain in an auction for the target firm (as auctions can proceed over multiple rounds).

Several of the other control variables in Table 6 appear to have significant effects on bid price revisions during the private phase of a deal's life. Larger target firms (measured as size prior to deal initiation) appear to experience lower private price revisions, as do targets of deals that become publicly hostile bid announcement (or, at least, that SDC codes as such). Public bidders revise their bids more than private bidders prior to public merger announcements.

In terms of variables influencing relatively-rare bidder price revisions after a deal has been publicly announced, one notable result from Table 6 is that bidders with a toehold make higher public price revisions. This result is potentially consistent with the fact that a toehold effectively

entrenches a bidder and may make them reluctant to lose a bid no matter what price the offer escalates to, although a substantial toehold does also reduce the cost to the bidder of increasing their bid.

Consistent with the prior literature, we observe that targets in deals that SDC codes as hostile at bid announcement (potentially because the target resists one or all of the potential bidders) receive significantly higher public revisions. Target resistance (via hostility) appears to shift some of the price discovery about the firm out of the private phase of a deal's life (lower private price revisions) and into the public negotiation window (likely via competition between bidders). Finally, although prior studies (e.g., Bebchuk and Cohen, 2005; Comment and Schwert, 1995) show that a staggered board is a particularly powerful governance structure in terms of deterring hostile bid attempts, especially when combined with a poison pill, these governance features do not seem to affect negotiating outcomes.

4.2. Negotiations for third-party-bidder-initiated deals

In this section, we further explore third-party-initiated deals. These deals are different from the rest of deals in our sample because neither of the merging firms initiate the deal (while the rest of deals in our sample are initiated either by the acquired firm (target) or the acquiring firm (the winning bidder)). By construction of our sample, a *bidder (third-party)* deal (see Section 1.3.) occurs when a target firm is approached by a third-party bidder, contacts other bidders, and ultimately sells itself to a different bidder.[27]

[27] Note that if the target firm were not able to find another bidder and signed a merger agreement with the initiating bidder, then the deal would have been classified as *bidder (formal) or bidder (informal)* (depending on the nature of the initial contact) rather than *bidder (third-party)*.

Third-party-initiated deal processes are relatively controversial in the academic literature. On one hand, these are amongst the most (privately) competitive deals we observe in our sample, as judged by number of bidders that the target's investment banker contacts and the proportion of those bidders that move on in a tangible way in the bid process. In traditional auction theory, greater competition results in higher bid prices, and so we might expect to observe higher publicly-revealed deal prices in these auctions. On the other hand, another stream of literature suggests that managerial entrenchment after 1990 frequently caused target managers to seek out "white knight" bidders to secure private benefits, in the process sacrificing takeover premiums for their shareholders (e.g., Bebchuk, Coates and Subramanian, 2002; Moeller, 2005).

To enhance our understanding of the bidding strategies and the dynamics between the winning bidder and the competing bidder who first identified the target firm, we further hand-collect information on the first bid price submitted by the third-party initiating bidder and the date the first bid price was submitted by the third party. We then recalculate the first bid premium and private revision premium using the first bid price submitted by the third-party initiating bidder (instead of the previously used first bid submitted by the winning bidder). Specifically, we calculate *Premium (first bid)* for these third-party initiated deals as the first private bid price submitted by the third-party bidder relative to the target price prior to deal initiation. We calculate *Premium (private revision)* as the difference between the first public price offered by the *winning bidder* and the first bid price submitted by the *third-party bidder* to capture the target firm's gain from switching from the third-party bidder to the (eventual) winning bidder. These definitions are analogous to the definitions of the identically-named variables for the remainder of the sample (see Section 1.2.2. and equations (4) – (6) above) but allowing for the fact that a third-party bidder made the initial private bid for the target.

Table 7, Panel A reports summary statistics for *Premium (first bid)* and *Premium (private revision)* for all five categories of deals described in Section 1.3. The summary statistics show that, on average, the first bid submitted by third-party bidders is 29.1% above the target's pre-deal-initiation stock market price. This number is lower compared to the full sample average of 34.8% using winning bidders' first bid price reported in Panel A of Table 3 (and the lowest of all five deal categories reported in Table 7, Panel A). More importantly, our results suggest that target firms are able to induce the winning bidder increase the offer by 23.6% on average relative to the initial bid submitted by the third-party bidder (the average of *Premium (private revision)* for third-party initiated bids). This is clearly the highest average of private revisions for the deal types documented in Table 7, which suggests a pattern in third-party initiated bids: the (eventually-losing) third-party bidder appears to make a private low-ball offer for the target firm, which is then, at least on average, trumped by a substantially increased offer from the eventually-winning bidder.

Table 7, Panel B reports the results of multivariate regressions intended to measure whether the univariate effects described above hold after controlling for the other determinants of premiums and revisions that we document in this paper. After controlling for deal and firm characteristics, the first bid premium submitted by a third-party bidder is not statistically different relative to the benchmark group (*bidder (informal)*). However, the coefficients on the *bidder (third party)* indicator variable remain strongly significantly positive after including other control variables in Models (2) and (3), suggesting that switching to a different bidder who can significantly outbid the initiating bidder likely contributes to a higher total premium. Overall these results indicate that the main motivation for target firms to approach different bidders appears to be to maximize offer premiums, which is inconsistent with the managerial entrenchment (or agency costs) explanation.

The results reported in Table 7, Panel B, together with those reported in Table 3, Panel B, provide a more complete picture about third-party-initiated deals. Compared to target-initiated deals (the other major deal type in our sample that is not initiated by the winning bidder), third-party-initiated deals have significantly higher rates of conversion from initial contact to a signed confidentiality agreement to a written indication of interest, indicating a greater ability to attract acquisition proposals from the bidders that the target's investment bank contacts. On the other hand, the low conversion ratios in target-initiated deals suggest that either the target firm over-reaches bidders that are not seriously interested in an acquisition or the target firm is not attractive enough for the bidders to submit written indication of interest.

The more efficient sale process (i.e., higher conversion ratios) and higher premiums in third-party-initiated (relative to target-initiated) deals are consistent with the theoretical study of information costs in Hansen (2001), which identifies "competitive information costs" as a cost of conducting an auction. Specifically, Hansen (2001) states that although releasing confidential information to potential buyers may help them more accurately evaluate relevant synergies and thus improve offer prices, such confidential information may include details on new products, product lines, research and development plans, and the like. Releasing such sensitive information to a set of potential buyers that may include competitors, suppliers, and customers reduces the value of the target firm, thus reduces the offer price received by target shareholders. In this setting, our results are consistent with Hansen's theory in that M&A deals in which the target does not necessarily have to disclose a large amount of information about itself (i.e, deals that are *not* target-initiated) seem to result in better outcomes for target shareholders.

An alternative explanation for the high premiums paid in third-party-initiated deals is that the winning bidder overpays for the target firm in those cases. For example, Roll (1986) suggests

that bidders may bid too high for target firms in the interest of winning a competitive takeover contest because of management hubris. To investigate this alternative view, we examine bidder returns around merger announcements. If the higher premiums are caused by winning bidders' overpayment for target firms, then we should expect lower announcement returns for winning bidders in third-party-initiated deals. We report regression results for bidder announcement returns in Appendix B, but find no evidence that winning bidders in third-party-initiated deals experience significantly lower returns, inconsistent with the overpayment explanation.

5. Conclusion

The main contribution of this paper is to look inside the "black box" of pre-public merger negotiations and describe how, on average, bidding for a target evolves during the period in the life of an M&A deal that is shielded from public scrutiny. We find that bid revisions are very common in the pre-public phase of a deal: we observe takeover price revisions for well over 80% of the deals in our sample (75% increases, 8% decreases) in the private negotiation window. Furthermore, price revisions during the private negotiation window are significantly associated with changes in the public-market values of a target, an association which attribute to bidders altering their private bids for takeover targets in response to changes in the market values of their target firms in the pre-public windows.

We also investigate whether the nature of the bid process has an impact on takeover price revisions in the pre-public phase of a deal, and find that bids with a greater number of potential acquirers involved in the bid process (i.e., auctions) have significantly *lower* takeover price revisions in the private deal phase but higher initial bid premiums relative to bids that would be defined as one-on-one negotiations. On the other hand, the nature of the bid process does not seem

to significantly affect the public phase of the life of a deal: whether a deal is privately auctioned amongst multiple bidders or negotiated exclusively with only one bidder has no impact on the public price revision.

