Deal Initiation in Mergers and Acquisitions

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Abstract

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Keywords: Mergers and acquisitions, Merger initiation, Financial distress, Financial constraints, Economic shocks, Information asymmetry, Takeover premia, Self-selection problem

JEL Classifications: G34

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I. Introduction

Firms initiate mergers and acquisitions (M&As) to find a suitable merger partner to help them meet their strategic and financial objectives. Having identified an attractive partner, a common aim at the later stages of the M&A process is to structure a deal to realize the major goals of the merger partners. The mechanics of the later stages of the merger process and the incentives of key players in M&A transactions are well researched, given the availability of transaction-level data in M&A databases. Yet, the crucial initial stage of the merger process where bidders and targets are matched has received relatively scant attention in the M&A literature. In this study, we investigate the deal initiation decisions of merger partners to further our understanding of deal partner incentives at this crucial initial stage of the M&A process.

The extant literature examining the initial phase of the sale process focuses on the impact of takeover competition on merger outcomes. In this literature, "auctions" (multiple bidder negotiations) are distinguished from "negotiations" (single bidder negotiations) to examine their impact on target premia (Boone and Mulherin (2007b); Aktas, de Bodt, and Roll (2010)), bidder announcement day returns (Boone and Mulherin (2008)), and the use of termination fees in merger agreements (Boone and Mulherin (2007a)). While these studies recognize the relevance of a deal initiation party in the context of takeover competition, they do not analyze the major economic drivers of target-initiated deals and treat these initiation decisions as external to the M&A decisions they are studying. Given that target-initiated deals represent about 35% of the United States M&A deals in our sample, it is important to understand how these deals differ from the more frequently observed acquirer-initiated deals. More specifically, we want to explore target motivations for initiating M&A deals, the economic conditions facing the merger partners when this occurs, and the effects of deal initiation decisions on takeover premia.

To preview our main results, we find that target shareholders receive significantly lower premia in target-initiated M&A deals than in bidder-initiated deals. The bid premia, defined as the percent difference between the offer price and target firm's prior stock price 63 trading days before the initial merger announcement date, averages 58% in bidder-initiated deals vs. 48% in target-initiated deals. Target cumulative abnormal returns (CAR) measured over the (-2,+2) and (-63,+2) periods around the initial deal announcement dates, as well as excess deal value to EBITDA multiples reported in Officer (2007) also indicate significantly lower wealth effects in target-initiated deals as compared with bidder-initiated deals.

We consider two hypotheses to explain why targets initiate deals and why they receive lower premia relative to bidder-initiated deals. The first hypothesis argues that targets experiencing financial or competitive weakness have strong motives to search for potential buyers. Targets can face financial distress implying that shareholders and managers face significant losses if the firms go bankrupt. Similarly, target firms may initiate mergers to relieve a binding financial constraint. The second hypothesis posits that industry-specific or economy-wide shocks, such as technological innovations, deregulation, and changes in key input prices, may necessitate a reallocation of assets among firms within an industry. During this consolidation process, the managers and owners of weaker, less efficient firms can find it optimal to be acquired by larger, more efficient firms, rather than attempt to survive the industry shock on its own and risk further loss of market share and even financial distress.

Empirically, we find that targets are financially weaker in target-initiated deals compared to bidder-initiated deals, regardless as to whether we measure financial weakness by Altman's Z-scores, interest coverage ratios, S&P long-term credit ratings, or low stock price levels. In addition, target firms in target-initiated deals underperform their stock market benchmarks both

one and three years prior to the deal announcement, while targets in bidder-initiated deals do not. Our investigation also reveals that a firm's financial constraint measured by the SA Index (Hadlock and Pierce (2010)) or by the WW Index (Whited and Wu (2006)) is, on average, significantly higher for targets in target-initiated deals. Finally, the frequency of target-initiated deals relative to bidder-initiated deals is higher in the 2001 economic recession. Overall, these results are consistent with target-initiated deals being associated with financial and competitive weaknesses, binding financial constraints, and industry and economy-wide shocks.

The economic factors embedded in our first two hypotheses capture major motivations for targets to initiate deals and provide some interesting testable predictions. Yet, the lower bid premia and target CARs found in target-initiated deals cannot be easily explained by these factors. If targets initiate deals and accept lower premia primarily due to these conditions, then the effect of target-initiation on bid premia should diminish when we control for these factors. Contrary to expectations, the coefficient for target-initiated deals remains significantly negative, even after taking into account target financial distress, pre-announcement stock and operating performance, target financial constraints, and industry-specific and economy-wide shocks in our analysis. We also find weak associations when we interact the target-initiated indicator with measures for the above listed factors. Specifically, the coefficients of the interaction variables, which capture the marginal effects of these factors on target-initiated takeover premia are, for the most part, statistically insignificant. These results may be, in part, due to rational investors having previously discounted the price of a target's stock for these problems.

Our last major hypothesis, which we label the *Information Asymmetry Hypothesis*, emphasizes the informational disadvantages acquirers face due to target firms' superior information about their internal valuations. This information asymmetry between merger

partners presents acquirers with an adverse selection problem, causing them to rationally offer lower acquisition prices for target firms as the risk of purchasing a lemon rises (Akerlof (1970)).

Since target firms self-select to initiate deals with bidders, their observable and unobservable characteristics could be quite different from targets that do not initiate deals. To adjust for such self-selection, we specify a Heckman (1979) selection model to identify the underlying factors that could be driving the low premia in target-initiated deals. Following the prior empirical literature summarized in Prabhala and Li (2008), we interpret the inverse Mill's ratio as capturing the target board's private information about its value, as well as the effects of any omitted variables. We find that the inverse Mill's ratio is significantly negatively correlated with the bid premia. Our findings are consistent with target deal initiations signaling to bidders that target boards have negative private information, causing rational bidders to reduce takeover premia. In other words, deal initiation is a manifestation of negative private information held by a target which bidders infer when a target publicly announces its willingness to sell.

To assess whether the adverse selection problem between merging firms is driving our results, we evaluate whether the effect is more severe when target firms are more difficult to value. To test this proposition, we create a measure of information asymmetry between merger partners. We employ many of the commonly used asymmetric information measures found in the literature and use factor analysis to create a single information asymmetry factor that captures a significant portion of the common variability among these asymmetric information measures. We then divide our sample into high and low information asymmetry targets based on whether the information asymmetry measure is above its median. We separately estimate Heckman (1979) selection models for the two subsamples and find that the inverse Mill's ratio, the target's private information measure, has a significantly more negative coefficient in high information

asymmetry firms. That is to say, the average takeover premium is significantly lower in target-initiated deals with high target information asymmetry. Similar results hold when we reclassify high and low information asymmetry subsamples using individual information asymmetry measures. These results provide further support for the Information Asymmetry Hypothesis.

Finally, we examine whether deal initiating target firms have any incentives to signal their true values to bidders to reduce the aforementioned initiation discount. We find that the negative effect of target private information on bid premia in high information asymmetry deals gets much weaker when targets accept acquirer stock as payments or retain due diligence advisers. We argue that these actions are credible signals that can convey valuable information to bidders and can be used to mitigate the negative effect of target-initiation on bid premia.

Our investigation of deal initiation in the context of mergers and acquisitions is important for several reasons. First, we document the size and statistical significance of differences in deal premia across target- and bidder-initiated deals for a large sample of United States deals over an extended sample period from 1997-2012. In addition, we investigate firm-level determinants of the deal initiation decisions by target firms. While some studies of takeover competition, target CEO compensation, and golden parachutes include an indicator for target-initiated deals as a control variable and report a negative impact of target-initiation on bid premia, nearly all of these studies treat seller-initiation as exogenous and they generally do not explore the economic motivations for targets initiating deals.[1] In contrast, our primary objective is to investigate target

[1] Several studies use these controls in studies of takeover competition (Boone and Mulherin (2007b); Aktas et al. (2010)), target CEO option and equity grants (Fich, Cai, and Tran (2011); Heitzman (2011)), and golden parachutes (Fich, Tran, and Walkling (2013)).

incentives for initiating deals and to explore the importance of information asymmetry between the acquirer and the target as a major factor driving bid premia differences across samples.

Aktas et al. (2010) examine some determinants of target-initiation for a specialized sample of single-bidder negotiated deals. Our study examines a much broader sample of M&A deals that also includes multiple-bidder negotiated deals (which represents 58% of the deal sample) to assess the ability of our hypotheses to explain both the effect of target initiation on takeover premia and the underlying economic channels that affect these premia. Moreover, we provide a new perspective on M&A deal making mechanics by bringing to light some important elements of the initial private negotiations phase of the M&A process. While a vast majority of M&A studies analyze takeovers starting with the initial bid date, companies actually make crucial decisions well before an M&A agreement is reached and publicly announced. We shed new light on this process. Finally, our study provides new insights into the interplay of supply and demand factors in takeover markets.

II. Hypotheses

A. Drivers of Target Deal Initiation

A number of prior studies in the corporate finance literature view bankruptcy reorganization filings and mergers as alternative choices for surviving financial distress. Shrieves and Stevens (1979), Hotchkiss (1995), Hotchkiss and Mooradian (1997) and Hotchkiss and Mooradian (1998) argue that acquisitions dominate Chapter 11 filings as a means of redeploying financially distressed firm assets. Their empirical evidence indicate that acquirers improve the operations of financially distressed firms, while distressed firms that remain independent

continue to struggle after going bankrupt. Pastena and Ruland (1986) find that distressed firms with low leverage and high ownership concentration tend to prefer mergers to bankruptcy. [2] [3]

Less severe forms of financial distress can also lead targets to seek an acquirer. In periods of economic distress, firms often lose market share to competitors, experience sales declines, rising costs, and possibly negative operating income, while remaining solvent and fully able to pay their debts. In such circumstances, targets can be motivated to seek a buyer if they expect the economic weakness to continue. Consistent with this view, targets generally exhibit significantly negative abnormal stock returns prior to the merger (Asquith (1983); Martin and McConnell (1991); Kini, Kracaw, and Mian (1995, 2004)), low valuations (Edmans, Goldstein, and Jiang (2012); Bates, Becher, and Lemmon (2008)) and inferior operating performance (Palepu (1986); Cremers, Nair, and John (2009); Berger and Ofek (1996)).[4]

Financially constrained target firms with limited financing options can also find it beneficial to initiate deals with cash rich bidders to obtain additional equity capital. By merging

[2] Financially distressed firms can sell some assets to meet liquidity needs and avoid bankruptcy rather than sell the entire firm (Asquith, Gertner and Scharfstein (1994); Brown, James, and Mooradian (1994); Hotchkiss (1995)). However, if the industry is also depressed, then asset sales can represent selling at fire sale prices, which can be below their book values thereby limiting any benefit that can be obtained.

[3] In the Oler and Smith (2008) analysis of firms that publicly express an interest in being taken over (labeled as "Take-Me-Over" or TMO firms), these firms privately look for a potential buyer first and, if that fails, they announce a willingness to be sold. Oler and Smith (2008) find TMO firms tend to exhibit financial weakness relative to industry and size-matched peers. Note that target-initiated deals do not always result in TMO announcements.

[4] However, in a survey of studies of target performance prior to merger announcements, Agrawal and Jaffe (2003) report that many studies fail to find empirical support for the target underperformance hypothesis.

with a financially stronger firm, a target can gain access to additional capital.[5] For example, a target can sell new equity to the buyer as the acquisition method. Consistent with this view, Erel, Jiang, and Weisbach (2015) find that European target firms, on average, are financially constrained before mergers and their financial constraints ease after they merge. Liao (2010) finds that financially constrained target firms are more likely to be targets of minority share acquisitions. Fee, Hadlock, and Thomas (2006) find that firms are more likely to hold minority stakes in their suppliers when suppliers are suffering from financial difficulties.[6]

The deal initiation decisions of merger partners can be related to the interaction of demand (i.e., bidder firms actively seeking acquisition targets) and supply conditions (i.e., target firms actively seeking potential buyers) in the M&A market. When an economic shock, such as deregulation, tax rate increases and reduced deductions, technological cascades, tariff reductions, or changes in key input prices hit an industry, firms may find it optimal to reorganize to mitigate the shock's adverse effects (Mitchell and Mulherin (1996); Mulherin and Boone (2000); Andrade, Mitchell, and Stafford (2001); Andrade and Stafford (2004); Harford (2005)). Smaller, weaker and less efficient firms can find it optimal to sell their businesses to larger, financially

[5] Note that having a financial constraint is a distinctly different condition from having a financial or competitive weakness. While financially distressed targets are likely to face financial constraints, the reverse is not necessarily true. Financially constrained targets can be able to meet their financial obligations and thus face minimal bankruptcy risk, and yet they must forego profitable investment opportunities that exceed their ability to internally finance them.

