

Deal Initiation in Mergers and Acquisitions

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Abstract

We investigate the effects of the deal initiator in mergers and acquisitions. We find target-initiated deals are common and that important motives for target-initiated deals are target economic weakness, financial constraints and negative economy-wide shocks. We document that average takeover premia, target abnormal returns around merger announcements and deal value to EBITDA multiples are significantly lower in target-initiated deals. This gap is not explained by weak target financial condition. Adjusting for self-selection, we conclude that target managers' private information is a major driver of lower premia in target-initiated deals and this gap widens as information asymmetry between merger partners rises.

JEL Classification: G34

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1. Introduction

The objective of firms initiating mergers and acquisitions (M&As) is to find a suitable merger partner that can help them meet their strategic and financial objectives. Having identified an attractive partner, a common objective at the later stages of the M&A process is to structure a deal to realize the major goals of the merger partners and facilitate a successful conclusion to the M&A process. 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. However, the crucial initial stages of the merger process where bidders and targets are matched have 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 manager and shareholder incentives at the crucial initial stages of the M&A process, especially for target firm managers and shareholders.

Most of the current M&A literature explicitly or implicitly assumes that deals are initiated by acquirers. While a majority of M&A deals are acquirer initiated, we document that target firms also frequently initiate M&A deals, and they represent about 35% of US M&A deals. This finding raises important questions as to how target-initiated deals differ from acquirer initiated deals and how the economic and financial effects of target-initiated M&A deals differ from the more common acquirer-initiated deals. More specifically, we want to explore target firm motivations for initiating M&A deals, the economic circumstances of the two merger partners, and the effects of deal initiation decisions on merger outcomes and 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. We measure the premia received by target firms using four measures. First, 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 versus 48% in target-initiated deals. Second, target shareholders experience a 30% average cumulative abnormal return (CAR) in bidder-initiated deals and a 22% average CAR in target-initiated deals over the five day period (-2,+2), around the initial deal announcement date. Third, target CARs that are

accumulated using a longer pre-announcement window, starting 63 trading days before the initial deal announcement until 2 days after the announcement yield an average CAR of 41% in bidder-initiated deals versus 33% in target-initiated deals. Finally, we follow Officer (2007) and calculate excess deal value to EBITDA multiples, which are premium measures that do not depend on the market's assessment of the value of the target firms before the merger announcements. The excess deal value to EBITDA multiple averages 90% in bidder-initiated deals, while it is only 35% in target-initiated deals.

We consider three hypotheses to explain why targets initiate deals and why they receive lower premia than in bidder-initiated deals. The first hypothesis argues that target firms experiencing financial or competitive weakness have strong motives to search for potential buyers. Targets may face financial distress, which implies that shareholders and managers face significant losses if their firms go bankrupt. Alternatively, targets may experience a string of subpar performance results in terms of earnings and stock returns where easy turnaround solutions are unavailable. The second hypothesis posits that target firms initiate mergers to relieve a binding financial constraint. One major cost of being financially constrained is an inability to finance profitable investment projects. A cash-rich acquirer can help a target firm overcome these difficulties by allocating some of its own capital to the target firm post-merger enabling the target firm to invest in more profitable positive net present value (NPV) projects. Alternatively, being part of a larger and more diversified firm may give the target firm better access to external capital markets. The third 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 the reallocation process, the managers and owners of weaker and less efficient firms may find it optimal to be acquired by larger, more efficient firms, rather than have the firm attempt to survive the industry shock on its own.

Empirically we find that target firms are financially weaker in target-initiated deals compared to bidder-initiated deals, regardless of whether we measure these weaknesses by their 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

three years and one year before the merger 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 target firms 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 three hypotheses capture major motivations for target firms to initiate deals and provide some interesting testable predictions. However, the lower bid premia and target CARs found in target-initiated deals cannot be easily explained by these factors. If target firms initiate deals and accept lower premia primarily due to these conditions, then the effect of target-initiation on target premia should diminish when these factors are controlled for. Contrary to this expectation, we find that the coefficient of the target-initiated deal indicator remains significantly negative even after we take into account target financial distress, target 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 target premia, are for the most part statistically insignificant. These results may in part be 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 lemon rises (Akerlof, 1970). Good quality target firms generally have strong incentives to avoid selling themselves at such discounted prices. Therefore, acquirers infer that target firms initiating deals are more likely to be overvalued and

thus they offer them lower takeover premia than they offer targets in bidder-initiated deals. Of course, targets initiating deals should not require as large a premia to relinquish control.