Finally, we examine the strategic difference in bids that are initiated privately by a bidder other than the winning bidder (which we call third-party initiated), and find that the effect of competition prevails over concerns about entrenchment in the private bid process: bids initiated by these third-party bidders have significantly greater increases in the bid price in the window prior to the first publicly-revealed ("accepted") bid than we observe for other bids. We interpret these results as consistent with the notion that the behavior of target managers in the private negotiation window appears congruent with shareholder wealth maximization.

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Figure 1. The timeline of a bidding process

This figure illustrates the timeline and dates of bidding prices submitted by the winning bidder in a merger deal from deal initiation until deal completion.

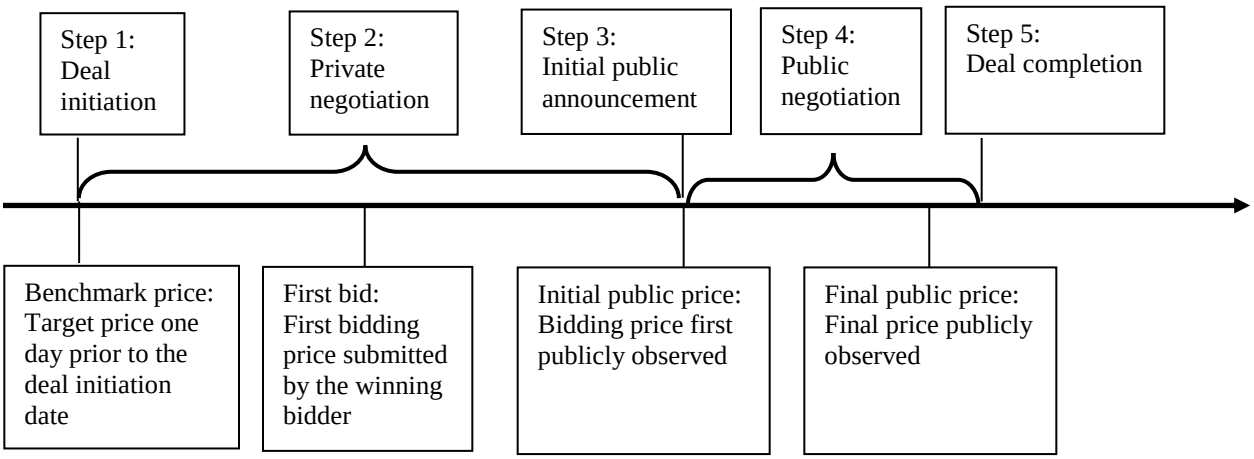


Figure 2. Measuring takeover premiums and price revisions

This figure illustrates how takeover premiums and price revisions are measured. Benchmark price is the target stock price one day prior to the deal initiation date. *First bid price* is the first private bid price submitted by the winning bidder. *Initial public price* is the initial publicly observed offer price obtained from SDC. *Final public price* is the final offer price reported by SDC.

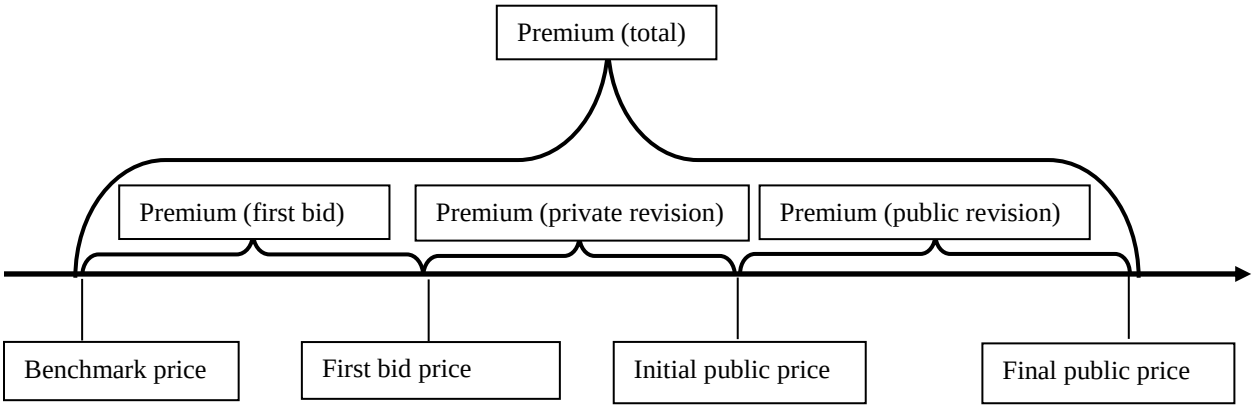
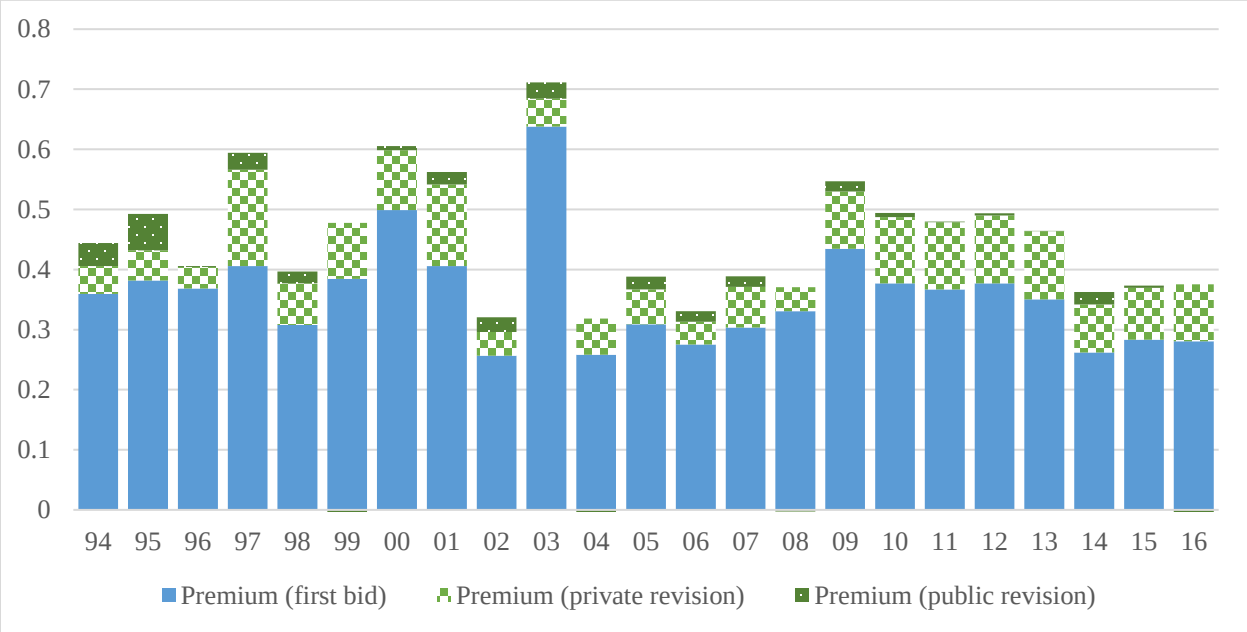


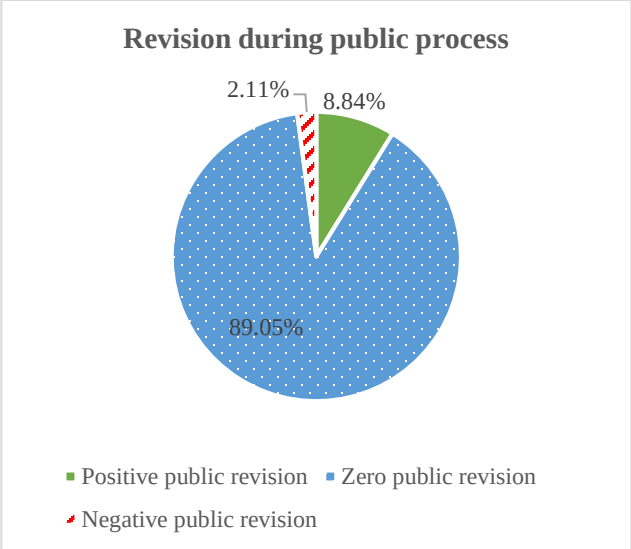
Figure 3. Takeover premiums and bid revisions

This figure plots target premiums and bid revisions. Panel A reports premiums based on first bids, private revisions, and public revisions by year. Panel B reports the fraction of positive, negative, and zero revisions during the private and public negotiation processes respectively. *Premium (first bid)* is the first private bid price obtained from merger document relative to the benchmark price (i.e., target stock price one day prior to the deal initiation). Specifically, *Premium (first bid)* = first bid price/benchmark price -1. *Premium (private revision)* is the difference between the initial public offer price obtained from SDC and the first private bid price relative to the benchmark price ((initial public price-first bid price)/benchmark price). *Premium (public revision)* is the difference between the final public offer price obtained from SDC and the initial public offer price relative to the benchmark price ((final public price-initial public price)/benchmark price)). The sample includes deals announced between 1994 and 2016.