[6] A related strand of literature investigates whether a major motivation behind conglomerate mergers is the transfer of resources within firms through internal capital markets (Weston (1970); Stein (1997); Matsusaka and Nanda (2002)). Hubbard and Palia (1999) study the 1960s merger wave and find that bidders experienced higher announcement returns when financially unconstrained bidders acquired financially constrained targets. Masulis, Pham, and Zein (2011, 2014) argue that a major purpose of business groups is to allow transfers of capital from cash rich to high growth cash poor affiliates.

stronger and more efficient firms in the industry. The fact that target shareholders and managers expect to receive offer premia for their shares (Betton, Eckbo, and Thorburn (2008); Hartzell, Ofek and Yermack (2004)), especially when industry prospects are unfavorable, serve as a lubricant for such mergers. Hence, economy-wide or industry-specific shocks can increase the supply of takeover targets resulting in a higher frequency of target-initiated deals.[7]

Our analysis of the deal initiation determinants leads to the following hypotheses:

Hypothesis 1: Target firms with financial and competitive weaknesses initiate M&A deals. Financially distressed firms initiate mergers with financially strong acquirers to avoid bankruptcy costs. Underperforming target firms initiate mergers to avoid continued subpar operating performance. Financially constrained target firms initiate deals with cash rich bidders, who can help them finance their valuable investment projects.

Hypothesis 2: The frequency of target-initiated deals relative to bidder-initiated deals rises after negative industry-specific or economy-wide shocks as weaker firms seek to strengthen their competitive positions.

B. Drivers of Premia Paid to Target Firms

There are two opposing views as to how bid premia are affected by the economic factors represented in the above hypotheses. The first view predicts that target firms are willing to accept lower premia when they initiate deals, primarily because they wish to avoid the costs associated with financial distress, financial constraints, and economic disruptions due to industry or

[7] In the 2008 banking crises, Bear Stearns, Lehman Brothers, Merrill Lynch, and Countrywide Financial, who faced severe liquidity problems, actively searched for buyers (Davidoff (2009)).

economy-wide shocks. These costs, which are easily identified by bidders, lower a target firm's reservation price and diminish its bargaining power during merger negotiations. Due to the need for rapid action, targets firms experiencing these conditions may fail to structure a competitive sale process. In addition, the market conditions in the target firm's industry may amount to a fire sale, which may suppress the industry peer's willingness to participate in the sale process (Shleifer and Vishny (1992); Pulvino (1998); Officer (2007); Eckbo and Thorburn (2008)).

An alternative view emphasizes the costs associated with financial distress, financial constraints, and shocks that could be avoided by a target merging with a bidder having ample financial resources. That is to say, the magnitude of the wealth created by the merger, which is driven by the removal of these costs, is not bidder specific. The common value flavor of this setting implies a high level of competition for such target firms. Even though targets end up negotiating with a limited number of bidders due to time pressure, previous research indicates that the premia received by target firms are comparable to premia received in competitive auctions (Boone and Mulherin (2007b); Aktas et al. (2010)).

We treat the first view as our null hypothesis, so that rejection of the null hypothesis provides support for the alternative competitive corporate control market view.

> **Hypothesis 3**: Target firms accept lower premia in target-initiated deals to avoid the costs of 1) financial distress, 2) financial constraints, or 3) the adverse effects of industry-specific or economy-wide shocks.

C. Information Asymmetry between Merging Firms

Our third hypothesis rests on the existence of information asymmetry between merger partners. As discussed in Genesove (1993), buyers are exposed to an adverse selection problem

when: 1) sellers possess superior information about their goods relative to buyers, and 2) buyers cannot fully protect themselves from the effects of information asymmetry by employing contracting technologies. These two conditions are likely to hold in takeover markets (Hansen (1987); Marquez and Yilmaz (2008); Officer, Poulsen, and Stegemoller (2009)). As is commonly conjectured in the extant literature, target firm managers should generally possess superior information about their firms' market values, financial projections, and operational and financial risks, which a typical bidder's due diligence process is unlikely to fully uncover. Further, contract clauses used by merging firms, such as representations, guarantees, warranties, escrows and earn-outs, have limited scope and capacity to fully protect bidders from this adverse selection problem, especially if the litigation costs of enforcement are taken into account.

Akerlof (1970) argues that it is optimal for buyers to offer discounted prices to sellers when buyers are at an informational disadvantage. These discounted prices are unattractive to sellers of good quality products causing them to withdraw from the market, while these prices are still attractive to sellers of lower quality products. Thus, in takeover markets, the act of initiating a deal causes acquirers to update their beliefs negatively about a target's quality since undervalued target firms rationally prefer to remain independent when their stock prices fail to reflect their true fundamental values, while "overvalued" target firms are readily put up for sale.[8] In fact, this argument could be considered an extension of the well-known adverse selection effects of seasoned equity offers (Myers and Majluf (1984)).[9]

[8] Kitching (1973) surveys acquirers about factors affecting post-merger performance and concludes "*If you buy a company because it approaches you, you are more likely to have a 'lemon' on your hands than a 'superstar'*" (Chapter 5, p. 188).

[9] Myers and Majluf (1984, p. 219) take a more extreme view "*A firm that actively seeks to be bought out may end up a wallflower. The more actively management seeks to sell, the less an outsider will assume their firm is worth.*"

The frequencies of buyer- and seller-initiated trades, which are assumed to be driven by information events, are used in market microstructure models to explain stock market dynamics (Easley and O'Hara (1992); Easley, Kiefer, O'Hara, and Paperman (1996); Easley, Kiefer, and O'Hara (1997)) and particularly to assess the impact of large block sales or trades on stock prices (Keim and Madhavan (1996); Madhavan and Cheng (1997); Gemmill (1996); Saar (2001); Booth, Lin, Martikainen, and Tse (2002)). For example, Keim and Madhavan (1996) find the effects of seller- and buyer-initiated block trades on stock prices can range from -4.32% to 2.8%. In their theoretical model, when an informed trader holds private information about a stock's value and then initiates a buy (sell) order, market participants can infer the sign of this private information. Thus, trade-initiations release new information about a stock's true value and permanently affect its market price.

The adverse selection problem created by information asymmetry between merging parties can vary in severity depending upon a target's characteristics. For instance, information asymmetry between them is expected to be high when target firms are difficult to value (e.g., volatile stock prices, larger fraction of intangible assets, and higher analyst earnings forecast errors). In these cases, bidders are exposed to a greater adverse selection risk of acquiring a low quality target firm, particularly when the target approaches the bidders to sell itself. However, bidders can accurately assess the qualities of easy-to-value target firms during negotiations and, as such, do not discount their prices simply because a target firm initiates the deal.

> **Hypothesis 4**: Information asymmetry about targets leads bidders to offer lower purchase prices when targets initiate deals since high quality or undervalued targets have incentives to avoid selling at such discounted prices. Greater information asymmetry amplifies this effect.

Bidding managers can possess private information regarding the economic gains from mergers, such as potential synergies, and the values of target firm assets under buyer manager control. Any positive private information held by bidders can lead them to initiate a takeover bid, which can strengthen a target's negotiating position. Thus, the average bid premia in bidder-initiated deals is likely to be larger when a bidder is expected to have superior private information relative to when targets initiate deals. These two information asymmetry scenarios yield similar implications for the effect of deal initiation on bid premia. We test Hypothesis 4 by selecting information asymmetry metrics likely to capture a target's information advantage over a bidder. These metrics are discussed in Section VI.[10]

III. The Data

A. Sample Formation

We extract deals from the SDC Platinum Mergers and Acquisitions database that meet the following sample criteria: 1) "Deal value" exceeds $5 million, 2) Both acquirer and target are publicly listed, U.S. domiciled and are not in the financial services or utility industries, 3) The transaction's legal form is either a "merger" or "acquisition of majority interest," 4) The deal announcement occurs in 1997-2012 period, and 5) The deal status is "completed."[11]

[10] In untabulated results, we also investigated target manager incentives to initiate deals with bidders. We find that target-initiated deals are more likely to occur when the target CEO's share of ownership is higher than the sample average, when targets are classified as family-owned, and when they have large blockholders. These additional factors do not change the significant negative effect of target-initiation on bid premia. Nevertheless, our sample size shrinks significantly when we control for the target manager and corporate governance characteristics in the analysis.

[11] Financial and utility firms are excluded since accounting statements of financial firms differ substantially from non-financials, and both financials and utilities are heavily regulated in the United States. The minimum deal size is

SDC M&A data are matched with the CRSP and Compustat databases to yield a total sample of 1,639 deals. To obtain the identity of the initiation party, we search the EDGAR database for acquirer and target filings for each deal. When available, initiation data are extracted from the "Background of the Merger" or "Material Contacts and Board Deliberations" sections of the DEFM14A, PREM14A, 14D9, TO-T, and S-4 company filings. The background section summarizes past contact and negotiations between the acquirer and the target including who initiated the merger, how senior managers of the two firms first met, how negotiations unfolded, relevant board of directors' decisions, and the identity of investment banks, among other details.

While official SEC documents do not reveal the main motivations of merging firms, the actions taken during the takeover process are accurately reported. The main information sources for the deal initiator are the reported actions taken by the two parties. If a target is interested in selling itself, then it considers "strategic alternatives" to operating as an independent firm and typically hires an investment bank to evaluate its options. In this case, target firm management, or their investment bankers, contact potential acquirers to solicit their interest. In this type of deal, target firms intend to sell themselves prior to any offer from a bidder. Thus, we designate these deals as target-initiated. In a typical bidder-initiated deal, a target is not seeking to sell its

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set at $5 million USD to expand the coverage of transactions to smaller deals where information asymmetry between merging firms is likely to be higher. The legal form of acquisition is restricted to the two major categories to ensure that the merger substantially changes the ownership of the merging firms. We also drop the deals where the acquirer holds more than 50% of the target's shares before the merger or less than 50% of the target firm's shares after the merger. We start our sample at the beginning of 1997 as public companies are required to submit their filings through EDGAR as of May 6, 1996. Finally, we limit our sample to public acquirers to investigate how acquirers fare in target- and bidder-initiated deals. We do not find an effect of deal initiation on acquirer CARs in univariate and multivariate analysis. As such, we leave these results untabulated.

business. A bidder or its investment banker approaches a target's top management to express an interest in exploring a "strategic combination" of the firms. Target management takes this offer to its board and then conveys its board's decision back to the bidder. In some cases, targets negotiate with the bidder and end up being bought, while in other cases, they contact potential "White Knights" or just say no and fight the takeover bid. Appendix A provides examples of bidder- and target-initiated deals.

When a target firm is eventually bought by the initial bidder, even when competing bidders participate in the process, we classify it as a bidder-initiated deal. Thus, the cases where a target firm puts itself up for sale primarily because it receives an unsolicited bid by a losing bidder are also classified as bidder-initiated. These cases are distinct from target-initiated deals since the target managers do not exhibit any evidence of wanting to sell their firms prior to the unsolicited bid. Unsuccessful bids are also distinct from cases where an acquirer initiates a bid that eventually becomes successful. The hypotheses that we construct in this analysis rest on the observation that targets reveal valuable private information to potential bidders through their deal initiation decisions. Since targets involved in these bidder-initiated unsuccessful deals do not initially seek to sell themselves, but only act in reaction to "being put into play," categorizing these bids as bidder-initiated enables us to more cleanly test our adverse selection hypothesis.[12]

[12] We also investigate the effect of unsuccessful bidder-initiated deals on our results. We find that 44% of bidder-initiated auction deals are initiated by unsuccessful bidders. The average bid premia for unsuccessful bidder-initiated auction deals is lower than the average bid premia in successful bidder-initiated auction deals, while higher than the average bid premia in target-initiated deals, although the pairwise bid premia gaps between these three bid samples is only statistically significant for successful bidder-initiated deals compared to target-initiated deals and not for the bid premia gaps of the two intermediate pairs. When we exclude unsuccessful bidder-initiated deals from the sample, OLS and Heckman regressions produce similar statistically significant results to those reported above.

Deal initiation information is not available for all of the deals in our sample. In 81 deals, the required SEC documents for merging firms could not be located and in 290 cases, we are unable to discern which party initiated the deal, even with access to the merging firms' disclosure documents.[13] As a result, a total of 371 deals (out of 1,639) in our sample lack clear initiation information, leaving us with 1,268 deals with a known deal initiator.

One complication is that deals can be initiated by parties other than the merging firms, such as investment banks or activist shareholders. In theory, third party initiated deals may serve as an interesting sample to test the relevance of the adverse selection hypothesis. Unfortunately, practical implementation of these tests proves problematic. Investment banks are rarely mentioned as deal initiators in SEC documents. Although data availability is not a major issue for activist-driven deals, this sample is unlikely to provide clean results as shareholder activism occurs far in advance of a typical bid announcement, when it becomes publicly known through activist 13D filings, it often triggers significant market reactions. These price reactions strongly suggest changing market expectations about subsequent corporate events including a potential merger. Thus, the wealth effects of activist-initiated deals are unlikely to be adequately captured by conventional short run event windows used to measure wealth effects in other types of bids.