Because target firms self-select to initiate deals with bidders, their observable and unobservable characteristics could be quite different than targets that do not initiate deals. To adjust for this self-selection, we specify a Heckman selection model to identify the underlying factors that could be driving the low premia in target-initiated deals. We find that the unobservable driver of a target firm's decisions to initiate deals, which we interpret as the target firm's private information, is negatively correlated with the premia that they receive in mergers. Our findings are consistent with the conjecture that target deal initiation signals to bidders that target firms have negative private information, causing rational bidders to offer reduced takeover premia. In other words, deal initiation is a manifestation of negative private information held by a target, which is inferred by bidders when a target publicly announces a willingness to sell.

If the adverse selection problem between merging firms is driving our results, then the effect should be 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 groups based on the relative size of the information asymmetry measure. We separately estimate Heckman selection models for the two subsamples and find that a target's private information 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.

Our investigation of deal initiation in the context of mergers and acquisitions is important for several reasons. First, using a hand-collected dataset, we document the size and statistical significance of the differences in deal premia across target- and bidder-initiated deals. Moreover,

we take a step forward in explaining how and to what extent different hypotheses explain the effect of target deal initiation on takeover premia. Second, we aim to provide fresh perspectives on the mechanics of M&A deal making by examining the initial private negotiations phase of the process. The vast majority of studies in the M&A literature analyze takeovers beginning at the initial public announcement. However, companies make very critical decisions well before an M&A deal agreement is reached and publicized. Third, our study provides new insights into the inter-play of supply and demand factors in takeover markets. The market microstructure literature commonly uses trade initiations (buy and sell orders) to capture changes in supply and demand conditions in stock markets; we aim to follow a similar path to analyze the interaction between supply and demand in takeover markets.¹

Our study contributes to the literature that analyze the economic impact of the decisions taken by merging firms during the private negotiations stage of the M&A process (Boone and Mulherin, 2007a; Boone and Mulherin, 2007b; Boone and Mulherin, 2008; Aktas, de Bodt and Roll, 2010). While these studies recognize the relevance of deal initiation decisions for merging firms, their main focus is to quantify the impact of takeover competition (single versus multiple bidder negotiations) on merger outcomes.² Our study focuses directly on the relation between deal initiation party and subsequent target premia. We carefully analyze the potential factors that lead targets to initiate deals and the potential reasons that target deal initiation affects offer premia. Overall, the empirical evidence we provide complements these earlier preliminary

¹ The first study to use deal initiation data for investigating target abnormal returns is Sanders and Zdanowicz (1992). Using a sample of 30 deals, they find that target abnormal returns on average start to increase after the deal initiation date. This analysis is confined to insider trading activity around deal initiation dates and they do not differentiate between bidder- and target-initiated deals. Fich, Cai and Tran (2011) and Heitzman (2011) investigate option and equity grants made to target CEOs during the private phase of merger negotiations. Fich, Cai and Tran (2011) show that bid premia are on average 3.8% lower for target-initiated deals. Heitzman (2011) reports that target firms receive 10.75% higher bid premia in bidder-initiated deals than in other types of deals. He argues that the relative bargaining power of targets is higher in bidder-initiated deals relative to target-initiated deals. However, neither study examines the economic causes for firms' deal initiation decisions.

² Boone and Mulherin (2007b) and Aktas, de Bodt and Roll (2010) control for the deal initiation party in the merger process. For instance, Boone and Mulherin use a deal initiator indicator in several of their regressions and find that targets on average receive a 9.5% higher abnormal return in "unsolicited" (bidder-initiated) deals over the (-1,+1) event period relative to other deals. Aktas, de Bodt and Roll find that targets receive 32.1% lower bid premia in target-initiated deals than in bidder-initiated deals.

findings to provide a clearer understanding of the links between deal initiation decisions, choice of sales method, and takeover premia.

2. Hypotheses

2.1. Drivers of Target Deal Initiation

A number of prior studies in the literature consider bankruptcy reorganization filings and mergers as alternative strategies for surviving financial distress. Shrieves and Stevens (1979) argue that merger can be preferable to bankruptcy because mergers let target shareholders (i) avoid the legal and administrative costs associated with bankruptcy (see Hotchkiss et.al, 2008 survey), (ii) better utilize tax loss carry-forwards, (iii) value a firm as going concern rather than at liquidation value, and thereby avoid potential fire sale valuation and (iv) generally resolve uncertainty more quickly than a lengthy bankruptcy proceeding. Pastena and Ruland (1986) empirically study conditions when merger may be a better alternative to bankruptcy for resolving financial distress. They show that firms with low leverage and high ownership concentration tend to prefer mergers over bankruptcy. 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. The empirical evidence from these studies indicate that acquirers typically improve the operations of financially distressed firms, while those distressed firms that remain independent continue to struggle after going bankrupt.^{3 4}

Less severe forms of financial distress can also lead targets to seek a buyer. Target shareholders and managers can have incentives to consider an acquisition well before the firm

³ 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, thus limiting any benefit that can be obtained.