Panel A: Premiums based on first bids, private revisions, and public revisions.



Panel B: Fraction of positive, negative, and zero revisions



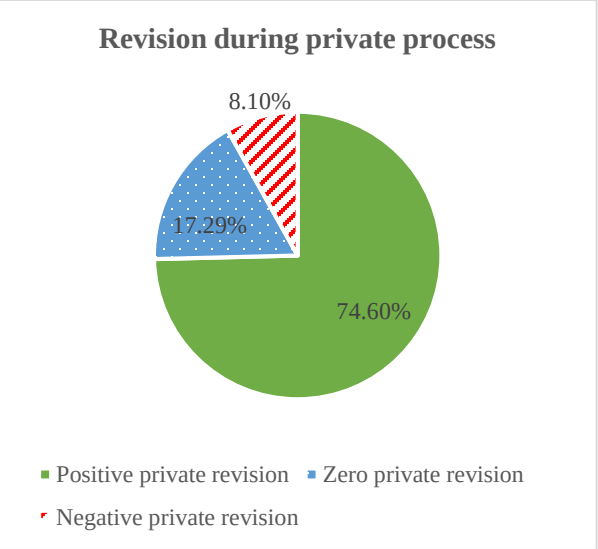


Table 1. Sample selection

This table describes the formation of our sample from SDC. We draw completed deals from the 1994 to 2016 time period, and we require that the form of the deal is coded as "merger". We require targets to be public firms and deal value reported by SDC to be higher than $1 million. We further require that bidders seek to purchase 50% or more of target ownership. We drop deals with a target stock price less than or equal to $5 the day prior to the public announcement date. We merge SDC with CRSP to obtain target price data prior to the deal initiation. We drop deals without target price information on CRSP and poison pill/staggered board information on ISS (formerly IRRC). Finally, we drop deals for which merger documents are not available on the SEC EDGAR website.

Sample filters	# of deals
Date announced: 1994 to 2016; Form of the deal: Merger (stock or asset)	41,066
Target Status: Public	11,957
Target share price one day prior to announcement > $5	7,351
Deal value: > $1 million	6,541
Percent of shares acquirer is seeking to purchase >= 50%	6,521
Deal status: Completed	5,504
Information of price per share paid to target shareholders is available on SDC	5,310
Target return on CRSP	4,887
Poison pill and staggered board information on ISS	1,596
Merger documents available on SEC EDGAR	1,324

Table 2. Sample distribution and summary statistics

This table presents sample distribution of deals by year and summary statistics. Panel A presents the temporal distribution for the full sample. Percent of deals in each year is calculated using number of deals announced during that year divided by total number of deals over the sample period. Panel B presents summary statistics for deal and firm characteristics. Panel C reports deals by different initiation types. We separate our sample into five mutually exclusive categories based on deal initiation: (1) bidder-initiated informally (bidder (informal)); (2) bidder-initiated formally (bidder (formal)); (3) third-party-bidder-initiated (bidder (third party)); (4) target-bidder mutually-initiated; (5) target-initiated. A deal is defined as *bidder (informal)* if the publicly disclosed winning bidder initiates a deal without delivering an acquisition proposal within three days. A deal is defined as *bidder (formal)* if the publicly disclosed winning bidder initiates a deal and delivers an acquisition proposal within three days after the initiation. A deal is defined as *bidder (third party)* if a third-party-bidder (i.e., not the publicly reported winning bidder) initiates a deal. A deal is defined as *mutual initiation* if the bidder and the target mutually initiate a deal. A deal is defined as *target initiation* if the target firm initiates a deal. Definitions of all variables are provided in Appendix A. Deal value and target size are inflation adjusted. The sample consists of 1,324 completed deals announced between 1994 and 2016 from the Thomson One Banker SDC database.

Panel A: Sample distribution

Year	# of deals	% deals
1994	7	0.53%
1995	20	1.51%
1996	37	2.79%
1997	56	4.23%
1998	100	7.55%
1999	140	10.57%
2000	122	9.21%
2001	54	4.08%
2002	19	1.44%
2003	26	1.96%
2004	48	3.63%
2005	71	5.36%
2006	83	6.27%
2007	94	7.10%
2008	39	2.95%
2009	34	2.57%
2010	51	3.85%
2011	51	3.85%
2012	44	3.32%
2013	39	2.95%
2014	56	4.23%
2015	71	5.36%
2016	62	4.68%
Total	1,324	100.00%

Panel B: Summary statistics for deal and firm characteristics

Variable	Mean	Median	25th Pctl	75th Pctl	Std Dev
Deal value ($ million)	3,780.010	1,396.610	593.772	3,483.140	8,003.550
Target size ($ million)	2,560.600	868.677	353.319	2,124.810	5,602.840
Tender offer	0.216	0.000	0.000	0.000	0.412
All stock	0.192	0.000	0.000	0.000	0.394
All cash	0.437	0.000	0.000	1.000	0.496
Public bidder	0.760	1.000	1.000	1.000	0.427
Toehold	0.036	0.000	0.000	0.000	0.187
Number of public bidders	1.097	1.000	1.000	1.000	0.371
Hostile	0.026	0.000	0.000	0.000	0.158
Poison pill	0.461	0.000	0.000	1.000	0.499
Staggered board	0.546	1.000	0.000	1.000	0.498

Panel C: Deals by initiation type

Variable	Mean	Median	25th Pctl	75th Pctl	Std Dev
Bidder (informal)	0.329	0.000	0.000	1.000	0.470
Bidder (formal)	0.069	0.000	0.000	0.000	0.254
Bidder (third party)	0.131	0.000	0.000	0.000	0.339
Mutual initiation	0.147	0.000	0.000	0.000	0.354
Target initiation	0.324	0.000	0.000	1.000	0.468

Table 3. Deal initiation and bidder participation/conversion during private negotiation

This table examines the relation between deal initiation and number of bidders participated at different stages during the private negotiation process. Panel A reports summary statistics on bidder participation and Panel B reports bidder conversion during the private process. For Panel A, we report number of bidders contacted (*N(contact)*), number of bidders who signed confidentiality agreements (*N(confident)*), and number of bidders who submitted a written proposal with a price range proposed to buy target shares (*N(indication of interest*). For Panel B, we report three conversion ratios: *Ratio (Confidentiality/Contact)*, *Ratio (Indication of interest/Contact)*, and *Ratio (Indication of interest/Confidentiality). Ratio (Confidentiality/Contact)* is the ratio of the number of confidentiality agreements signed to the number of potential buyers contacted. *Ratio (Indication of interest/Contact)* is the ratio of the number of indication of interest submitted to the number of potential buyers contacted. *Ratio (Indication of interest/Confidentiality)* is the ratio of the number of indication of interest submitted to the number of confidentiality agreements signed. For bidder conversion ratio analysis reported in Panel B, we only include observations in which the number of bidders contacted is at least two. We exclude deals in which the target firm was in contact with only one bidder (in which cases the conversion ratio would always be 100%). We separate deals into five groups: *Bidder (informal), Bidder (formal), Bidder (third party), Mutual initiation,* and *Target initiation.* Definitions of all variables are provided in Appendix A. Sample period is from 1994 to 2016.