B. Construction of Variables and Data Summary

We define a target-initiated indicator variable to take a value of 1 if the deal is target-initiated and 0 if the deal is bidder-initiated. A total of 35.4% of the identified deals are target-initiated and the remaining 64.6% are bidder-initiated. Annual numbers of bidder- and target-initiated deals based on initial announcement dates are displayed in Figure 1.

[13] We also exclude merger-of-equals deals, as the classification of acquirer and target is less clear cut.

[Insert Figure 1 about here.]

We calculate abnormal returns to acquirer and target stocks around the offer announcement dates using a conventional one-factor market model. We estimate market model parameters for trading days (-316, -64) relative to Event Day 0, defined as the initial announcement date and use these parameter estimates to calculate abnormal daily returns for the five-day event window (-2, +2). Of course, the market reaction on a merger announcement does not reflect the full rise in target shareholder wealth if the deal is partially anticipated by investors as some expected benefits are capitalized into the stock price earlier.

Deal anticipation could be more serious for target-initiated deals, as targets initiating deals may publicize their intentions to be sold well before a formal deal is announced (e.g., retention of investment banks). To mitigate this concern, we follow Mulherin and Simsir (2015) and use the "Original Date Announced" (ODA) field in SDC to capture market reactions to these earlier merger-related events. That is, we extend our event period to include the market reaction on the ODA whenever it precedes the merger announcement date. As an additional remedy, we use longer event windows for target CARs starting 63 trading days before the initial merger announcement dates (Schwert (1996, 2000)). We estimate the bid premium as the offer price divided by the target stock price measured 63 days prior to the bid announcement minus one. [14]

Our first hypothesis predicts that bid premia received by financially distressed targets are lower than that of financially healthy targets. Since capital markets can partially anticipate

[14] In untabulated results, we measure target abnormal returns over the alternative event windows (-1,+1) and (-5,+5). Results using event window (-1,+1) or (-5,+5) are very similar to the CAR (-2,+2).

potential insolvency, expected bankruptcy costs should reduce target stock prices prior to merger announcements. As a result, this effect could lead to biased market-based premium estimates. We follow Officer (2007) and use the excess deal value to EBITDA multiple as our fourth takeover premium measure. This ratio is a standard measure used by M&A investment bankers and it has the advantage of not depending on the market's past or current assessment of a target's market value. We calculate the excess deal value to EBITDA multiple as the percent difference between a deal's multiple and the mean multiple of a reference portfolio of industry- and size-matched deals occurring in the 18 months prior to the bid date. Measurement of this multiple, along with market-based premium measures, are explained in detail in Appendix B.[15]

Panel A of Table 1 reports the average announcement CARs of 26.4% and -1.9% for target and acquirer stocks, respectively, over the (-2, +2) bid event window. Target firms experience an average 36.6% abnormal stock return over the (-63, +2) event window. The average (median) bid premium for target firms in our sample is 53.8 (44.2 %), while the excess deal value to EBITDA multiple has a mean (median) value of 90.9%, (-3.5%).[16]

[Insert Table 1 about here.]

The extant literature finds that many deal and firm characteristics have cross sectional associations with merger partner announcement returns. This motivates our choice of controls in analyzing target announcement returns and their relationship to the deal initiating party including

[15] Ang and Mauck (2011) analyze the relation of financial distress and market-based premia in crises and non-crises periods. Their investigation shows the market-based premia measures' sensitivity to the firm and market conditions.

[16] Consistent with Officer (2007), the distribution of deal value to EBITDA multiples is positively skewed. To limit the influence of outliers, we winsorize the multiples at the 2% and 98% levels.

method of payment (Travlos (1987); Chang (1998)), acquisition legal form (Jensen and Ruback (1983); Huang and Walkling (1987)), asset relatedness (Morck, Shleifer, and Vishny (1990)), toehold size (Betton and Eckbo (2000)), relative deal size (Asquith, Bruner, and Mullins (1983)), termination fees (Bates and Lemmon (2003); Officer (2003)) and merger partner characteristics such as Tobin's Q (Lang, Stulz, and Walkling (1991); Servaes (1991)), leverage (Maloney, McCormick, and Mitchell (1993)), cash flow (Lang, Stulz, and Walkling (1989)), cash holdings (Harford (1999)) and equity capitalization (Moeller, Schlingemann, and Stulz (2004)). Deal and merger partner characteristics are shown in Panels B-D of Table 1. Of our M&A sample, 22% are tender offers, 64.2% are within-industry deals, and 58.3% use an auction sales method.[17] Consistent with the prior research, targets are smaller, less profitable, and have lower sales growth and Tobin's Q than acquirers.

To assess whether a target is experiencing financial distress, we analyze its Altman's Z-score (Altman (1968)), interest coverage, liquidity and leverage ratios, and S&P credit rating on its bonds, and its stock price 63 trading days prior to the merger announcement.[18] We also analyze targets with current ratios below and leverage ratios above industry medians since these firms are more likely to face short-term liquidity problems and high long-term debt obligations (Pulvino (1998)).

To identify underperforming targets, we estimate changes in their annual industry-adjusted return on assets (ROA), Tobin's Q, and sales growth rates for one and three calendar

[17] Auctions are more likely in target-initiated deals than in negotiated deals as 76% (48%) of the target-initiated (bidder-initiated) deals are auctions. These estimates are similar to those reported in Aktas et al. (2010).

[18] Garlappi and Yan (2011) find that firms with stock prices below $5 have higher financial distress risk.

years prior to the merger announcement. We also calculate a target stock's buy-and-hold abnormal annual returns for one and three calendar years prior to the merger announcement.

We investigate whether target firms operate in highly competitive industries where operating inefficiencies could lead to weak or negative earnings. One well known product market competition measure is the Herfindahl-Hirschman Index (HHI) estimated by Hoberg and Phillips (2013) using a network-based industry classification. We create an indicator variable that is 1 if the HHI of the target industry is above the median industry HHI across all industries. Our second product competition measure is the percentage change in the target market share in the one and three years prior to the merger announcement. To measure product market share, we divide a firm's annual sales by the sum of the annual sales of the other Compustat firms in its industry.

Kaplan and Zingales (1997) (KZ) and Whited and Wu (2006) (WW) develop alternative measures of firm financial constraints based on linear combinations of financial ratios. These indices are higher for more financially constrained firms. In a recent study, Hadlock and Pierce (2010) evaluate the performances of these financial constraint measures and find that a simple (SA) index that uses firm size and age is superior to the KZ and WW indices. For comparison, we calculate all three measures and analyze their interactions with the deal initiation indicator.

We use several industry-level variables to capture industry shocks. Harford (2005) finds that industry-specific shocks result in significant changes in industry-level net income/sales, asset turnover, ROA ratios, R&D expenses and capital expenditures, and employee and sales growth rates. Following Harford (2005), we create an industry shock index based on the first principal component of these seven variables. To capture the time series dynamics in these seven variables, we create a set of indicator variables that take a value of 1 if the change in the respective variable is above the 75^{th} percentile of its industry distribution across the full 1986-

2012 sample period. Since industry-specific shocks can trigger mergers, we control for target industry M&A activity in the bid year (Schlingemann, Stulz and Walkling (2002)).

Finally, we measure economy-wide shocks using indicator variables for the 2001 and 2008 economic recessions from the National Bureau of Economic Research (NBER). Since mergers are planned and negotiated several months ahead of their public announcements, the effects of economic recessions on M&A bids could begin several months before the start of a recession and its effects could continue for several months after the end of the recession. To take this into account, we extend the formal NBER recession periods by six months both before and after the recession period. Thus, our 2001 and 2008 economic recession indicators take a value of 1 for deals announced from Sept. 2000-May 2002 and June 2007-Dec. 2009, respectively. In Appendix C, we explain in detail the construction of all of the variables in this section.

C. Takeover Premia and Deal Initiation Parties: Univariate Tests

As shown in Table 2, bidder- and target-initiated deals differ significantly in terms of target CARs, bid premia, and deal value to EBITDA multiples indicating that target firm returns are significantly higher if deals are bidder-initiated. In particular, Panel A indicates that the *Bid Premium* averages 48.7% in target-initiated deals and 58.5% in bidder-initiated deals.[19] The mean difference in bid premia of 9.8% is statistically significant at the 1% level.

[19] In contrast, Betton et al. (2008) report mean and median bid premia estimates of 48% and 39%, respectively (Table 5). Their premia are based on pre-bid target stock prices on Trading Day -42 instead of -63 and our initial bid date is based on SDC's "Original Date Announced" field as opposed to the "Date Announced" field.

[Insert Table 2 about here.]

Panels B and C of Table 2 report the averages for our bid announcement return measures, *Target CAR (-2, +2)* and *Target CAR (-63, +2)*. The first row of Panels B reveals that the target average announcement return, *Target CAR (-2, +2)*, is 22.7% in target-initiated deals and 30% in bidder-initiated deals. Similarly, the longer window average target announcement return, *Target CAR (-63, +2)*, is 33.5% in target-initiated deals and 40.9% in bidder-initiated deals. The difference in mean returns is statistically significant at the 1% level for both CAR measures.

Differences in mean premia across initiating parties remain significant after we also categorize deals by payment method and acquisition legal form. There is one exception. The difference in mean premia for tender offers is no longer statistically significant, which may reflect the smaller sample of tender offers compared to other deal types.

Offenberg and Pirinsky (2015) argue that high levels of bidder-specific synergies can lead bidders to initiate deals with targets using cash tender offers to reduce the likelihood of competing bids. This behavior yields a negative relationship between target-initiation and tender offer indicators. To control for a possible confounding tender offer effect on bid premia, we include a tender offer indicator in our subsequent regressions, along with a target-initiated indicator. As we demonstrate in the next section, a statistically significant negative effect of target-initiation on bid premia continues to hold after controlling for tender offers.

Finally, we compare the two initiating party samples by *Deal Value to EBITDA* ratios. Row 1 of Panel D reveals that the average *Deal Value to EBITDA* ratio is 43.8% in target-initiated deals and 102% in bidder-initiated deals. The 58.3 percentage point difference is

significant at the 5% level. Median values of the *Deal Value to EBITDA* multiples are -16.6% and 6.2% for target- and bidder-initiated deals, respectively, and the difference is again significant, but are considerably lower than their mean values indicating the influence of large outliers in the distribution.

IV. The Determinants of Deal Initiation Party

A. Univariate Analysis

In Panel A of Table 3, we compare measures of target financial distress across the two initiation samples and find significant differences. In target-initiated deals, targets have lower Altman's Z-scores, interest coverage ratios, and S&P long-term credit ratings than in bidder-initiated deals. The percentage of targets with stock prices below $5 (63 trading days before the bid announcement) is significantly higher in target-initiated deals as well.

Panel B summarizes our operating and stock performance measures in the pre-merger period for the two deal initiation samples. We see that targets in target-initiated deals appear to underperform their benchmarks in the stock market. The average target buy-and-hold abnormal return in the three years prior to the merger announcement (adjusted for the control portfolio buy-and-hold return) is 12.6% for target-initiated deals and 29% for bidder-initiated deals. The difference in means between bidder and target-initiated samples is statistically significant at the 5% level. One year target buy-and-hold abnormal returns are also significantly lower for target-initiated deals relative to bidder-initiated deals. Except for industry-adjusted ROA, inferior target stock performance in target-initiated deals does not carry over to the operating performance measures we examine. That is, the average one and three year changes in industry-adjusted Tobin's Q, sales, and market share growth rates.

[Insert Table 3 about here.]

Panel C of Table 3 presents means and medians for our three financial constraint measures, namely the SA, KZ, and WW indices for the two deal initiation samples. The SA Index has a mean (median) of -2.87 (-2.93) for target-initiated deals and -2.99 (-3.04) for bidder-initiated deals. Mean and median differences are 0.12 and 0.11, respectively, which are statistically significant at the 1% level. The results are similar using the WW Index. However, the KZ Index produces just the opposite findings.[20] Using the SA and WW indices, we conclude that the typical target firm in the target-initiated sample is more financially constrained than in the bidder-initiated sample.

Finally, in Panel D of Table 3, we analyze how proxies for industry-specific and economy-wide shocks affect firms in the two deal initiation samples. The industry shock index, the time series indicators for industry shock indices (Harford (2005)) and the two industry M&A activity measures are not statistically different from each other. However, in the 2001 economic recession, a significant difference is observed where 11% of bidder-initiated deals are announced, while a larger 16.2% of target-initiated deals are announced.

B. Probit Regressions

[20] As discussed by Hadlock and Pierce (2010), correlations between the SA and WW indices are quite high (the correlation in our sample is 0.78, which is close to the Pierce and Hadlock's (2010) estimate of 0.8), but the correlation of the SA and the KZ indices is negligible (our sample produces a correlation coefficient of -0.11).

To address potential selection issues regarding deal initiating party choice, we estimate a probit regression model for target-initiated deals. Control variables are grouped into five categories: target financial distress measures (*Altman's Z-score, Liquidity*), target performance measures (*Change in ROA Over the Past 3 Years*, *BHAR Over the Past 1 Year*), target industry competition (*High HHI* indicator), target financial constraint measures (*SA-Index*) and economic shock measures (*Industry Shock Index*, and the *2001 and 2008 Economic Recession* indicators).