⁴ 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 find TMO firms tend to be experiencing financial weakness compared to their industry and size-matched peers. Their study differs from ours, first because of the loose relation between deal initiations and TMO announcements. In fact, target-initiated deals do not always result in TMO announcements. Second, private negotiations and deal initiation decisions typically precede TMO announcements.

exhibits any evidence of financial distress. In periods of economic distress, firms can lose market share to competitors, experience sales declines, rising costs and possibly negative operating income, while they are solvent and able to fully pay their debts. When such firms are unable to reverse their poor performance, they face the prospect of experiencing financial distress in the near future. Thus, target shareholders and managers are motivated to sell their firms preemptively when they expect continued economic weakness, which can ultimately result in financial distress. Consistent with this view, target performance in the pre-takeover period is a well researched topic. The main findings of these studies are that targets exhibit significantly negative abnormal stock returns (Asquith, 1983, Martin and McConnell, 1991; Kini, Kracaw and Mian, 1995; Kini, Kracaw and Mian, 2004), low valuations (Edmans, Goldstein and Jiang, 2012; Bates, Becher and Lemmon, 2008) and inferior operating performance in the pre-merger period (Palepu, 1986; Cremers, Nair and John, 2009; Berger and Ofek, 1996).⁵

Financially constrained target firms can also find it beneficial to initiate deals with cash-rich bidders to gain access to external capital. A firm may be categorized as financially constrained if the firm has available a number of profitable investment opportunities, but fails to undertake them due to inadequate financial resources. Such financially constrained firms may be generating insufficient cash flows from their existing operations, which would eliminate the internal financing option, unless they have substantial cash holdings and liquid assets available. They can also face high borrowing costs and share issuance costs due to high financial leverage and high asymmetric information, which can make external financing options costly. Thus, valuable investment opportunities go unfunded because of a target's binding financial constraint. Alternatively, by merging with a financially strong firm, the target can gain access to external capital markets on more favorable terms.⁶

⁵ However, in a comprehensive survey of studies of target performance before merger announcements, Agrawal and Jaffe (2003) report that many studies fail to find empirical support for the target underperformance hypothesis.

⁶ Note that the target financial constraints hypothesis is distinct from the target financial and competitive weaknesses hypothesis. While financially distressed targets are likely to have financial constraints, the reverse is not necessarily true: financially constrained targets may be able to meet their financial obligations and may have little bankruptcy risk, but have profitable investment opportunities that exceed their ability to internally finance them.

A number of corporate finance studies consider target financial constraints as a major motivation for takeovers. Erel, Jiang and Weisbach (2013) show that European target firms on average are financially constrained before mergers and their financial constraints ease after they merge. Liao (2010) shows that constrained target firms are more likely to be targets of minority acquisitions. Fee, Hadlock and Thomas (2006) find that firms are more likely to hold minority stakes in their suppliers when their suppliers are suffering from financial difficulties. Finally, Myers and Majluf (1984) argue that the underinvestment problem caused by the information asymmetry between managers and outside investors could be eliminated if cash-strapped targets can convey their private information to cash-rich acquirers during private merger negotiations.⁷

The deal initiation decisions of merger partners can be related to the interaction of demand and supply in the M&A market. Target firms actively seeking potential buyers of their businesses represent part of the supply in the takeover market, whereas bidder firms actively seeking acquisition targets represent demand in the takeover market. Industry-specific shocks, such as deregulation, changes in tax rates and tariffs, technological cascades or changes in key input prices, can transform the way firms operate in the industry. When a shock hits an industry, firms within it 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). After such industry shocks, smaller, weaker and less efficient firms can find it optimal to sell their businesses to larger, financially stronger and more efficient firms in the industry. The fact that target shareholders and managers are likely 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

⁷ 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) and Matsusaka and Nanda (2002) argue that the allocation of resources can be more efficient if firms (or divisions) have access to well-functioning internal capital markets. 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 and 2014) argue that a major purpose of business groups is to allow transfers of capital from cash rich to high growth cash poor affiliates.

such mergers. Hence, industry-specific shocks can increase the supply of takeover targets, resulting in a higher frequency of target-initiated deals.

Economy-wide shocks can have similar impacts on the dynamics of takeover markets. In an economic recession, financially or economically weak firms can see insolvency on the horizon and thus, find it optimal to put themselves up for sale. Since stock valuations are typically lower during economic recessions, firms do not expect to receive attractive takeover premia, hence financially healthy firms are likely to avoid selling themselves at such times. On the other hand, potential buyers (both financial and strategic) might also refrain from making large investments or acquisitions in the presence of substantial economic uncertainty brought on by a recession. The overall result is a rise in the supply of financially weak takeover targets, and a fall in demand for takeover targets. Under such conditions, we expect a rise in the frequency of target-initiated deals in the takeover market, compared with the frequency of bidder-initiated deals.^{8 9}

The above analysis of the determinants of deal initiation leads to the following hypotheses:

Hypothesis 1: *Financial and competitive weaknesses lead target firms to initiate M&A deals with potential acquirers. Financially distressed firms initiate mergers with potential acquirers to avoid large bankruptcy costs, while underperforming target firms initiate mergers to avoid continued subpar operating performance and stock returns.*

Hypothesis 2: *Financially constrained target firms initiate deals with cash-rich bidders, who can help them finance their valuable investment projects.*

Hypothesis 3: *The frequency of target-initiated deals relative to bidder-initiated deals rises after negative industry-specific or economy-wide shocks.*

⁸ 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).