Panel A: Bidder participation during private negotiation

	Mean	Median	25th Pctl	75th Pctl	Std Dev	N
N(contact)						
All deals	9.23	3.00	1.00	8.00	18.63	1,322
By initiation						
Bidder (informal)	4.70	1.00	1.00	4.00	12.34	433
Bidder (formal)	5.63	1.00	1.00	5.00	10.14	92
Bidder (third party)	14.30	6.00	3.00	16.00	20.12	175
Mutual initiation	1.78	1.00	1.00	2.00	2.62	193
Target initiation	15.86	7.00	3.00	17.00	25.01	429
N(confidentiality)						
All deals	4.53	1.00	1.00	4.00	8.28	1,319
By initiation						
Bidder (informal)	2.21	1.00	1.00	2.00	4.60	431
Bidder (formal)	2.62	1.00	1.00	3.00	3.48	92
Bidder (third party)	7.06	3.00	2.00	8.00	9.61	175
Mutual initiation	1.31	1.00	1.00	1.00	1.03	193
Target initiation	7.70	3.00	1.00	8.50	11.22	428
N(Indication of Interest)						
All deals	2.21	1.00	1.00	3.00	2.26	1,319
By initiation						
Bidder (informal)	1.48	1.00	1.00	1.00	1.30	431
Bidder (formal)	1.71	1.00	1.00	2.00	1.39	92
Bidder (third party)	3.34	3.00	2.00	4.00	2.26	175
Mutual initiation	1.17	1.00	1.00	1.00	0.48	193
Target initiation	3.06	2.00	1.00	4.00	3.02	428

Panel B: Bidder conversion during private negotiation

	Mean	Median	25th Pctl	75th Pctl	Std Dev	N
Ratio (Confidentiality/Contact)						
All deals	0.56	0.50	0.33	0.75	0.27	831
By initiation						
Bidder (informal)	0.51	0.50	0.30	0.67	0.28	184
Bidder (formal)	0.52	0.50	0.31	0.67	0.26	45
Bidder (third party)	0.62	0.60	0.40	0.88	0.28	174
Mutual initiation	0.65	0.67	0.33	1.00	0.31	50
Target initiation	0.54	0.50	0.33	0.69	0.26	378
Ratio (Indication of interest/Contact)						
All deals	0.41	0.33	0.20	0.50	0.29	831
By initiation						
Bidder (informal)	0.43	0.33	0.20	0.55	0.29	184
Bidder (formal)	0.39	0.33	0.20	0.50	0.25	45
Bidder (third party)	0.49	0.40	0.20	0.67	0.32	174
Mutual initiation	0.57	0.50	0.33	1.00	0.31	50
Target initiation	0.34	0.29	0.16	0.50	0.24	378
Ratio (Indication of interest/Confidentiality)						
All deals	0.77	0.80	0.43	1.00	0.46	831
By initiation						
Bidder (informal)	0.88	1.00	0.50	1.00	0.49	184
Bidder (formal)	0.78	0.75	0.50	1.00	0.38	45
Bidder (third party)	0.81	1.00	0.50	1.00	0.44	174
Mutual initiation	0.94	1.00	0.67	1.00	0.46	50
Target initiation	0.67	0.60	0.33	1.00	0.43	378

Panel C: The length of the private and public negotiation process

	Mean	Median	25th Pctl	75th Pctl	Std Dev	N
Private negotiation days (deal initiation, public announcement)						
All deals	168	136	85	222	125	1,324
Auction	199	168	112	259	138	679
Negotiation	135	110	67	177	99	645
Public negotiation days (public announcement, deal completion)						
All deals	148	120	81	185	100	1,324
Auction	139	112	77	172	96	679
Negotiation	157	129	86	197	104	645

Table 4. Price revisions and takeover premiums

This table presents summary statistics for price revision and takeover premiums. Panel A presents premiums and price revisions during private and public negotiation process. Panel B reports the portion of revisions that are positive, zero, and negative during the private and public negotiation process, respectively. Panel C reports summary statistics for offer price revisions by auction versus negotiation. *Premium (total)* is the final public offer price obtained from SDC relative to the benchmark price (i.e., target stock price 1 day prior to the deal initiation). *Premium (total)* = final public price/benchmark price -1. *Premium (first public)* is the first public price obtained from SDC relative to the benchmark price. *Premium (first public)* = first public price/benchmark price -1. *Premium (first bid)* is the first private bid price obtained from merger document relative to the benchmark price. *Premium (first bid)* = first bid price/benchmark price -1. *Premium (private revision)* is the difference between the initial public offer price obtained from SDC and the first private bid price relative to the benchmark price ((initial public price-first bid price)/benchmark price). *Premium (public revision)* is the difference between the final public offer price obtained from SDC and the initial public offer price relative to the benchmark price ((final public price-initial public price)/benchmark price)). Definitions of all variables are provided in Appendix A. Sample period is from 1994 to 2016.

Panel A: Summary statistics for premiums and revisions

Variable	Mean	Median	25th Pctl	75th Pctl	Std Dev	N
Premium (total)	0.460	0.377	0.222	0.600	0.460	1,324
Premium (first public)	0.449	0.363	0.215	0.586	0.457	1,324
Premium (first bid)	0.348	0.294	0.178	0.465	0.299	1,012
Premium (private revision)	0.085	0.053	0.000	0.127	0.147	1,012
Premium (public revision)	0.011	0.000	0.000	0.000	0.084	1,324

Panel B: Summary statistics for positive, zero, and negative price revisions

Variable	Mean	Median	25th Pctl	75th Pctl	Std Dev	N
Positive public revision	0.088	0.000	0.000	0.000	0.284	1,324
Zero public revision	0.890	1.000	1.000	1.000	0.312	1,324
Negative public revision	0.021	0.000	0.000	0.000	0.144	1,324
Positive private revision	0.746	1.000	0.000	1.000	0.435	1,012
Zero private revision	0.173	0.000	0.000	0.000	0.378	1,012
Negative private revision	0.081	0.000	0.000	0.000	0.273	1,012

Panel C: Summary statistics for offer price revisions by auction versus negotiation

	Mean	Median	25th Pctl	75th Pctl	Std Dev	N
Premium (first bid)						
Auction	0.375	0.311	0.183	0.502	0.334	594
Negotiation	0.309	0.277	0.171	0.410	0.236	418
Premium (private revision)						
Auction	0.073	0.046	0.000	0.107	0.137	594
Negotiation	0.101	0.062	0.011	0.151	0.158	418
Premium (public revision)						
Auction	0.012	0.000	0.000	0.000	0.094	679
Negotiation	0.009	0.000	0.000	0.000	0.073	645

Table 5. Change of market value during private negotiation and price revision

This table reports the effect of the change of target market capitalization on bidder price revisions during the private negotiation process. The dependent variable is *Private revision,* which is the difference between the initial public offer price obtained from SDC and the first private bid price relative to the benchmark price. For the private revision analysis, we only include the 1,012 observations where the information on private price revision is available. Our regression model is specified as follows:

$$Private\ revision = \alpha + \beta 1 \Delta Mkt(earnings) + \beta 2 \Delta Mkt(runup) + \varepsilon \quad (1)$$

where $\Delta Mkt(earnings)$ and $\Delta Mkt(Runup)$ are two components of $\Delta Mkt(first\ bid, announcement)$. $\Delta Mkt(first\ bid, announcement)$ is the percentage change of target firm's market capitalization, measured from the date the first bid was submitted to one day prior to the public deal announcement. For 28 out the 1,012 observations where we are not able to find the specific date on which the first bid was submitted, we use target market cap one day prior to deal initiation instead. $\Delta Mkt(earnings)$ is the percentage change of the target firm's market capitalization during (-1, +1) around earnings announcements made during the date the first bid was submitted and the public announcement date. Out of the 1,012 total observations used in the analysis, we have 421 target firms that make earnings release after the date the first bid was submitted and before the public announcement of the merger. For the rest target firms that do not have earnings release during such a period, we assign a value of zero to this variable. $\Delta Mkt(runup)$ is the difference between $\Delta Mkt(first\ bid, announcement)$ and $\Delta Mkt(earnings)$. *Positive_runup* is an indicator variable that equals 1 if $\Delta Mkt(runup)$ is positive, and zero otherwise. *Negative_runup* is an indicator variable that equals 1 if $\Delta Mkt(runup)$ is negative, and zero otherwise. *Positive_earnings* is an indicator variable that equals 1 if $\Delta Mkt(earnings)$ is positive, and zero otherwise. *Negative_earnings* is an indicator variable that equals 1 if $\Delta Mkt(earnings)$ is negative, and zero otherwise. Panel A reports summary statistics for $\Delta Mkt(first\ bid, announcement)$, $\Delta MktEarnings$, and $\Delta MktRunup$. Panel B reports regression coefficients for Equation (1). Sample period is from 1994 to 2016. Robust t-statistics using heteroscedasticity-consistent standard errors are reported in parentheses. ***, **, * correspond to statistical significance at the 1, 5, and 10 percent levels, respectively.