The probit regressions also include a control for *Prior Industry Target-Initiated Deal & Auction Activity* to capture the added incentives for target firms to initiate deals so as to choose a friendly acquirer. This variable is measured by the total number of target-initiated or auction deals in a target's industry (defined by 2-digit SIC codes) divided by the total number of completed mergers in the industry in the two years prior to the initial merger announcement date (ODA field in the SDC M&A database). Aktas et al. (2010) use a target's institutional ownership measures and Tobin's Q to predict target-initiated deals. They find that a target's institutional ownership (percentage of shares owned) and institutional shareholder concentration (Herfindahl-Hirschman Index of institutional shareholdings) have significant predictive power for target-initiated deals. Thus, we include these variables in our set of controls. The final set of control variables includes industry fixed effects. Since economic recession indicators are highly correlated with specific year fixed effects, we exclude year fixed effects from these regressions.

The results of our selection regressions are summarized in Table 4. Regressions in Columns (1) and (2) are identical, except Column (1) excludes the target's two institutional ownership variables and Tobin's Q. Interestingly, neither institutional ownership variable is significant. One concern with this specification is that the target Tobin's Qs are correlated with

Altman's Z-scores (correlation of 0.59), which may raise multicollinearity concerns. Thus, we estimate probit regressions with and without these variables to assess their impact on our results.

[Insert Table 4 about here.]

The significant variables in Column (1) are target *Liquidity, Change in ROA Over the Past 3 Years*, the *High HHI* indicator, the *SA-Index, Prior Industry Target-Initiated Deal & Auction Activity*, and the *2001 Economic Recession* indicator. Holding all of the other variables at their means, a one standard deviation increase in the financial constraint measure, the *SA-Index* (a 0.49 increase), raises the probability of a target-initiated deal by 6%. For other variables, the marginal effects are a 6.1 percentage points increase for the *High HHI* indicator (for an incremental change from zero to one) and 3.1 percentage points decrease for the *Change in ROA Over the Past 3 Years* variable (for a one standard deviation increase). The deals announced during the 2001 economic recession are 10 percentage points more likely to be target-initiated deals than at other times. However, the 2008 economic recession indicator is not a significant predictor of deal initiation. As such, the two economic recessions have quite different impacts on takeover market dynamics.[21] These results are consistent with our first two hypotheses. Target financial and competitive weakness (Hypothesis 1) and negative industry-specific and economy-wide shocks (Hypothesis 2) increase the likelihood of a target-initiated deal.

Column (2) includes three additional controls, but they all are insignificant. In contrast, Aktas et al. (2010) report significant negative coefficients for a target's institutional ownership

[21] This may be due to their different economic magnitudes or particular industries that are more adversely affected by the downturn and M&A activity tends to be concentrated in a small number of changing industries.

and Tobin's Q and a significantly positive coefficient for the institutional shareholding concentration. However, estimating a regression model analogous to Aktas et al. (2010), we are unable to replicate their results. This disparity could be due to the different sample selection criteria in their study (e.g., they require deal value to exceed $100 million).[22]

V. The Determinants of Premia Paid to Target Firms

In Section III.C, we find that the deal initiating party has a significant association with the bid premia. We now re-visit the effects of deal initiation choice on bid premia, target CARs, and deal value to EBITDA multiples in a multivariate framework, where we include variables to test Hypothesis 3. Control variables are grouped into six categories: deal characteristics (*Percent Cash, Tender, Asset Relatedness, Acquirer Termination Fee, Target Termination Fee, Toehold, Relative Size*), acquirer characteristics (*ROA* and *Tobin's Q)*, target performance measures (*Change in ROA Over the Past 3 Years*, *BHAR Over the Past 1 Year*), target financial distress measures (*Altman's Z-score, Liquidity*), target industry competitiveness (*High HHI* indicator), a

[22] Finally, we investigate whether target financial weakness and financial constraints (Hypothesis 1) are more relevant during industry-specific or economy-wide shock periods (Hypotheses 2). For instance, financially distressed target firms may be particularly vulnerable to shocks and have greater incentives to contact potential acquirers in these periods. To test the significance of this effect, we interact several of the target financial weakness and financial constraint measures with economic shock measures and include them as control variables in our probit regressions. Consistent with this conjecture, the results indicate that underperforming targets (measured by *Change in ROA Over the Past 3 Years*) and financially constrained targets (measured by the *SA-Index*) initiate deals more often during the 2001 economic recession. A similar effect is present when the *Industry Shock Index* variable is interacted with a target's *Altman's Z-score* and *BHAR Over the Past 1 Year.* Due to space constraints, these results are provided in Table A-1 of the Internet Appendix.

target financial constraint measure (*SA-Index*), and a target industry-specific shock measure (*Industry Shock Index*). Year and industry fixed effects are also included as controls.[23]

Table 5 presents regression estimates of bid premia, deal announcement CARs, and excess deal multiples. The dependent variables in Columns (1)-(4) are *Bid Premium*, *Target CAR (-2, +2)*, *Target CAR (-63, +2)*, and a *Deal Value to EBITDA* multiple, respectively. Regression estimates indicate that the deal initiation party significantly affects offer premia and this result holds across different bid premium measures. In Column (1), *Bid Premium* is significantly reduced economically for *Target-Initiated* deals. The -0.126 coefficient estimate indicates that targets, on average, receive 12.6 percentage points lower premia when they initiate deals. *Target-Initiated* coefficients in Columns (2) and (3) are also economically and statistically significant. In Column (4), we find that *Deal Value to EBITDA* multiples are 48.5 percentage points lower in target-initiated deals, although statistical significance of the coefficient estimate is marginal.[24, 25]

All four regressions in Table 5 include variables capturing the two types of economic factors posited by Hypotheses 1 and 2 to motivate targets to initiate deals. Since the *Target-Initiated* indicator is statistically significant and economically large, even after controlling for all of these economic motives, we conclude that these economic factors have a limited capacity to

[23] We exclude target size since it is highly correlated with the SA-Index. We also exclude the auction deal indicator, although the results are very similar with its inclusion.

[24] We replicate these regressions after excluding all of the control variables capturing target financial and competitive weakness, target financial constraints, and industry specific shocks (Table A-2, Internet Appendix). As the first row of Table A-2 indicates, the *Target-Initiated* indicator yields very similar results to the estimates reported in Table 5.

[25] In untabulated analysis, we find that the results shown in Table 5 continue to hold with alternative measures of target financial distress, operating and stock performance, financial constraints, and industry shocks.

explain the lower premia in target-initiated deals. If the reverse were true (as in a typical omitted variable bias case), then including these control variables should lower the *Target-Initiated* deal coefficient in the offer premium regressions. Thus, Table 5 fails to support Hypothesis 3.

[Insert Table 5 about here.]

However, a weaker form of Hypothesis 3 could still hold. Although these three economic factors that motivate target deal initiation cannot fully explain takeover premia, they could mitigate or exacerbate the premia received in target-initiated deals. For instance, the premium gap between target- and bidder-initiated deals may be much larger for financially distressed vs. financially healthy target firms. To examine if the effect of the *Target-Initiated* indicator on the takeover premia depends upon these three economic factors or other deal initiation factors, we interact the *Target-Initiated* indicator with each of these factors separately and re-estimate the same regressions shown in Table 5 with each interaction term included as an extra control.

Table 6 reports these regression results. In Panel A, we interact the *Target-Initiation* indicator with the target's *Altman Z-score.* The control variables, also used in Table 5, are suppressed to conserve space. In this model, we expect a positive interaction term, which indicates that the negative marginal effect of target initiation rises as a target's Altman Z-score falls (since scores rise with a firm's financial health). Thus, a positive interaction term indicates that the premium gap between target- and bidder-initiated deals is lower for financially healthy targets. However, as the estimates indicate, the interaction term's coefficient is statistically indistinguishable from zero suggesting that target financial health does not moderate the effect.

[Insert Table 6 about here.]

We interact a *Target-Initiated* indicator with the *BHAR Over the Past 1 Year* and the *SA-Index* and the *Industry Shock Indices* in the remaining panels of Table 6. The results indicate that the interaction terms are statistically insignificant.[26] In untabulated results, we perform a similar analysis with alternative measures of target financial distress, pre-merger operating performance, and financial constraints and we observe similar findings. Given these results, we conclude that target financial and economic weakness, financial constraints, and negative economic shocks have weak power to explain the lower takeover premia in target-initiated deals (Hypothesis 3), possibly because the market previously discounted target firm stock prices for these problems.

VI. The Information Asymmetry Hypothesis

The results of the OLS regressions in Table 5 indicate that target firms receive significantly lower premia, deal announcement CARs, and deal value to EBITDA multiples when they initiate deals. One potential concern with this finding is that target firms are optimally deciding to initiate deals. Thus, target firms are self-selecting into the two deal initiation samples. If unobservable factors, such as target manager private information, which can motivate target deal initiations, also affect takeover premia, then the target-initiated deal coefficient would capture the effects of these unobserved factors. Endogeneity of the target-initiation decision can create a correlation with the error term in the bid premium equation, which left unaddressed, could bias the coefficient estimates of the explanatory variables. We use a Heckman (1979) two-step model to address this potential self-selection bias. The first step involves estimating a

[26] When we include measures for both hypotheses in a single regression, all of the interaction terms are insignificant.

selection equation for the target-initiation decision. The second step involves estimating the effects of the control variables and the estimated inverse Mills ratio on the bid premia.[27]

The selection equation error term represents a part of a target's deal initiation decision not captured by the observable explanatory variables. As such, the error term captures a target's private information, as well as the effects of other omitted or unobservable determinants. As Prabhala and Li (2008) demonstrate, the expected value of the error term, conditional upon the target's deal initiation decision, is equal to the inverse Mills ratio. Thus, testing for self-selection bias is equivalent to testing for the existence of private information held by target firm managers.

Interpreting the results of the self-selection model as reflecting an estimate of target managers' private information enables us to directly test the Information Asymmetry Hypothesis (Hypothesis 4), which predicts that target firms receive lower premia when they initiate deals as this decision reveals to potential bidders the target's negative private information. A significantly negative inverse Mills ratio in the outcome equation indicates that private information held by target managers has, on average, a negative effect on takeover premia.

Our identifying instrument in this first step equation is *Prior Industry Target-Initiated Deal & Auction Activity*, which passes the IV relevance condition given its significant positive relation to the target-initiation decision (shown in Column (1) in Table 4). To pass the

[27] In the original Heckman (1979) model, the outcome variable is observable only for the selection subsample. As such, the outcome equation is estimated for this subsample. In our case, the outcome variable, *Bid Premium*, is observed in both target- and bidder-initiated deals. Thus, we estimate the outcome equation using the entire sample of deals. The only modification to the Heckman (1979) procedure is the need to include the estimated inverse Mills ratio for the non-selected group (bidder-initiated deals) and a standard errors correction to the coefficients in the outcome equation (Greene (1981)). For similar applications of the Heckman (1979) model, see Puri (1996), Gande, Puri, Saunders, and Walter (1997), Gande, Puri, and Saunders (1999), and Golubov, Petmezas, and Travlos (2012).

exclusivity condition, the IV must only affect the target offer premia through the target-initiation decision. Firms that operate within the same industry may face similar motivations and trade-offs before putting their firms up for sale. Thus, their deal initiation decisions are likely to be positively related to the frequency of prior target-initiated and auction deals in their industries. Furthermore, there is no clear economic rationale for *Prior Industry Target-Initiated Deal & Auction Activity* affecting the target firm's offer premium directly, as the effect of deal initiation on offer premia is captured by the target-initiated indicator. In the second step equation, we regress target premia on the control variables in Table 5's OLS regressions, augmented by the first step inverse Mills ratio.[28]

In estimating the second step regressions, we use each of our four measures of target premia as the dependent variable. Since the choice of target premia affects the number of available observations, we re-estimate the first step regression with the same set of observations used in the second step equation to obtain the appropriate inverse Mills ratio estimates for each of the four target premia measures. The key coefficient estimate of interest in the second step regressions is the inverse Mills ratio, denoted as the *Target Information* variable.

Examining Table 7, we find that in all four regressions, the *Target Information* variable and the correlations of the error terms in the selection and outcome equations (rho) are significantly negative. These results are consistent with a target manager's private information leading them to initiate deals, and where this very same private information leads to lower target premia. The types of valuable private firm-specific information that target managers could

[28] Since inclusion of the institutional ownership variables in probit regressions reduces the sample size without providing additional insight into why target firms initiate deals, we calculate the inverse Mills ratio using the model estimates in Column (1) of Table 4, which excludes the institutional ownership variables.

possess include undisclosed sales and profit forecasts, R&D projects and outcomes, financing issues, legal liabilities, and indications of financial difficulties, among others.[29] [30]

[Insert Table 7 about here.]

Significantly negative *Target Information* coefficients in Table 7 are consistent with the Information Asymmetry Hypothesis (Hypothesis 4). To further test the implications of this hypothesis, we assess whether target-initiated offer premia are lower when acquirer-target information asymmetry is relatively high. For instance, the acquirer's adverse selection problem can be worse when targets are more difficult to value. If Hypothesis 4 is true, then we should find a larger negative *Target Information* coefficient for targets with this trait.

[29] A bidder's adverse selection problem can be more severe when targets are larger. We control for this effect in our regressions by including a target's relative size to the acquirer. In untabulated tests, we also estimate OLS and self-selection regressions using greater deal value limits, such as $100 million and $500 million. The results are similar to those reported here, particularly for market based bid premia measures.

[30] We run further tests to assess whether the prior results are driven by the behavior of in-play target firms. First, we use Mulherin and Simsir's (2015) expanded "Hand-collected Original Date Announced" (HODA) dataset to identify in-play target firms not captured by the ODA field in SDC. We find that 41.7% (33.5%) of HODA (non-HODA) events are target-initiated. While target-initiation and early HODA dates may seem positively associated, our key findings hold if such in-play target firms are excluded (Table A-3 in the Internet Appendix). Second, we estimate target CARs using longer pre-announcement windows, such as over (-126, +2) and find similar results to CARs estimated over (-63, +2) (Table A-4 in the Internet Appendix). Third, we confirm in Table A-5 that target CARs using conventional event dates ("Date Announced" field in SDC) yields similar results. Hence, we conclude that the negative effect of target-initiation on bid premia is driven by factors other than the behavior of in-play target firms.

To measure the information asymmetry between merging firms, we construct variables correlated with the information asymmetry between target insiders and outside investors. Our conjecture is that this information asymmetry is similar to that between target insiders and acquirers. We utilize several well-known information asymmetry measures in our analysis:

1. Idiosyncratic volatility of target stock returns. Moeller, Schlingemann, and Stulz (2007) and Officer et al. (2009) measure information asymmetry with it.

2. Dispersion and accuracy of analyst forecasts of target earnings. High forecast dispersion and analyst forecast errors indicate larger disagreement among analysts and greater manager-investor information asymmetry (Krishnaswami and Subramaniam (1999); Thomas (2002)).

3. Target size (total assets). Larger firms typically experience greater information production activity by investors, analysts and outsiders, which should help bidders more accurately value larger targets (Barth, Kasznik, and McNichols (2001)).

4. Target R&D expenses (Officer et al. (2009)). Higher R&D intensity firms tend to be in early stages of risky investment projects that are more difficult to value.

5. The number and quality of acquirer financial advisors (Rau (2000); Bao and Edmans (2011); Krishnan and Masulis (2013)). The bidder's use of more high quality advisors is expected to lessen the adverse selection problems they face.

6. Target tangible asset intensity (Leary and Roberts (2010); Barth et al. (2001)). The value of a target's intangible assets may not be accurately captured by its financial statements. Thus, serious differences of opinion about intangible asset values may exist.

7. Target firm abnormal accruals (Kothari, Leone, and Wasley (2005)). Financial statements of targets are generally less informative when abnormal accruals are high (Lee and Masulis (2009)).

8. Distance from merger partner headquarters measured in miles. Geographically closer firms facilitate more informed bidding and give bidder's better access to local private information about a target (Coval and Moskowitz (2001); Uysal, Kedia, and Panchapagesan (2008)).

Next, we take an approach similar to Karpoff, Lee, and Masulis (2013) and use factor analysis to create a combined information asymmetry factor, which avoids an obvious multicolinearity problem that using multiple information asymmetry measures entail. The objective of factor analysis is to uncover the common underlying factor or factors captured by the information asymmetry measures discussed above. Details on the construction of the information asymmetry factor are provided in Table A-6 of the Internet Appendix.

To identify high and low information asymmetry subsamples, we calculate the sample median for the information asymmetry factor. Deals with above median information asymmetry measures are classified as high information asymmetry deals and the remainder as low information asymmetry deals. We estimate the Heckman (1979) procedure separately for the two subsamples using an identical set of control variables to that of Table 7. Because we have four target premium measures, we must estimate a total of eight regressions. The regressions estimates are displayed in Panel A of Table 8. Due to space limitations, we omit the coefficients on the control variables, which are consistent with those reported in Table 5.

[Insert Table 8 about here.]

Regression estimates indicate that the *Target Information* coefficient is significantly different for the high and low information asymmetry subsamples. While the coefficient estimate for this variable is significantly negative in all of the regressions, its magnitude is much larger in the high information asymmetry subsample. For instance, *Target Information* has a coefficient of -0.102 in the high information subsample and is only -0.049 in the low information asymmetry subsample (in Columns 1 and 2). The results are similar when the alternative target premium measures are used as dependent variables. In a majority of cases, the coefficient estimates of the *Target Information* variable in the high information asymmetry subsample are significantly more negative than their counterparts in the low information asymmetry subsample.

To investigate which of our information asymmetry proxies are driving the results in Panel A of Table 8, we create high and low information asymmetry subsamples based on whether individual information asymmetry measures are above or below their respective median values. In Panels B-D, information asymmetry subsamples are based on target analyst forecast errors, acquirer financial advisor quality, and target idiosyncratic volatility. The results indicate that *Target Information* is, on average, significantly negative in the high information asymmetry subsample, but is either insignificant or less negative for low information asymmetry firms.

Note that conventional information production methods employed during merger negotiations, such as internal screening and hiring due diligence advisors, investment banks, and consultants, are likely to provide very useful information to potential acquirers. However, full discovery of a target manager's private information is unlikely, as targets are particularly cautious about revealing sensitive information to bidders about their cost structures, production

technologies, R&D projects, sales projections, or the evolution of consumer behavior in their markets. Thus, the ultimate information asymmetry between merging firms is likely to be large enough to reflect itself in a substantially lower offer price.

7. Signaling of Private Information by Target Firms

If the adverse selection problem between merging firms has a negative impact on bid premia, then target firm managers and shareholders with more positive information should have incentives to signal their private information to bidders during merger negotiations (Spence (1973)). While the optimal signaling device may depend upon target and acquiring firm characteristics, some observable approaches could be employed, enabling us to investigate ways target firms signal their private information to bidders. We consider two signaling methods. First, target shareholders would be adversely affected by post-merger valuation declines in target assets if they receive acquirer firm stock as a payment. Thus, stock payments could signal a target firm's willingness to share the risk with a bidder and would indicate that target managers have no seriously negative information about the target's asset values. In addition, targets could retain due diligence advisors (auditors) at an additional expense to certify the accuracy of their financials, operations, and other business characteristics that may affect their values. Even though acquiring firms may want to rely on the opinions of their own due diligence advisors, they may still benefit from the opinions of target firm due diligence advisors, especially when the target advisors have access to information that is not easily accessible by outside advisors.

Target firms have stronger signaling incentives when information asymmetry between the merging firms is high. As such, we first classify deals as having high information asymmetry when their information asymmetry factor is high (top quartile of targets) and further classify

them by method of payment (all cash vs. any stock) and target advisor retention status (retained vs. not retained). As a final step, we run self-selection regressions to determine whether a target's private information has similar effects on bid premia in these subsamples. If target firms manage to signal their private information to acquirers when there is high information asymmetry between the two, then the adverse effect of a target's private information on bid premia should be mitigated compared to those cases where target firms do not take any signaling action.

As Table 9 indicates *Target-Information* has large and significantly negative coefficients in all cash deals, while it has mostly small and insignificant coefficients for any stock deals. In other words, the adverse effect of a target's private information on bid premium is high when the target demands cash as the acquisition financing method, while its effect is lower when a target signals its quality by accepting stock as the method of payment. The other signaling method in Panel B reveals that the adverse effect of a target's private information on bid premia is higher when target firms do not retain any due diligence advisor than when they do.[31] [32]

[Insert Table 9 about here.]

[31] Another possible signaling device is contingent payment bid or earn-out. Interestingly, the use of earn-outs in public-public deals is rare (e.g., there are 11 earn-outs in our sample). We also investigate whether prior strategic alliances, joint ventures, or equity stakes between merger partners appear to be used to reduce asymmetric information. There are 106 deals where merging firms have such a prior relationship, but the sample size drops to 14 when we focus on high information asymmetry deals, which preclude a serious statistical analysis of this issue.

[32] The results are weaker when high information asymmetry deals are defined based on the sample median. This evidence suggests that target firms use signaling devices only when the adverse selection problem is severe.

The results suggest that target firms may use the method of payment and due diligence advisors to reduce bid premia discounts in target-initiated deals, especially if information asymmetry is severe. However, we do not claim that these signaling decisions are always positive NPV actions, as we do not have enough information about how costly these signaling actions are to target firms.

VIII. Conclusion

From 1997-2012, about 35% of the deals in our sample are initiated by target firms. In target-initiated deals, target firms contact potential bidders and express their willingness to be sold. Our study investigates the factors that lead target firms to initiate a sale of control and the subsequent merger outcomes that follow from such decisions.

Target firms often show signs of financial and economic distress and binding financial constraints prior to their deal initiation. The relative frequency of target-initiated deals also increases during economic recessions. These results are consistent with the hypotheses that financially distressed targets seek to avoid expected bankruptcy costs, financially constrained targets seek to merge with cash rich or financially strong partners, and underperforming and inefficient target firms are more willing to be taken over during economic recessions.

Deal initiating target firms receive significantly lower bid premia, announcement CARs, and deal value to EBITDA multiples compared to targets in bidder-initiated deals. We investigate whether the factors that motivate targets to initiate deals also explain the low premia in target-initiated deals. While we find evidence that financially distressed target firms receive modestly lower deal multiples, the target-initiated deal indicator remains significantly negative even after controlling for target financial distress. Thus, we conclude that target financial

weakness is not the primary cause of the premium gap between bidder- and target-initiated deals. Likewise, inclusion of a target financial constraint or negative industry and economy-wide shock indicators does not significantly diminish the effect of target-initiation on takeover premia.

Target firms self-select to initiate deals with bidders. As a result, targets initiating M&A deals have different characteristics from targets in bidder-initiated deals. Controlling for sample selection bias using a Heckman's (1979) two-step procedure, we estimate the unobservable factors motivating target deal initiation decisions from the inverse Mills ratio of the first step self-selection model. We find that this ratio is associated with significantly lower bid premia and target bid announcement CARs. These findings are consistent with the Information Asymmetry Hypothesis, which posits that information asymmetry between merger partners leads to an adverse selection problem for potential buyers causing them to discount bid prices. We also find the self-selection problem is more severe for deals characterized by high target information asymmetry. This evidence provides added support for the Information Asymmetry Hypothesis.

One explanation for the weak explanatory power of adverse target financial and competitive conditions to explain the low takeover premia observed in target-initiated deals is that target stock prices have incorporated most of the negative information associated with their poor current economic situation prior to the deal announcements. Yet, the fact that among those firms with similar publicly known weaknesses, a particular target firm decides to sell itself when its stock price is seriously depressed, can reveal additional negative private information held by target managers. Moreover, it is also possible that firms with a weak financial or competitive position are more vulnerable to added negative news. Finally, our financial distress and weakness measures are drawn from historical data, which may poorly measure the current

financial condition of target firms during deal negotiations. We leave the answers to these questions for future research.