Panel A: Summary statistics for change of target market value

Variable	Mean	Median	25th Pctl	75th Pctl	Std Dev	t Value	N
ΔMkt(first bid, announcement)	0.083	0.041	-0.011	0.142	0.191	13.82	1,012
ΔMkt(runup)	0.075	0.037	-0.012	0.133	0.181	13.12	1,012
ΔMkt(earnings)	0.021	0.012	-0.028	0.056	0.097	4.36	421

Panel B: OLS regression

	(1)	(2)	(3)	(4)
Dependent variable	Private Price revision			
ΔMkt(runup)	0.419***		0.419***	
	(7.77)		(20.06)	
ΔMkt(earnings)		0.588***	0.591***	
		(3.41)	(9.96)	
ΔMkt(runup)*Positive_runup				0.482***
				(6.85)
ΔMkt(runup)*Negative_runup				0.073
				(0.87)
ΔMkt(earnings)*Positive_ earnings				0.684***
				(3.94)
ΔMkt(earnings)*Negative_ earnings				0.155
				(1.00)
Constant	0.053***	0.079***	0.048***	0.028***
	(12.66)	(18.23)	(11.71)	(4.41)
Observations	1,012	1,012	1,012	1,012
R-squared	0.266	0.065	0.332	0.363

Table 6. Nature of the bid process and price revisions

This table examines the relation between the nature of the bid process (auction vs. negotiation) and price revisions during the private and public negotiation process. Dependent variables are *Premium (private revision)* and *Premium (public revision).* *Premium (private revision)* is the difference between the initial public offer price obtained from SDC and the first private bid price relative to the benchmark price ((initial public price-first bid price)/benchmark price). *Premium (public revision)* is the difference between the final public offer price obtained from SDC and the initial public offer price relative to the benchmark price ((final public price-initial public price)/benchmark price)). The main independent variable is *auction*, an indicator variable that equals one if the target firm contacts an auction during the private negotiation process, and zero otherwise. We exclude observations with total premiums higher than 200%. Definitions of all variables are provided in Appendix A. Sample period is from 1994 to 2016. Robust t-statistics using heteroscedasticity-consistent standard errors are reported in parentheses. ***, **, * correspond to statistical significance at the 1, 5, and 10 percent levels, respectively.

	(1)	(2)	(3)
VARIABLES	Premium (private revision)		Premium (public revision)
Auction	-0.030***	-0.029***	0.001
	(-3.53)	(-3.90)	(0.23)
Tender offer	0.014	0.011	0.012**
	(1.16)	(1.03)	(2.09)
Target size	-0.014***	-0.008**	0.000
	(-3.34)	(-2.35)	(0.09)
Poison pill	-0.008	-0.004	0.002
	(-0.81)	(-0.42)	(0.39)
Staggered board	-0.006	-0.002	-0.002
	(-0.67)	(-0.23)	(-0.44)
Public bidder	0.023**	0.022**	0.002
	(2.36)	(2.57)	(0.55)
Toehold	0.011	0.005	0.050***
	(0.42)	(0.26)	(2.93)
Hostile	-0.051***	-0.038**	0.172***
	(-2.89)	(-2.49)	(7.36)
ΔMkt(runup)		0.352***	
		(9.32)	
ΔMkt(earnings)		0.364***	
		(4.14)	
Constant	0.186***	0.097**	-0.074**
	(3.14)	(2.00)	(-2.18)
Industry and Year FEs	Yes	Yes	Yes
Observations	1,006	1,006	1,309
R-squared	0.187	0.387	0.165

Table 7. Third-party-bidder initiation and negotiation

This table examines the first bid premium and private price revision by different types of deal initiation. For third-party-initiated deals, we use the first-bid price submitted by the third-party-bidder to measure first bid premium and the private price revision. For all other types of deals, we use the first-bid price submitted by the winning bidder in the calculation. Panel A reports summary statistics of the first-bid premium and the private revision. B reports OLS regression results. Specifically, for third-party-initiated deals, we calculate premium (first bid third-party) and premium (private revision third-party) as follows: *Premium (first bid third-party)* = third-party first bid price/benchmark price -1. *Premium (private revision third-party)* = (initial public price-third-party first bid price)/benchmark price. For Panel B, independent variables $\Delta Mkt(earnings)$ and $\Delta Mkt(Runup)$ are calculated over the window (third-party first bid date, public announcement date) for third-party initiated deals. The main independent variables are *Bidder (informal), Bidder (formal), Bidder (third party), Mutual initiation,* and *Target initiation.* The benchmark group is *Bidder (informal)*. Definitions of all other variables are provided in Appendix A. Sample period is from 1994 to 2016. Robust t-statistics using heteroscedasticity-consistent standard errors are reported in parentheses. ***, **, * correspond to statistical significance at the 1, 5, and 10 percent levels, respectively.

Panel A: Summary statistics

	Mean	Median	25th Pctl	75th Pctl	Std Dev	N
Premium (private revision)						
Bidder (informal)	0.097	0.068	0.020	0.140	0.135	346
Bidder (formal)	0.122	0.079	0.000	0.186	0.184	92
Bidder (third party)	0.236	0.207	0.085	0.348	0.271	125
Mutual initiation	0.093	0.063	0.000	0.138	0.195	90
Target initiation	0.066	0.041	0.000	0.095	0.139	323
Premium (first bid)						
Bidder (informal)	0.319	0.286	0.187	0.391	0.236	346
Bidder (formal)	0.310	0.267	0.201	0.416	0.163	92
Bidder (third party)	0.291	0.266	0.184	0.387	0.192	125
Mutual initiation	0.302	0.251	0.102	0.448	0.339	90
Target initiation	0.362	0.294	0.162	0.490	0.366	323

Panel B: OLS regression analysis

	(1)	(2)	(3)
VARIABLES	Premium (first bid third-party)	Premium (Private revision third-party)	
Bidder (formal)	-0.011	0.029	0.016
	(-0.45)	(1.38)	(0.99)
Bidder (third party)	-0.035	0.122***	0.081***
	(-1.53)	(6.25)	(4.86)
Mutual initiation	-0.035	-0.028**	-0.016
	(-1.03)	(-1.97)	(-1.09)
Target initiation	-0.003	-0.042***	-0.031***
	(-0.14)	(-4.27)	(-3.60)
Tender offer	0.022	0.008	0.013
	(0.99)	(0.67)	(1.15)
Target size	-0.040***	-0.016***	-0.008**
	(-5.22)	(-3.43)	(-2.33)
Poison pill	0.024	0.001	0.004
	(1.23)	(0.08)	(0.41)
Staggered board	0.016	-0.005	0.003
	(0.93)	(-0.58)	(0.42)
Public bidder	0.033*	0.025**	0.024***
	(1.80)	(2.46)	(2.75)
Toehold	-0.137***	-0.014	-0.006
	(-3.36)	(-0.52)	(-0.29)
Hostile	0.006	-0.107***	-0.086***
	(0.12)	(-3.84)	(-4.11)
ΔMkt(runup)			0.349***
			(10.20)
ΔMkt(earnings)			0.406***
			(4.98)
Constant	0.845***	0.231***	0.113**
	(5.86)	(3.44)	(2.09)
Industry and Year FEs	Yes	Yes	Yes
Observations	970	970	970
R-squared	0.202	0.295	0.477

Appendix A. Variable definitions

Variable	Definition	Data Source
A.1. Premium variables		
Premium (total)	The final public offer price obtained from SDC relative to target stock price 1 day prior to the deal initiation.	SDC, CRSP, merger documents
Premium (first pub)	The first public offer price obtained from SDC relative to target stock price 1 day prior to the deal initiation.	SDC, CRSP, merger documents
Premium (first bid)	The first private bid price obtained from merger document relative to target stock price 1 day prior to the deal initiation.	CRSP, merger documents
Premium (private revision)	The difference between the initial public offer price obtained from SDC and the first private bid price relative to target stock price 1 day prior to the deal initiation.	SDC, CRSP, merger documents
Premium (public revision)	The difference between the final public offer price obtained from SDC and the initial public offer price relative to target stock price 1 day prior to the deal initiation.	SDC, CRSP, merger documents
Positive public revision	An indicator variable that equals 1 if percent revision (public) is positive, and zero otherwise.	SDC, CRSP, merger documents
Zero public revision	An indicator variable that equals 1 if percent revision (public) is zero, and zero otherwise.	SDC, CRSP, merger documents
Negative public revision	An indicator variable that equals 1 if percent revision (public) is negative, and zero otherwise.	SDC, CRSP, merger documents
Positive private revision	An indicator variable that equals 1 if percent revision (private) is positive, and zero otherwise.	SDC, CRSP, merger documents
Zero private revision	An indicator variable that equals 1 if percent revision (private) is zero, and zero otherwise.	SDC, CRSP, merger documents
Negative private revision	An indicator variable that equals 1 if percent revision (private) is negative, and zero otherwise.	SDC, CRSP, merger documents
A.2. Sale process variables		
Bidder (informal)	An indicator variable that equals 1 if the publicly reported bidder initiates a deal without delivering an acquisition proposal within three days after the initiation, and zero otherwise.	Merger documents
Bidder (formal)	An indicator variable that equals 1 if the publicly reported bidder initiates a deal and delivers an acquisition proposal within three days after the initiation, and zero otherwise.	Merger documents
Bidder (third party)	An indicator variable that equals 1 if a third-party bidder (i.e., not the publicly reported bidder) initiates a deal, and zero otherwise.	Merger documents
Mutual	An indicator variable that equals 1 if the bidder and the target mutually initiate a deal, and zero otherwise.	Merger documents
Target initiation	An indicator variable that equals 1 if the target firm initiates a deal, and zero otherwise.	Merger documents

Private negotiation days	The number of calendar days between the private initiation date and the public announcement date.	Merger documents
Public negotiation days	The number of calendar days between the public announcement date and deal completion date.	SDC
N (contact)	The number of potential buyers that the target firm was in contact during the negotiation process.	Merger documents
N (confidentiality)	The number of potential buyers that signed a confidentiality/standstill agreement with the target firm.	Merger documents
N (indication of interest)	The number of potential buyers that submitted a written proposal with a price range proposed to buy target shares.	Merger documents
Ratio (Confidentiality/Contact)	The ratio of the number of confidentiality agreements signed to the number of potential buyers contacted.	Merger documents
Ratio (Indication of interest/Contact)	The ratio of the number of indication of interest submitted to the number of potential buyers contacted.	Merger documents
Ratio (Indication of interest/Confidentiality)	The ratio of the number of indication of interest submitted to the number of confidentiality agreements signed.	Merger documents
Auction	An indicator variable that equals 1 if two or more bidders signed a confidentiality agreement during the sale process (Boone and Mulherin, 2007), and zero otherwise.	Merger documents
A.3. Deal/firm characteristics		
Hostile	An indicator variable that equals 1 if the deal is characterized as hostile or unsolicited by SDC	SDC
Tender Offer	An indicator variable that equals 1 if the deal is a tender offer, and zero otherwise.	SDC
Cash	An indicator variable that equals 1 if the method of payment is cash only, and zero otherwise.	SDC
Stock	An indicator variable that equals 1 if the method of payment is stock only, and zero otherwise.	SDC
Public bidder	An indicator variable that equals 1 if bidder public status is 'Public', and zero otherwise.	SDC
Toehold	An indicator variable that equals 1 if a bidder has an ownership stake of 5% or more in the target, and zero otherwise.	SDC
Target Size	The log value of the target market capitalization one day prior to the deal initiation.	CRSP
Poison pill	An indicator variable that equals 1 if the target firm has a poison pill in place at the time of the merger, and zero otherwise.	ISS, SDC
Staggered board	An indicator variable that equals 1 if the target firm has a staggered board at the time of the merger, and zero otherwise.	ISS, SDC
ΔMkt (first bid, announcement)	The percentage change of target firm's market capitalization, measured from the date the first bid was submitted to one day prior to the public deal announcement.	CRSP

ΔMkt (earnings)	The percentage change of the target firm's market capitalization during (-1, +1) around earnings announcements made during the date the first bid was submitted and the public announcement date.	CRSP
ΔMkt (runup)	The difference between ΔMkt (first bid, announcement) and ΔMkt (earnings).	CRSP

Appendix B. Deal initiation and bidder announcement returns

This table reports regression results of deal initiation on bidder merger announcement returns. Dependent variables are *Bidder CAR (-1, +1)*, *Bidder CAR (-2, +2)*, and *Bidder CAR (initiation, completion)*. *Bidder CAR (-1, +1)* is cumulative abnormal return in a 3-day window surrounding the merger announcement using market-adjusted returns from the CRSP value-weighted index. *Bidder CAR (-2, +2)* is cumulative abnormal return surrounding a 5-day window and *Bidder CAR (initiation, completion)* is cumulative abnormal return from deal initiation until deal completion. Bidder market capitalization prior to deal initiation is included as an additional control variable. The main independent variables are *Bidder (informal)*, *Bidder (formal)*, *Bidder (third party)*, *Mutual initiation*, and *Target initiation.* The benchmark group is *Bidder (informal)*. Definitions of all other variables are provided in Appendix A. Sample period is from 1994 to 2016. Robust t-statistics using heteroscedasticity-consistent standard errors are reported in parentheses. ***, **, * correspond to statistical significance at the 1, 5, and 10 percent levels, respectively.

	(1)	(2)	(3)
Dep. Var.	Bidder CAR (-1, +1)	Bidder CAR (-2, +2)	Bidder CAR (initiation, completion)
Bidder (formal)	0.029**	0.025**	-0.006
	(2.48)	(2.09)	(-0.12)
Bidder (third party)	-0.000	0.004	0.037
	(-0.03)	(0.46)	(0.94)
Mutual initiation	0.004	0.007	-0.008
	(0.51)	(0.85)	(-0.24)
Target initiation	0.004	0.003	0.032
	(0.63)	(0.46)	(1.20)
Tender offer	0.013*	0.020***	-0.109***
	(1.85)	(2.65)	(-3.68)
Bidder size	0.001	0.002	-0.019**
	(0.64)	(0.83)	(-2.28)
Target size	-0.009***	-0.009***	0.007
	(-3.55)	(-3.47)	(0.61)
Poison pill	0.005	0.006	-0.028
	(0.79)	(1.03)	(-1.13)
Staggered board	-0.009*	-0.011**	0.003
	(-1.65)	(-1.96)	(0.14)
Toehold	0.012	0.010	-0.077
	(0.77)	(0.61)	(-1.03)
Hostile	-0.020	-0.014	0.141***
	(-1.39)	(-0.83)	(2.64)
Constant	0.100**	0.102**	0.458***
	(2.15)	(2.38)	(2.98)
Industry and Year FEs	Yes	Yes	Yes
Observations	855	855	855
R-squared	0.183	0.188	0.184

Appendix C.1. An example of a formal initiation by the winning bidder

Target: Dionex Corporation
Acquirer: Thermo Fisher Scientific Inc.
SEC filings: SC14D9[1]
Background of the merger (Simplified)

On October 13, 2010, Marc Casper, Chief Executive Officer of Thermo Fisher, had a telephone conversation with Dr. Witney in which Mr. Casper conveyed Thermo Fisher's interest in acquiring Dionex. On October 14, 2010, Mr. Casper delivered a letter to Dr. Witney that made an offer by Thermo Fisher to acquire all outstanding shares of Dionex's common stock for $106.50 per share in cash (the "Proposed Transaction"). Dr. Witney indicated that he would consider the matter and discuss it with the Dionex Board.

The Dionex Board determined to ask Goldman, Sachs & Co. ("Goldman Sachs") to prepare a financial analysis to assist the Dionex Board in its consideration of the Proposed Transaction and to continue the Dionex Board's discussion at a special meeting of the Dionex Board on October 18, 2010.

On October 26, 2010, the Dionex Board held a regular meeting at which all members of the Dionex Board were present. At the meeting, representatives of Goldman Sachs provided additional financial analysis of the terms of the Proposed Transaction.

On November 12, 2010, in a telephone conversation between Dr. Witney and Mr. Casper, Mr. Casper indicated Thermo Fisher would be willing to increase the offered price from $106.50 to $111.50.

On November 13, 2010, the Dionex Board held a meeting. After full discussion, the Dionex Board unanimously determined to reject Thermo Fisher's latest offer.

After subsequent discussion between Dr. Witney, Mr. McCollam and representatives of Goldman Sachs on November 14, 2010, and after obtaining the concurrence of Mr. Pigliucci, on November 15, 2010, Dr. Witney conveyed to Mr. Casper by telephone that Dionex was unlikely to consider a potential sale at a price level that was not significantly greater than the indicative price level most recently expressed by Thermo Fisher.

On November 16, 2010, in a telephone conversation between Dr. Witney and Mr. Casper, Mr. Casper indicated Thermo Fisher would be willing to increase the offered price to $114.00 and that it was unlikely Thermo Fisher would be able to offer any higher price.

On November 17, 2010, the Dionex Board held a meeting at which all members of the Dionex Board, Mr. McCollam, Ms. Christopher, representatives of Goldman Sachs and representatives of Cooley were present. The Dionex Board engaged in a full discussion regarding the range of potential responses to Thermo Fisher's latest offer. After full discussion, the Dionex Board unanimously determined to reject Thermo Fisher's latest offer and reiterate to Thermo Fisher that it was unlikely that the Dionex Board would consider a sale unless Thermo Fisher increased its indicative pricing level.

On November 23, 2010, Mr. Casper conveyed to Dr. Witney by telephone a willingness to begin negotiations based on a revised proposal of $118.50 per share, subject to Dionex's willingness to enter into a confidentiality agreement that provided for a limited period of exclusive negotiations.