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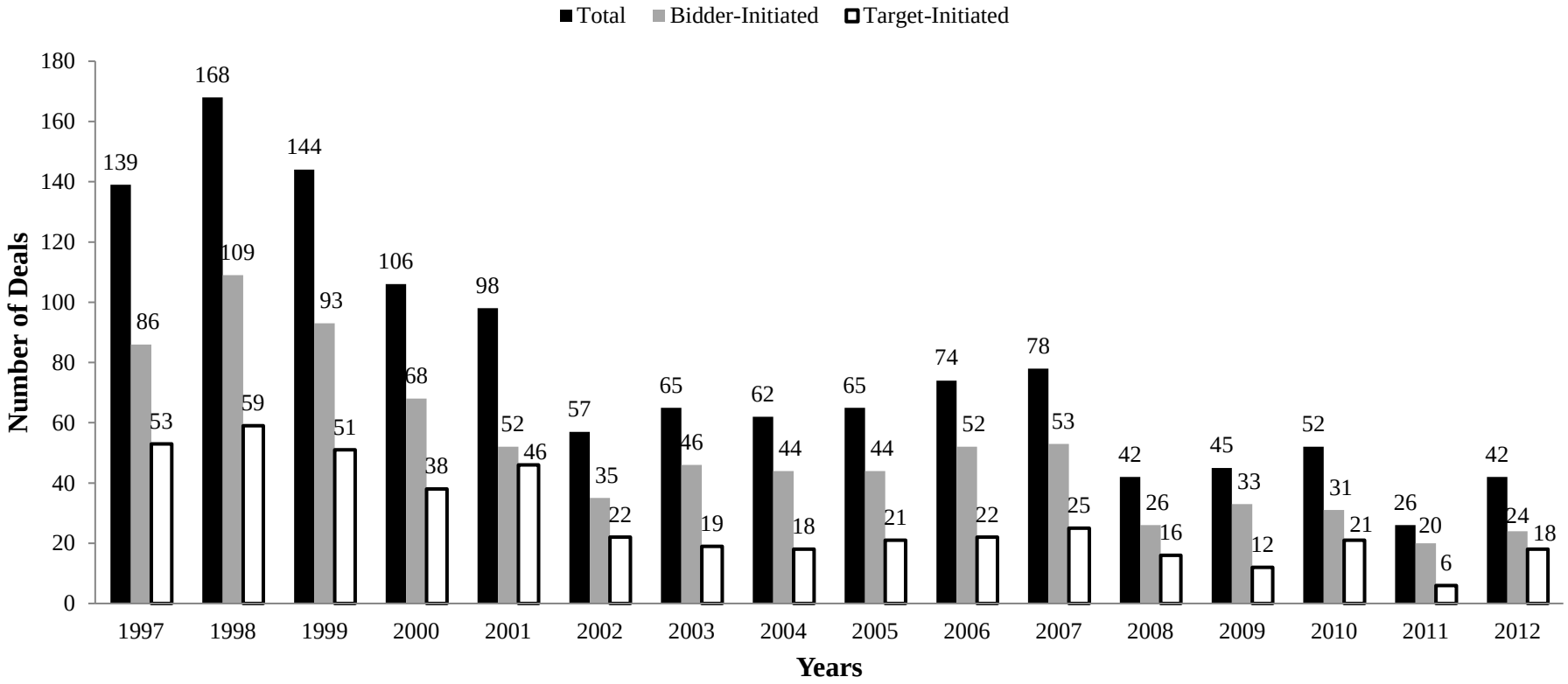

Figure 1. Deal Initiation Over Time

This figure illustrates the distribution of bidder and target-initiated deals over years. We draw our sample from the SDC database using the following restrictions: deal value is greater than $5 million, both acquirer and target are non-financial and non-utility public firms located in the United States, form of the transaction is either merger or acquisition of majority interest, deal status is completed, and the deal announcement date falls between 1/1/1997-12/31/2012. This sample is then matched with the CRSP and Compustat databases. Deal initiation data comes from the SEC filings of the merging firms.

Table 1. Data Summary

This table summarizes the selected variables used in our analysis. We draw our sample from the SDC Database using the following restrictions: deal value is greater than $5 million, both acquirer and target are public companies located in the United States and they are not finance or utility firms, form of the transaction is either merger or acquisition of majority interest, deal status is completed, and the deal announcement date falls between 1/1/1997-12/31/2012. This sample is then matched with the CRSP and Compustat databases. Deal initiation data comes from the SEC filings of the merging firms. *Acquirer CAR (-2,+2)* (*Target CAR (-2,+2)*) is the abnormal returns to acquirer (target) firms over the (-2,+2) period. *Target CAR (-63,+2)* is calculated similarly. The normal returns are calculated using the market model with an estimation window of (-316,-64). *Bid Premium* is the offer price divided by the target stock price 63 trading days before the announcement of the merger, minus 1. The *Deal Value to EBITDA* variable is the deal value / EBITDA value minus the average deal value / EBITDA value of the group of benchmark deals, minus 1. The event study procedure and the construction of the *Bid Premium* and the deal *Value to EBITDA* variables are explained in Appendix B. Due to space limitations, the definition and calculation of the deal and financial characteristics of the merging firms are explained in Appendix C.

	N	Mean	Median	Std. Dev	Min	Max
Panel A. Return & Premium Variables						
Bid Premium	1,571	0.538	0.442	0.601	-0.610	3.429
Target CAR (-2,+2)	1,636	0.264	0.219	0.269	-0.286	1.307
Target CAR (-63,+2)	1,636	0.366	0.331	0.443	-0.831	1.868
Deal Value to EBITDA	694	0.909	-0.035	3.003	-0.940	16.391
Acquirer CAR (-2,+2)	1,637	-0.019	-0.012	0.102	-0.625	0.688
Panel B. Deal Characteristics						
Percent Cash	1,588	0.447	0.321	0.451	0	1
Tender	1,639	0.220	0	0.414	0	1
Asset Relatedness	1,639	0.642	1	0.480	0	1
Relative Size	1,634	0.269	0.121	0.358	0	1.870
Acquirer Termination Fee	1,639	0.006	0.000	0.017	0	0.209
Target Termination Fee	1,639	0.052	0.046	0.049	0	0.635
Toehold	1,639	0.007	0.000	0.048	0	0.483
Auction	1,268	0.583	1	0.493	0	1
Panel C. Acquirer Characteristics						
Tobin's Q	1,626	2.632	1.953	2.100	0.640	13.253
Book Leverage	1,620	0.478	0.482	0.216	0.066	1.077
ROA	1629	0.077	0.099	0.144	-0.568	0.340
Sales Growth	1,617	0.301	0.115	0.699	-0.487	4.990
Size	1,629	11,732	2,000	24,249	18	130,730

Panel D. Target Characteristics						
Tobin's Q	1,609	2.133	1.583	1.695	0.539	11.197
Book Leverage	1,607	0.460	0.429	0.263	0.058	1.457
ROA	1,617	-0.027	0.053	0.270	-1.405	0.289
Sales Growth	1,604	0.276	0.091	0.749	-0.581	5.073
Size	1,617	1,286	214	3,759	10	28,355

Table 2. Deal Initiation and the Wealth Effects of Mergers on Target Shareholders

This table compares the CARs and bid premia received by target firms in bidder- and target-initiated deals. We draw our sample from the SDC Database using the following restrictions: deal value is greater than $5 million, both acquirer and target are public companies located in the United States and they are not finance or utility firms, form of the transaction is either merger or acquisition of majority interest, deal status is completed, and the deal announcement date falls between 1/1/1997-12/31/2012. This sample is then matched with the CRSP and Compustat databases. Deal initiation data comes from the SEC filings of the merging firms. *Target CAR (-2,+2)* is the abnormal returns to the target firms over the (-2,+2) period. *Target CAR (-63,+2)* accumulates abnormal returns over the (-63,+2) period. The normal (expected) returns are calculated using the market model with an estimation window of (-316,-64). *Bid Premium* is the offer price divided by the target stock price 63 trading days before the announcement of the merger, minus 1. The *Deal Value to EBITDA* variable is the deal value / EBITDA value minus the average deal value / EBITDA value of the group of benchmark deals, minus 1. The event study procedure and the construction of the *Bid Premium* and *Deal Value to EBITDA* variables are explained in Appendix B. *All Equity* consists of deals in which 100% of the total payment is paid with equity. *All Cash* consists of deals in which 100% of the total payment is paid with cash. *Tender* consists of only tender offer deals, and all other offers are classified as *Merger*. p-values are estimated using cross sectional variations only. Significance levels are denoted by an asterisk, * for 10%, ** for 5%, and *** for 1%.

	Target-Initiated			Bidder-Initiated			Difference (T-B)			
	N	Mean	Median	N	Mean	Median	Mean	p-value	Median	p-value
Panel A. Bid Premium										
Entire Sample	424	0.487	0.388	796	0.585	0.491	-0.098***	0.005	-0.103***	0.000
All E	136	0.457	0.328	227	0.608	0.510	-0.150**	0.042	-0.182***	0.002
All Cash	139	0.508	0.422	293	0.597	0.487	-0.089*	0.087	-0.065**	0.032
Tender	84	0.588	0.438	216	0.626	0.537	-0.038	0.605	-0.098	0.168
Merger	340	0.462	0.378	580	0.570	0.473	-0.108***	0.008	-0.094***	0.000
Panel B. Target CAR (-2,+2)										
Entire Sample	448	0.227	0.179	818	0.300	0.247	-0.073***	0.000	-0.068***	0.000
All Equity	145	0.161	0.113	233	0.241	0.200	-0.081***	0.003	-0.087***	0.001
All Cash	145	0.310	0.276	297	0.363	0.320	-0.053*	0.058	-0.043**	0.045
Tender	85	0.376	0.321	216	0.383	0.333	-0.007	0.852	-0.012	0.782
Merger	363	0.192	0.156	602	0.270	0.227	-0.078***	0.000	-0.072***	0.000

Panel C. Target CAR (-63,+2)										
Entire Sample	448	0.335	0.284	818	0.409	0.366	-0.074***	0.004	-0.081***	0.001
All Equity	145	0.262	0.174	233	0.375	0.309	-0.113**	0.022	-0.135***	0.005
All Cash	145	0.407	0.358	297	0.484	0.426	-0.077*	0.070	-0.068*	0.096
Tender	85	0.526	0.493	216	0.507	0.446	0.019	0.733	0.047	0.947
Merger	363	0.290	0.250	602	0.374	0.334	-0.084***	0.003	-0.083***	0.001
Panel D. Deal Value to EBITDA										
Entire Sample	181	0.438	-0.166	363	1.022	0.062	-0.583**	0.026	-0.222***	0.003
All Equity	54	0.489	-0.072	99	0.818	-0.130	-0.329	0.459	-0.058	0.559
All Cash	58	0.866	-0.085	140	1.254	0.147	-0.387	0.446	-0.232	0.222
Tender	29	0.703	-0.263	107	0.578	0.058	0.124	0.795	-0.321	0.359
Merger	152	0.388	-0.125	256	1.207	0.074	-0.819***	0.009	-0.199***	0.005

Table 3. Target Financial and Competitive Weakness, Financial Constraints, and Industry and Economic Shocks by Deal Initiation Party

This table summarizes the relation between target financial and competitive weakness, financial constraints, and industry specific and economy wide shock measures with respect to the deal initiation groups. We draw our sample from the SDC Database using the following restrictions: deal value is greater than $5 million, both acquirer and target are public companies located in the United States and they are not finance or utility firms, form of the transaction is either merger or acquisition of majority interest, deal status is completed, and the deal announcement date falls between 1/1/1997-12/31/2012. This sample is then matched with the CRSP and Compustat databases. Deal initiation data comes from the SEC filings of the merging firms. The definitions of financial distress, operating and stock performance, financial constraints, and shock variables are explained in Appendix C. The p-values of the two sample mean comparison tests and the Wilcoxon rank sum tests are reported in the respective parts of the table. Significance levels are denoted by an asterisk, * for 10%, ** for 5%, and *** for 1%.

	Target-Initiated (T)			Bidder-Initiated (B)			Difference (T-B)			
Panel A. Target Financial Distress Measures	N	Mean	Median	N	Mean	Median	Mean	p-value	Median	p-value
Altman's Z-score	439	3.618	2.812	790	4.838	3.216	-1.220**	0.011	-0.404***	0.004
Interest Coverage Ratio	358	-24.464	2.261	631	1.763	3.641	-26.22**	0.014	-1.380***	0.001
Liquidity Ratio	443	0.545	0.572	803	0.563	0.580	-0.018	0.226	-0.007	0.287
Book Leverage	447	0.479	0.431	802	0.461	0.440	0.018	0.250	-0.010	0.838
S&P Long-Term Credit Rating	84	12.44	13.00	176	11.40	12.00	1.043**	0.013	1.000***	0.006
Current ratio below industry median and book leverage above industry median	450	0.291	0	818	0.253	0	0.038	0.143		
Stock Price on Day -63 Less Than $5	450	0.331	0	818	0.233	0	0.098***	0.000		
Panel B. Target Operating and Stock Performance Measures	N	Mean	Median	N	Mean	Median	Mean	p-value	Median	p-value
Over the past three years:										
Change in ROA	434	-0.246	-0.013	778	-0.086	0.040	-0.161***	0.000	-0.053***	0.003
Change in Tobin's Q	376	1.227	0.258	684	1.373	0.136	-0.146	0.576	0.122	0.564
Sales Growth	385	1.147	0.043	718	1.293	0.065	-0.146	0.641	-0.022	0.501
Market Share Growth	385	1.108	0.153	718	1.253	0.153	-0.145	0.604	0.000	0.417
BHAR	336	0.126	-0.042	646	0.290	0.043	-0.164**	0.037	-0.086**	0.025
Over the past one year:										
Change in ROA	447	-0.090	0.001	809	-0.027	0.018	-0.063***	0.000	-0.016**	0.014
Change in Tobin's Q	445	0.285	-0.038	804	0.381	-0.022	-0.096	0.268	-0.016	0.568
Sales Growth	443	0.162	-0.001	803	0.162	0.004	-0.001	0.985	-0.005	0.285

Market Share Growth	443	0.203	0.047	803	0.206	0.049	-0.003	0.949	-0.002	0.299
BHAR	417	-0.013	-0.039	741	0.054	-0.014	-0.067**	0.028	-0.026**	0.038