On November 24, 2010, the Dionex Board held a meeting at which all members of the Dionex Board (other than Mr. McGeary), Mr. McCollam, Ms. Christopher, representatives of Goldman Sachs and representatives of Cooley were present. The Dionex Board engaged in a full discussion regarding the range of potential responses to Thermo Fisher's latest offer, including whether any other potential acquirors might be interested in acquiring Dionex for a

[1] The full document is available at
https://www.sec.gov/Archives/edgar/data/708850/000095012310114843/f57681sc14d9.htm

price in excess of that being proposed by Thermo Fisher and Thermo Fisher's requests related to commencing due diligence as described above. The Dionex Board determined, after reviewing a list of potential acquirors of Dionex and the high trading multiples of Dionex's common stock, that of the few potential acquirors that might have an interest in acquiring Dionex, none of them would reasonably be expected to offer a price approaching the price being proposed by Thermo Fisher, and that it was in the best interests of Dionex and its stockholders to pursue the Proposed Transaction at a price of $118.50 per share.

On December 13, 2010, Thermo Fisher and Dionex issued a joint press release announcing the transaction and their execution of the Merger Agreement.

Appendix C.2. An example of an informal initiation by the winning bidder

Target: The Lubrizol Corp.
Acquirer: Berkshire Hathaway Inc.
SEC filings: DEFM14[2]
Background of the merger (Simplified)

During the Fall of 2010, David L. Sokol was the Chairman, President and Chief Executive Officer of NetJets and the Chairman of MidAmerican Energy Holdings Company, two subsidiaries of Berkshire Hathaway. From time to time, Mr. Sokol met with various investment banking firms, including Citi, to discuss capital-raising and transaction ideas. In the course of general discussions between Mr. Sokol and Citi, Mr. Sokol requested more information regarding possible transactions in several industries, including the chemical industry. Using publicly available information, Citi generated a list and descriptions of 18 companies, including Lubrizol, in the chemical industry.

On December 13, 2010, Mr. Sokol and Citi met to discuss the list of companies. During the course of the meeting, Mr. Sokol said that the only company on Citi's list that he found interesting was Lubrizol. When Mr. Sokol learned from Citi's representatives that Citi had an investment banking relationship with Lubrizol and its Chairman, President and Chief Executive Officer, Mr. James L. Hambrick, he asked one of the Citi representatives to inform Mr. Hambrick that he was interested in speaking with him and discussing Berkshire Hathaway and Lubrizol, if Mr. Hambrick were available. Mr. Sokol also advised Citi that Berkshire Hathaway does not engage in hostile transactions, and that Mr. Hambrick should understand that if they met and nothing came of the meeting, their meeting would remain confidential.

On January 6, 2011, the Board convened a special meeting. During the course of the special meeting, Mr. Hambrick outlined Berkshire Hathaway's possible interest as he understood it from his conversation with Citi. The Board engaged in an extensive and thorough discussion about Berkshire Hathaway's possible interest. The Board determined that it needed to retain outside legal counsel and financial advisors to assist it in connection with any response to Mr. Sokol, including the process that the Board should undertake in connection with its review of Berkshire Hathaway's possible interest in acquiring Lubrizol. The Board decided to engage Jones Day and Evercore to assist it.

On January 12, 2011, the Board formally engaged Evercore to evaluate potential strategic and financial alternatives.

On January 14, 2011, Mr. Sokol and Mr. Hambrick had a telephone conference during which they generally discussed the corporate cultures and philosophies of both Berkshire Hathaway and Lubrizol, and arranged to have an in person meeting on January 25, 2011.

On January 25, 2011, Mr. Sokol and Mr. Hambrick met in Cleveland, Ohio. Mr. Hambrick also offered to have a follow-up meeting with Mr. Sokol and Mr. Buffett if Mr. Sokol thought that such a meeting would be helpful to Berkshire Hathaway.

On February 8, 2011, Mr. Hambrick met with Mr. Buffett in Omaha, Nebraska. Mr. Hambrick provided Mr. Buffett with an overview of Lubrizol's corporate culture, philosophy and operations. Mr. Hambrick also discussed Lubrizol's overall business and financial performance and described Lubrizol's publicly available past results and publicly available forecasts through fiscal year 2013. Mr. Hambrick gave his views on the future of the specialty chemicals manufacturing industry and general industry dynamics. At this meeting, Mr. Buffett responded to a question from Mr. Hambrick about price by saying that Berkshire Hathaway would like to make an offer to buy all of the outstanding shares of Company common stock for **$135.00 per share in cash**. Mr. Hambrick told Mr. Buffett that he would relay Berkshire Hathaway's proposal to the Board, but that he did not know whether or not the Board would be inclined to recommend the offer.

On March 2, 2011, Evercore's Chairman called Mr. Buffett to inform him that the Board was willing to support a transaction by which Berkshire Hathaway would acquire all of the outstanding shares of Lubrizol for $140.00 per

[2] The full document is available at
https://www.sec.gov/Archives/edgar/data/60751/000119312511127281/ddefm14a.htm

share in cash. Mr. Buffett told Evercore's Chairman that Berkshire Hathaway was unwilling to raise its offer beyond $135.00 per share.

On March 3, 2011, the Board convened a special meeting. Evercore and Jones Day participated in the meeting. Jones Day provided the directors with another overview of its fiduciary duties. Evercore described for the Board the March 2, 2011 discussion between Evercore's Chairman and Mr. Buffett. There was additional discussion about Evercore's various valuation analyses. Evercore also indicated that, in its view, contacting other potential purchasers was unlikely to result in an offer being made for Lubrizol in excess of Berkshire Hathaway's $135.00 per share cash offer. Evercore also noted that Berkshire Hathaway generally does not participate in auctions and that if Lubrizol contacted other potential parties, Berkshire Hathaway might withdraw its offer. After more discussion among the directors, the Board determined to pursue negotiations with Berkshire Hathaway toward a possible transaction for $135.00 per share in cash.

During the early morning on March 14, 2011, Berkshire Hathaway and Lubrizol announced the signing of the merger agreement through a joint press release.

Appendix C.3. An example of a third-party bidder initiation

Target: Hilton Hotels Corporation.
Acquirer: BH Hotels LLC.
SEC filings: DEFM14A[3]
Background of the merger (Simplified)

From time to time Stephen Bollenbach, our co-chairman and chief executive officer, and other members of management had been approached by various parties about possible transactions, including, among others, in June 2006, an informal approach to Mr. Bollenbach by a principal of **a private equity firm** who indicated an interest in a possible acquisition of the Company at a price in the **low $30s per share**.

Mr. Bollenbach indicated that the Company would not be interested in pursuing a transaction at that price. Thereafter, Mr. Bollenbach was contacted by a principal of a real estate investment firm who stated that he had heard rumors of the prior indication of interest and expressed an interest in considering a transaction at the price levels indicated by the other firm. Mr. Bollenbach informed UBS Securities LLC, which we refer to as UBS, of these indications of interest. UBS regularly acts as a financial advisor to the Company.
On August 2, 2006, Mr. Bollenbach, together with a representative of UBS, met with Jonathan Gray, a senior managing director of Blackstone. Blackstone had previously interacted with the Company when it had proposed partnering with the Company in its acquisition of Hilton International due to Blackstone's interest in purchasing the hotel properties of Hilton International and the Company's interest in operating those hotel properties and uniting the Hilton brand. At this meeting, Mr. Gray discussed Blackstone's interest in a transaction involving an acquisition of the Company or a significant portion of its real estate assets. Mr. Bollenbach informed Mr. Gray that, at the right price, the Company would consider a potential transaction.

Between September 12, 2006 and September 14, 2006, the board held an offsite retreat at which, among other things, it conducted a thorough review of the Company's business and financial strategies, including expectations of future earnings and cash flows, and an internal valuation prepared by management. This valuation suggested that the Company had a standalone value of approximately $42 per share and that the Company's stock price in the mid $20s per share did not fully reflect the Company's value.

Mr. Bollenbach also reviewed with the board Blackstone's indication that it was interested in pursuing a transaction with the Company at a price in the high $30s per share.

Mr. Bollenbach conveyed to Mr. Gray that the Company would not be interested in pursuing a transaction that did not involve a price per share in the $40s.

On May 30, 2007, Mr. Bollenbach and Mr. La Forgia met with Mr. Gray and Kenneth Caplan, a senior managing director of Blackstone. The Blackstone representatives returned to the meeting and indicated that Blackstone would be willing to increase their proposed price to $45 per share. Mr. Bollenbach responded that the $45 price was still insufficient.

The Blackstone representatives then asked Mr. Bollenbach at what price the Company would be willing to accept a transaction assuming the definitive agreement contained the provisions that were requested by Blackstone. Based on his previous discussions with the board, Mr. Bollenbach informed the Blackstone representatives that a price of $48 per share was a price he could recommend to the board.