Panel C. Target Financial Constraints and Deal Initiation	N	Mean	Median	N	Mean	Median	Mean	p-value	Median	p-value
SA-Index	447	-2.875	-2.935	809	-2.991	-3.046	0.116***	0.000	0.112***	0.000
WW-Index	443	-0.245	-0.239	789	-0.267	-0.260	0.022***	0.000	0.021***	0.000
KZ-Index	424	-8.345	-1.040	749	-7.608	-1.205	-0.737	0.642	0.165	0.384

Panel D. Industry and Economic Shocks and Deal Initiation	N	Mean	Median	N	Mean	Median	Mean	p-value	Median	p-value
Industry Shock Index	450	-0.001	0.027	818	0.004	0.029	-0.005	0.813	-0.002	0.544
M&A Activity (value)	450	0.101	0.073	818	0.102	0.072	0.000	0.937	0.002	0.742
M&A Activity (number)	450	0.474	0.403	818	0.457	0.399	0.017	0.222	0.004	0.379
2001 Economic Recession	450	0.162	0	818	0.110	0	0.052***	0.008		
2008 Economic Recession	450	0.096	0	818	0.105	0	-0.010	0.590		
Time-series shock indicators										
Net Income / Sales Shock	450	0.318	0	818	0.333	0	-0.015	0.593		
Asset Turnover Shock	450	0.382	0	818	0.344	0	0.039	0.169		
R&D Shock	450	0.313	0	818	0.296	0	0.017	0.517		
Capital Expenditure Shock	450	0.291	0	818	0.253	0	0.038	0.143		
ROA Shock	450	0.318	0	818	0.284	0	0.034	0.203		
Employee Growth Shock	450	0.409	0	818	0.373	0	0.036	0.208		
Sales Growth Shock	450	0.369	0	818	0.358	0	0.011	0.705		

Table 4. Predicting Target-Initiated Deals

This table presents the results of the probit regressions. The dependent variable is target-initiated, which takes a value of 1 if the deal is classified as target-initiated, and 0 if bidder-initiated. We draw our sample from the SDC Database using the following restrictions: deal value is greater than $5 million, both acquirer and target are public companies located in the United States and they are not finance or utility firms, form of transaction is either merger or acquisition of majority interest, deal status is completed, and the deal announcement date falls between 1/1/1997-12/31/2006. This sample is then matched with the CRSP and Compustat databases. Deal initiation data comes from the SEC filings of the merging firms. Due to space limitations, the construction of the control variables are explained in Appendix C. z-values are in parentheses, below the reported coefficients. Significance levels are denoted by an asterisk, * for 10%, ** for 5%, and *** for 1%. All regressions include industry dummies (coefficients not reported).

	(1)	(2)
VARIABLES	*Target-Initiated*	*Target-Initiated*
Altman's Z-score	-0.0006	0.0013
	(-0.118)	(0.192)
Liquidity	-0.472**	-0.458**
	(-2.167)	(-2.068)
Change in ROA Over the Past 3 Years	-0.131*	-0.150**
	(-1.847)	(-2.009)
BHAR Over the Past 1 Year	-0.132	-0.132
	(-1.620)	(-1.559)
High HHI	0.162**	0.176**
	(1.964)	(2.095)
SA-Index	0.329***	0.303**
	(3.276)	(2.013)
Industry Shock Index	0.052	0.044
	(0.491)	(0.404)
2001 Economic Recession	0.253**	0.246**
	(2.170)	(2.076)
2008 Economic Recession	-0.104	-0.095
	(-0.667)	(-0.604)
Prior Industry Target-Initiated Deal & Auction Activity	0.652**	0.665**
	(1.991)	(2.020)
Institutional Shareholding Concentration		0.061
		(0.209)
Institutional Ownership		-0.002
		(-0.011)
Tobin's Q		-0.0137
		(-0.398)
Constant	0.645*	0.601
	(1.720)	(1.146)
Observations	1,067	1,049
LR chi-square statistic	44.86	45.48
Prob>LR chi-square	0.0001	0.0005
Industry dummies (SIC-1)	Yes	Yes

Table 5. Multivariate Analysis of Target Premia

This table presents the results of the OLS regressions. The dependent variables are *Bid Premium* (Column 1), *Target CAR (-2,+2)* (Column 2), *Target CAR (-63,+2)* (Column 3), and *Deal Value to EBITDA* (Column 4). We draw our sample from the SDC Database using the following restrictions: deal value is greater than $5 million, both acquirer and target are public companies located in the United States and they are not finance or utility firms, form of transaction is either merger or acquisition of majority interest, deal status is completed, and the deal announcement date falls between 1/1/1997-12/31/2012. This sample is then matched with the CRSP and Compustat databases. Deal initiation data comes from the SEC filings of the merging firms. *Target CAR (-2,+2)* is the abnormal returns to the target firms over the (-2,+2) period. *Target CAR (-63,+2)* accumulates abnormal returns over the (-63,+2) period. The normal (expected) returns are calculated using the market model with an estimation window of (-316,-64). *Bid Premium* is the offer price divided by the target stock price 63 trading days before the announcement of the merger, minus 1. The *Deal Value to EBITDA* variable is the deal value / EBITDA value minus the average deal value / EBITDA value of the group of benchmark deals, minus 1. The event study procedure and the construction of the *Bid Premium* and *Deal Value to EBITDA* variables are explained in Appendix B. *Target-Initiated* is 1 if the deal is classified as target-initiated, and 0 if bidder-initiated. Due to space limitations, the construction of the control variables are explained in Appendix C. t-values are in parentheses, below the reported coefficients. Significance levels are denoted by an asterisk, * for 10%, ** for 5%, and *** for 1%. Regressions include year and industry dummies (coefficients not reported).

	(1)	(2)	(3)	(4)
VARIABLES	*Bid Premium*	*Target CAR (-2,+2)*	*Target CAR (-63,+2)*	*Deal Value to EBITDA*
Target-Initiated	-0.126***	-0.074***	-0.109***	-0.485
	(-3.415)	(-4.399)	(-4.449)	(-1.621)
Percent Cash	-0.019	0.052**	0.047	1.088**
	(-0.224)	(2.060)	(1.260)	(2.145)
Tender	0.024	0.073***	0.052	-0.814*
	(0.506)	(2.991)	(1.591)	(-1.909)
Asset Relatedness	0.040	0.005	0.003	0.230
	(1.114)	(0.314)	(0.118)	(0.934)
Acquirer Termination Fee	1.512	-0.489	0.645	-6.015
	(1.322)	(-1.138)	(0.911)	(-0.634)
Target Termination Fee	3.503***	0.254	1.707***	5.774
	(4.793)	(1.587)	(4.868)	(1.101)
Toehold	0.727	-0.286	0.219	2.409
	(1.073)	(-1.196)	(0.648)	(0.606)
ln(relative size)	-0.056***	-0.028***	-0.061***	-0.0267
	(-4.951)	(-4.743)	(-7.881)	(-0.251)
Acquirer Tobin's Q	-0.003	0.0008	-0.012*	0.179
	(-0.303)	(0.199)	(-1.770)	(1.626)
Acquirer ROA	-0.145	0.046	-0.012	-4.452**
	(-0.818)	(0.613)	(-0.109)	(-2.257)
Altman's Z-score	-0.004*	-0.0034***	-0.005***	0.0715***
	(-1.791)	(-3.825)	(-3.321)	(2.824)
Liquidity	0.061	0.029	0.041	1.314

	(0.573)	(0.611)	(0.614)	(1.576)
Change in ROA Over the Past 1 Year	0.051	0.019	0.038	-1.051*
	(1.276)	(1.130)	(1.405)	(-1.955)
BHAR Over the Past 1 Year	-0.089**	-0.069***	-0.280***	0.116
	(-2.125)	(-4.999)	(-10.64)	(0.325)
High HHI	0.015	0.001	-0.014	-0.356
	(0.423)	(0.062)	(-0.585)	(-1.272)
SA-Index	0.066	0.035	0.045	-0.097
	(1.160)	(1.390)	(1.257)	(-0.219)
Industry Shock Index	-0.083	-0.020	-0.074*	-0.338
	(-1.160)	(-0.881)	(-1.788)	(-0.575)
Constant	0.353	0.173*	0.225	-1.013
	(1.624)	(1.897)	(1.625)	(-0.569)
Observations	1,005	1,037	1,037	453
Adjusted R-squared	0.187	0.183	0.300	0.136
Industry dummies (SIC-1)	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes

Table 6. Multivariate Analysis of Target Premia with Interaction Variables

This table presents results of the OLS regressions with interaction variables. The dependent variables are *Bid Premium* (Column 1), *Target CAR (-2,+2)* (Column 2), *Target CAR (-63,+2)* (Column 3) and *Deal Value to EBITDA* (Column 4). We draw our sample from the SDC Database using the following restrictions: deal value is greater than $5 million, both acquirer and target are public companies located in the United States and they are not finance or utility firms, form of transaction is either merger or acquisition of majority interest, deal status is completed, and the deal announcement date falls between 1/1/1997-12/31/2012. This sample is then matched with the CRSP and Compustat databases. Deal initiation data comes from the SEC filings of the merging firms. *Target CAR (-2,+2)* is the abnormal returns to the target firms over the (-2,+2) period. *Target CAR (-63,+2)* accumulates abnormal returns over the (-63,+2) period. The normal (expected) returns are calculated using the market model with an estimation window of (-316,-64). *Bid Premium* is the offer price divided by the target stock price 63 trading days before the announcement of the merger, minus 1. The *Deal Value to EBITDA* variable is the deal value / EBITDA value minus the average deal value / EBITDA value of the group of benchmark deals, minus 1. The event study procedure and the construction of the *Bid Premium* and *Deal Value to EBITDA* variables are explained in Appendix B. *Target-Initiated* is 1 if the deal is classified as target-initiated, and 0 if bidder-initiated. Regressions contain the control variables that are shown in Table 5, though their coefficients are not reported due to space limitations. The construction of the interacting variables is explained in Appendix C. t-values are in parentheses, below the reported coefficients. F-test tests to determine whether the coefficients of the *Target-Initiated* indicator and the interaction term are jointly equal to zero. Significance levels are denoted by an asterisk, * for 10%, ** for 5%, and *** for 1%.

	Bid Premium	*Target CAR (-2,+2)*	*Target CAR (-63,+2)*	*Deal Value to EBITDA*
Regression 1: Financial Distress Measure is *Altman's Z-score*				
Target-Initiated	-0.104**	-0.077***	-0.109***	-0.133
	(-2.00)	(-3.73)	(-3.49)	(-0.403)
Altman's Z-score	-0.002	-0.003***	-0.004***	0.092***
	(-0.72)	(-3.34)	(-2.65)	(2.920)
Altman's Z-score x Target-Initiated	-0.005	0.001	0.000	-0.075**
	(-0.89)	(0.30)	(-0.03)	(-2.29)
N	1005	1037	1037	453
F-test p-value	0.000	0.000	0.000	0.022
Regression 2: Target Performance Measure is *BHAR Over the Past 1 Year*				
Target-Initiated	-0.110***	-0.075***	-0.110***	-0.496*
	(-2.98)	(-4.50)	(-4.53)	(-1.732)
BHAR over the Past 1 Year	-0.079	-0.077***	-0.283***	0.256
	(-1.58)	(-5.02)	(-8.97)	(0.589)

BHAR Over the Past 1 Year x Target-Initiated	0.007	0.027	0.048	-0.611
	(0.09)	(0.89)	(0.92)	(-1.075)
N	1051	1085	1085	470
F-test p-value	0.005	0.000	0.000	0.132

Regression 3: Financial Constraints Measure is *SA-Index*

Target-Initiated	-0.323	-0.097	-0.347**	-1.698
	(-1.14)	(-0.86)	(-1.97)	(-1.012)
SA-Index	0.090	0.038	0.074*	0.049
	(1.54)	(1.30)	(1.89)	(0.087)
SA-Index x Target-Initiated	-0.067	-0.008	-0.081	-0.402
	(-0.74)	(-0.21)	(-1.43)	(-0.752)
N	1005	1037	1037	453
F-test p-value	0.002	0.000	0.000	0.231

Regression 4: Shock Measure is *Industry Shock Index*

Target-Initiated	-0.130***	-0.069***	-0.102***	-0.432*
	(-3.60)	(-4.09)	(-4.17)	(-1.702)
Industry Shock Index	-0.123	-0.026	-0.089**	-0.672
	(-1.62)	(-1.12)	(-2.05)	(-1.285)
Industry Shock Index x Target-Initiated	0.086	-0.036	0.046	0.342
	(0.72)	(-0.87)	(0.66)	(0.501)
N	1005	1037	1037	453
F-test p-value	0.001	0.000	0.000	0.234

Table 7. Selection Bias, Deal Initiation and Target Premia

This table presents the results of the multivariate regressions that control for the selectivity bias. The dependent variables are *Bid Premium* (Column 1), *Target CAR (-2,+2)* (Column 2), *Target CAR (-63,+2)* (Column 3), and *Deal Value to EBITDA* (Column 4). We draw our sample from the SDC Database using the following restrictions: deal value is greater than $5 million, both acquirer and target are public companies located in the United States and they are not finance or utility firms, form of transaction is either merger or acquisition of majority interest, deal status is completed, and the deal announcement date falls between 1/1/1997-12/31/2012. This sample is then matched with the CRSP and Compustat databases. Deal initiation data comes from the SEC filings of the merging firms. *Target CAR (-2,+2)* is the abnormal returns to the target firms over the (-2,+2) period. *Target CAR (-63,+2)* accumulates abnormal returns over the (-63,+2) period. The normal (expected) returns are calculated using the market model with an estimation window of (-316,-64). *Bid Premium* is the offer price divided by the target stock price 63 trading days before the announcement of the merger, minus 1. The *Deal Value to EBITDA* variable is the deal value / EBITDA value minus the average deal value / EBITDA value of the group of benchmark deals, minus 1. The event study procedure and the construction of the *Bid Premium* and the *Deal Value to EBITDA* variables are explained in Appendix B. *Target-Information* is the inverse Mills ratio estimated in the first step probit regressions. Due to space limitations, the construction of the control variables are explained in Appendix C. t-values are in parentheses, below the reported coefficients. Significance levels are denoted by an asterisk, * for 10%, ** for 5%, and *** for 1%. Regressions include year and industry dummies (coefficients not reported).

	(1)	(2)	(3)	(4)
VARIABLES	*Bid Premium*	*Target CAR (-2,+2)*	*Target CAR (-63,+2)*	*Deal Value to EBITDA*
Target Information	-0.078***	-0.045***	-0.067***	-0.310*
	(-3.61)	(-4.49)	(-4.58)	(-1.834)
Percent Cash	-0.011	0.052**	0.047	1.089**
	(-0.22)	(2.16)	(1.35)	(2.590)
Tender	0.023	0.073***	0.052	-0.818**
	(0.51)	(3.35)	(1.63)	(-2.270)
Asset Relatedness	0.039	0.005	0.002	0.227
	(1.10)	(0.32)	(0.11)	(0.811)
Acquirer Termination Fee	1.519	-0.485	0.651	-5.930
	(1.36)	(-0.92)	(0.85)	(-0.697)
Target Termination Fee	3.502***	0.253	1.705***	5.731*
	(9.95)	(1.56)	(7.23)	(1.762)
Toehold	0.727*	-0.285*	0.219	2.399
	(1.88)	(-1.68)	(0.89)	(0.708)
ln(relative size)	-0.056***	-0.028***	-0.061***	-0.026
	(-4.72)	(-5.07)	(-7.68)	(-0.287)
Acquirer Tobin's Q	-0.003	0.0008	-0.012*	0.179**
	(-0.30)	(0.17)	(-1.74)	(2.179)
Acquirer ROA	-0.146	0.046	-0.013	-4.458***
	(-0.98)	(0.68)	(-0.13)	(-2.780)
Altman's Z-score	-0.004*	-0.003***	-0.005***	0.073***

	(-1.85)	(-2.88)	(-2.90)	(3.977)
Liquidity	0.082	0.041	0.059	1.406*
	(0.87)	(0.94)	(0.93)	(1.914)
Change in ROA Over the Past 3 Years	0.055*	0.021	0.042*	-1.097***
	(1.71)	(1.44)	(1.93)	(-2.856)
BHAR Over the Past 1 Year	-0.083**	-0.066***	-0.276***	0.139
	(-2.45)	(-4.14)	(-11.79)	(0.488)
High HHI	0.007	-0.003	-0.020	-0.402
	(0.21)	(-0.19)	(-0.85)	(-1.455)
SA-Index	0.051	0.026	0.031	-0.158
	(1.06)	(1.17)	(0.98)	(-0.397)
Industry Shock Index	-0.084	-0.022	-0.076**	-0.355
	(-1.49)	(-0.84)	(-2.01)	(-0.755)
Constant	0.259	0.117	0.142	-1.394
	(1.44)	(1.39)	(1.17)	(-0.949)
Observations	1,005	1,037	1,037	453
Adjusted R-square	0.187	0.183	0.300	0.137
Industry dummies (SIC-1)	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes

Table 8. Information Asymmetry, Deal Initiation and Target Premia

This table presents the results of the multivariate regressions that are run on specific subsamples, which are created with respect to the information asymmetry between merging parties. The dependent variables are *Bid Premium* (Columns 1 and 2), *Target CAR (-2,+2)* (Columns 3 and 4), *Target CAR (-63,+2)* (Columns 5 and 6), and *Deal Value to EBITDA* (Columns 7 and 8). We draw our sample from the SDC Database using the following restrictions: deal value is greater than $5 million, both acquirer and target are public companies located in the United States and they are not finance or utility firms, form of transaction is either merger or acquisition of majority interest, deal status is completed, and the deal announcement date falls between 1/1/1997-12/31/2012. This sample is then matched with CRSP and Compustat databases. Deal initiation data comes from the SEC filings of the merging firms. *Target CAR (-2,+2)* is the abnormal returns to the target firms over the (-2,+2) period. *Target CAR (-63,+2)* accumulates abnormal returns over the (-63,+2) period. The normal (expected) returns are calculated using the market model with an estimation window of (-316,-64). *Bid Premium* is the offer price divided by the target stock price 63 trading days before the announcement of the merger, minus 1. The *Deal Value to EBITDA* variable is the deal value / EBITDA value minus the average deal value / EBITDA value of the group of benchmark deals, minus 1. The event study procedure and the construction of the *Bid Premium* and *Deal Value to EBITDA* variables are explained in Appendix B. *Target-Information* is the inverse Mills ratio estimated in the first step probit regressions. The sample consists of high (low) information asymmetry deals in the odd (even) numbered columns. The names of the information asymmetry proxies are stated in the heading of each panel. In Panels A, B, and D, high information asymmetry deals have proxy values greater than the sample median. In Panel C, high asymmetric information deals have proxy values less than the sample median. The control variables used in the regressions are identical to the set of control variables used in Table 7. Due to space limitations, the coefficients of the control variables are not reported. *t*-values are in parentheses, below the reported coefficients. Standard errors of coefficients are estimated using the procedure outlined in Heckman (1979) and Greene (1981). Significance levels are denoted by an asterisk, * for 10%, ** for 5%, and *** for 1%. The final row in each panel tests whether the *Target Information* coefficient (denoted by m) in the low asymmetry subsample is smaller than that of the high information subsample. All regressions include year and industry dummies (coefficients not reported).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Information Asymmetry Proxy	*Bid Premium*		*Target CAR (-2,+2)*		*Target CAR (-63,+2)*		*Deal Value to EBITDA*	
Panel A. Target Information Asymmetry Index	High Information Asymmetry	Low Information Asymmetry	High Information Asymmetry	Low Information Asymmetry	High Information Asymmetry	Low Information Asymmetry	High Information Asymmetry	Low Information Asymmetry
Target Information	-0.102***	-0.049**	-0.064***	-0.027**	-0.094***	-0.047**	-0.697**	-0.156
	(-2.71)	(-2.21)	(-4.03)	(-2.20)	(-3.96)	(-2.69)	(-2.24)	(-0.98)
Observations	487	477	508	488	508	488	201	235
Adjusted R-square	0.131	0.304	0.195	0.197	0.277	0.312	0.208	0.035
H_0: $m_{high}>m_{low}$ (p-value)		0.119		0.035		0.058		0.060
Panel B. Target Analyst Forecast Error	High Information Asymmetry	Low Information Asymmetry	High Information Asymmetry	Low Information Asymmetry	High Information Asymmetry	Low Information Asymmetry	High Information Asymmetry	Low Information Asymmetry
Target Information	-0.130***	-0.039*	-0.059***	-0.026**	-0.109***	-0.040**	-0.251	-0.447**
	(-3.90)	(-1.85)	(-3.64)	(-2.09)	(-4.44)	(-2.39)	(-0.749)	(-2.03)
Observations	411	423	429	429	429	429	138	247
Adjusted R-square	0.178	0.336	0.200	0.172	0.269	0.348	0.057	0.225
H_0: $m_{high}>m_{low}$ (p-value)		0.012		0.059		0.011		0.312
Panel C. Acquirer Quality of Financial Advisor	High Information Asymmetry	Low Information Asymmetry	High Information Asymmetry	Low Information Asymmetry	High Information Asymmetry	Low Information Asymmetry	High Information Asymmetry	Low Information Asymmetry
Target Information	-0.125***	-0.012	-0.070***	-0.027**	-0.093***	-0.033*	-0.301	-0.307
	(-3.80)	(-0.45)	(-4.66)	(-2.06)	(-4.15)	(-1.82)	(-1.24)	(-1.38)
Observations	495	510	514	523	514	523	231	222
Adjusted R-square	0.160	0.249	0.183	0.223	0.255	0.381	0.143	0.210
H_0: $m_{high}>m_{low}$ (p-value)		0.005		0.016		0.022		0.492
Panel D. Target Idiosyncratic Volatility	High Information Asymmetry	Low Information Asymmetry	High Information Asymmetry	Low Information Asymmetry	High Information Asymmetry	Low Information Asymmetry	High Information Asymmetry	Low Information Asymmetry
Target Information	-0.121***	-0.038*	-0.056***	-0.047***	-0.102***	-0.041***	-0.376	-0.126
	(-3.08)	(-2.03)	(-3.34)	(-4.13)	(-4.00)	(-2.90)	(-1.13)	(-0.74)
Observations	484	521	507	530	507	530	184	269
Adjusted R-square	0.146	0.274	0.158	0.234	0.274	0.345	0.082	0.200
H_0: $m_{high}>m_{low}$ (p-value)		0.028		0.323		0.019		0.252

Table 9. Signaling Under Asymmetric Information

This table presents the results of the self-selection regressions in high information asymmetry subsamples. Information asymmetry is measured using the combined information asymmetry factor explained in Table A-6 of the Internet Appendix. High information asymmetry deals have information asymmetry factor values greater than the 75th percentile of the distribution. The dependent variables are *Bid Premium* (Column 1), *Target CAR (-2,+2)* (Column 2), *Target CAR (-63,+2)* (Column 3), and *Deal Value to EBITDA* (Column 4). In Panel A, signal refers to the subsample of deals where the target accepts the acquirer stock as payment. No signal represents deals in which payment is 100% cash. In Panel B, signal refers to the subsample of deals where target firms retain a due diligence advisor. No signal represents deals in which the target does not retain any due diligence advisor. We draw our sample from the SDC Database using the following restrictions: deal value is greater than $5 million, both acquirer and target are public companies located in the United States and they are not finance or utility firms, form of the transaction is either merger or acquisition of majority interest, deal status is completed, and the deal announcement date falls between 1/1/1997-12/31/2012. This sample is then matched with the CRSP and Compustat databases. Deal initiation data comes from the SEC filings of the merging firms. *Target CAR (-2,+2)* is the abnormal returns to the target firms over the (-2,+2) period. *Target CAR (-63,+2)* accumulates abnormal returns over the (-63,+2) period. The normal (expected) returns are calculated using the market model with an estimation window of (-316,-64). *Bid Premium* is the offer price divided by the target stock price 63 trading days before the announcement of the merger, minus 1. The *Deal Value to EBITDA* variable is the deal value / EBITDA value minus the average deal value / EBITDA value of the group of benchmark deals, minus 1. The event study procedure and the construction of the *Bid Premium* and *Deal Value to EBITDA* variables are explained in Appendix B. *Target-Information* is the inverse Mill's ratio. Due to space limitations, the construction of the control variables are explained in Appendix C. *t*-values are in parentheses, below the reported coefficients. Significance levels are denoted by an asterisk, * for 10%, ** for 5%, and *** for 1%.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Bid Premium		*Target CAR (-2,+2)*		*Target CAR (-63,+2)*		*Deal Value to EBITDA*	
Panel A. Signal: Target Firms Accept Acquirer Stock as Payment	Signal	No Signal	Signal	No Signal	Signal	No Signal	Signal	No Signal
Target Information	-0.0959	-0.169**	-0.0495*	-0.0868**	-0.0710	-0.142***	0.165	-0.565
	(-1.096)	(-2.591)	(-1.662)	(-2.339)	(-1.332)	(-3.439)	(0.424)	(-0.798)
Observations	148	106	164	108	164	108	43	36
Adjusted R-square	0.0579	0.114	0.109	0.111	0.120	0.464	-0.170	0.112
Same controls as in Table 7	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel B. Signal: Target Firms Retain Due Diligence Advisors	Signal	No Signal	Signal	No Signal	Signal	No Signal	Signal	No Signal
Target Information	-0.0529	-0.212***	-0.0641*	-0.0667**	-0.0540	-0.144***	-0.352	-0.380
	(-0.539)	(-3.036)	(-1.794)	(-2.069)	(-0.922)	(-3.008)	(-0.980)	(-0.582)
Observations	106	148	119	153	119	153	34	45
Adjusted R-square	0.121	0.0436	-0.00751	0.100	0.145	0.201	0.294	0.0789
Same controls as in Table 7	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

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