On June 24, 2007, Mr. Gray communicated to a representative of our financial advisors that Blackstone would offer a price of $47.50 per share. Mr. Gray also indicated that the costs of any potential acquisition had increased significantly since Blackstone's last offer due to worsening conditions in the credit markets. Mr. Gray also noted that

[3] The full document is available at
https://www.sec.gov/Archives/edgar/data/47580/000110465907059886/a07-20270_1defm14a.htm

the stock price of the Company's common stock had decreased to $34.72 per share since the time of Blackstone's last offer and that a price of $47.50 per share represented a substantial premium to the stockholders of the Company.

During a lengthy discussion, the board members considered, among other things, their view that Blackstone's offer of $47.50 per share was a compelling price, their belief that Blackstone was in the best position of possible purchasers to provide the maximum value to the Company's stockholders due to synergies that Blackstone could achieve as a result of its existing lodging assets, Blackstone's ability to secure the necessary financing to complete the transaction and Blackstone's proven track record of completing large acquisition transactions on agreed terms.

After discussing all of the foregoing, the board determined that the price offered by Blackstone was compelling and authorized our management and legal and financial advisors to move forward with negotiations at the price of $47.50 per share.

Appendix D. Our data collection process

To capture the detailed negotiation process and offer price revisions prior to the public merger announcement, we manually collect the following information: the date on which the deal was initiated, the party who initiated the deal, the number of participants in contact with the target firm during the private sales process, the number of participants who signed confidentiality agreement with the target firm, the number of indications of interest submitted, the first offer price submitted by the winning bidder and the third-party bidder (in third-party initiated deals), the date on which the first offer price was submitted, and pre-event activities of 13d filings and merger rumors prior to the public merger announcement.

AD.1. Data source

We obtain merger documents from the Securities and Exchange Commission's (SEC's) EDGAR website. The SEC requires that firms publicly listed on US stock exchanges disclose all material information when they issue proxy statements soliciting shareholder votes. Since almost all mergers require a shareholder vote from target shareholders, we are able to collect the relevant information for our analysis. For tender offers (where the target shareholders do not vote), the target firm is still required to file form SC14D1/SC14D9 and to make a recommendation statement to their shareholders with respect to the tender offer, which is pursuant to Section 14(d)(4) of the 1934 Securities Exchange Act.

SEC filings we use to obtain the detailed information on price revisions and the sale process include S-4, S-4/A, DEFM 14, DEFM 14/A, SC14D1, SC14D9, DEF 14A, DEFS 14A, PRES14A, SC 13E3, and PRER14A. Most of the time, detailed information on private negotiation is available in the section titled "Background of the Merger." Occasionally, it also appears in the section titled "Board Deliberations."

AD.2. Collecting bid prices

The "Background of the Merger" section often describes the iterations during which the target firm and the (later) publicly disclosed bidder reach an agreement on the merger consideration. We collect the first bid price from the background information whenever this information is available. In most cases, collecting the first bid price is straight forward. For example, for the deal presented in Appendix B.1., the first bid price submitted by the bidder (Thermo Fisher Scientific Inc) is $106.50 and the date the first price submitted is on October 14, 2010. In the example presented in Appendix B.2., the first bid price submitted by the bidder (Berkshire Hathaway) is $135.00 on February 8, 2011.

In stock deals in which the method of payment is bid shares, the target firm and the bidder negotiate the exchange ratio that specifies the number of bidder shares to be exchanged for each target share when the merger is completed. For example, in the merger between Provident Financial Group (target) and National City Corp. (bidder) announced in 2004, the announced exchange ratio is 1.135 shares which allows each share of Provident common share to be converted into 1.135 common shares of National City.[4] The background information shows that the original proposed exchange ratio by the bidder was 1.04 and after negotiations, the bidder agreed to increase the exchange ratio to 1.135. In stock mergers, SDC calculates price per share consideration based on the bidder stock price on the last trading day prior to the public announcement. Price per share consideration reported by SDC is $40.17 based on the bidder stock price of $35.39. In this example, we calculate the first bid price as $40.17/1.135*1.04 = $36.81.

Sometimes the initial bid price is not disclosed in the merger background. For example, the merger between Storage Technology Corp. and Sun Microsystems, Inc. announced in 2005, the background information states "On May 3, 2005, Mr. Martin and Mr. Schwartz met in person in California. During this meeting, Mr. Schwartz indicated that Sun was prepared to offer *a price per share in cash that was less than the merger consideration of $37.00 per share* that was later agreed… On May 15, 2005, Sun *increased its proposed purchase price to $37.00 per share* of cash consideration."[5] In this example, we define the first bid price as *unknown*. The first bid premium and premium (private

[4] The full document is available at
http://www.sec.gov/Archives/edgar/data/69970/000095015204002214/l06460asv4.txt
[5] The full document is available at
https://www.sec.gov/Archives/edgar/data/94673/000103570405000382/d26147dedefm14a.htm#133

revision) cannot be calculated because of the missing information on the first bid price. Note that this example differs from the example provided in Appendix B.2 in which the first bid price ($135) is known and the public offer price is also $135. In the latter example, the first bid premium can be calculated and premium (private revision) is zero.

Occasionally, the initial proposal submitted by the bidder indicates a price range instead of a specific price. For example, in the merger between Coventry Health Care and First Health announced in 2004, the background information states "On September 16, 2004, Coventry submitted a preliminary, non-binding indication of interest to acquire First Health at a price in the range of $17.00 to $19.00 per share, consisting of approximately 60% Coventry common stock and 40% cash… On October 8, 2004, Coventry submitted a definitive proposal to acquire First Health at a price of $18.10 per share (the "October 8th Proposal"), consisting of 60% Coventry common stock and 40% cash…On October 10, 2004, Mr. Wolf stated that Coventry would increase its offer price to $18.75 per share (the "Final Proposal")." In the cases in which a price range is first proposed, and then followed by a refined specific price, we use the specific price as the first bid price. In this example, the first bid price is $18.10 and the private price revision is $18.75 - $18.10 = $0.65.

AD.3. Collecting deal initiation and initiation dates

For each observation, we also obtain detailed information on deal initiation and the initiation date from the Background section of merger documents. The specifics of deal initiation and initiation dates follow Eaton, Liu and Officer (2018), and the below information is mainly from their Appendix C.

A deal is classified as "target initiated" if the sale process is initiated by the target firm. A deal is classified as "bidder initiated" if the target is approached by the bidder. A deal is classified as "mutually initiated" if the background information says that representatives from each firm meet on a certain date and discuss a possibility of business combination without specifying which party took the initiative in the sale process. A deal is classified as "third-party-initiated" if it is initiated by a third party (i.e., a potential bidder without its identity being disclosed in the merger documents).

In target-initiated deals, we define deal initiation dates as the days on which the target board (or CEO) contacts their investment banker to initiate a sale of the firm. For example, in the merger between Plenum Publishing Corp (the target) and Wolters Kluwer NV (the bidder), the Background section states, "on February 24, 1998 the Company retained Salomon Smith Barney to render financial advisory and investment banking services to the Company in connection with the sale of the Company. The Company instructed Salomon Smith Barney to initiate a process to explore the sale of the entire equity interest in the Company through an auction process." In this example, we classify that the deal is initiated by the target firm, and the initiation date is February 24, 1998.[6][7] Sometimes, a merger process is discontinued for various reasons and then resumed after a considerable amount of time has passed. The deal initiation classification and initiation dates are based on the most recent merger process.

For non-target-initiated deals, we use the first reported date on which a bidder approached a target firm and initiated merger discussions. For example, in the merger between Extended Stay America Inc (the target) and Blackstone Group LP (the bidder), the Background section states, "On Friday, January 23, 2004, Mr. Jonathan D. Gray, Senior Managing Director of The Blackstone Group (bidder), called Mr. George D. Johnson, Jr., Chief Executive Officer of the Company (target), to inquire about the Company's interest in considering a possible acquisition of the Company by Blackstone." we classify this deal as a bidder-initiated deal and the initiation date is January 23, 2004.[8]

[6] The full document is available at https://www.sec.gov/Archives/edgar/data/79166/0001047469-98-024319.txt
[7] Target firms sometimes first have a board meeting and decide to pursue a sale of the firm and later formally hire a financial advisor. In those cases, I use the date of the board meeting as the deal initiation date (assuming that such date is included in the SEC filing).
[8] The full document is available at:
https://www.sec.gov/Archives/edgar/data/1002579/000104746904011431/a2133112zdefm14a.htm