⁹ The other alternative for surviving the industry specific or economy wide shock is to acquire other firms. However, when a firm is relatively small, cash poor and financially weak, it is difficult for the firm to become a bidder. A negative shock combined with a weak balance sheet precludes a firm from becoming a bidder, which explains why many target managers and shareholders would be willing to be taken over.

2.2. Drivers of Premia Paid to Target Firms

There are two opposing views of how bid premia are affected by the economic factors represented in the above three 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 or industry shocks. These costs, which are easily identified by bidders, lower a target firm's reservation price and diminish its bargaining power during merger negotiations. Since target firms experiencing these conditions need to take rapid action to resolve their difficulties, they may find it hard to structure an efficient auction process and thus, they end up selling themselves in a non-competitive takeover market. In addition, the market conditions in target firm's industry may amount to fire-sale conditions, since many potential bidders lack the financial resources to offer competitive premia for target firms (Shleifer and Vishny, 1992; Pulvino, 1998; Officer, 2007; Eckbo and Thorburn, 2008). The result may be that financial buyers and strategic buyers with weak synergies are the only available bidders.

An alternative view emphasizes on 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. Hence, target firms can contact and negotiate with a wide range of potential bidders. 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 shows that the premia received by target firms are comparable to premia received in competitive auctions (Boone and Mulherin, 2007b; Aktas, de Bodt and Roll, 2010). Therefore, targets are unlikely to receive lower premia in target-initiated deals just because they are financially distressed, financially constrained or exposed to industry-specific or economy-wide shocks.

These two conflicting views provide distinctly different predictions on the relations between bid premia and target financial distress, financial constraints, and industry and economy wide

shocks. 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.¹⁰

Hypothesis 4: *Target firms are willing to accept lower premia in target-initiated deals to avoid the costs associated with (i) financial distress, (ii) financial constraints, or (iii) the adverse effects of industry-specific or economy-wide shocks.*

2.3. Information Asymmetry between Merging Firms

Our fourth hypothesis rests on the existence of information asymmetry between merger partners. As discussed in Genesove (1993), a market is exposed to an adverse selection problem when (i) sellers possess superior information about their goods relative to buyers, and (ii) 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 (e.g., Hansen, 1987; Marquez and Yilmaz, 2008; Officer, Poulsen, Stegemoller, 2009). As is commonly conjectured in the extant literature, target firm managers are expected to 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. Furthermore, contract clauses employed by merging firms, such as representations, guarantees and warranties, escrows and earn-outs, have a limited scope and capacity to fully protect bidders from this adverse selection problem.

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 bad quality products. Thus, in takeover markets, the act of initiating a deal

¹⁰ Note that stock prices of financially distressed/constrained target firms should reflect the capitalized values of these problems. A merger announcement may signal elimination of these problems and result in a greater stock price jump at the bid announcement. Hence, using the conventional market-based takeover premium measures (target CARs, bid premia) to test the above hypothesis can lead to biased inferences. As discussed in the next section, our takeover premium measures include the excess deal value to EBITDA multiple, which has the benefit of not being directly related to the market's current assessment of a target firm's value in the pre-merger announcement period.

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. Thus, acquirers rationally discount the prices they are willing to pay in target-initiated deals.¹¹

Studies examining the dynamics of trading in other markets also offer insights on how information asymmetry between players affects their initiation decisions and influences transaction outcomes. For instance, 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 bid-ask spreads, the equilibrium levels of stock prices and trading volume (e.g., Easley and O'Hara, 1992; Easley et.al, 1996; Easley, Kiefer, O'Hara, 1997).¹² In this extensive literature, studies that analyze the impact on stock prices of large block sales or trades is potentially relevant for takeover markets (e.g., Keim and Madhavan, 1996; Madhavan and Cheng, 1997; Gemmill, 1996; Saar, 2001; Booth et.al, 2002). For example, Keim and Madhavan (1996) show that the average permanent price impact of a seller-initiated block trade is -4.32 percent, while for a buyer-initiated block trade, it is +2.8 percent. 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 sign of this private information. Thus, trade-initiations release new information about a stock's true value and permanently affect its market price.

A sale of control transaction resembles a large block sale of equity in the secondary market. Myers and Majluf (1984) argue that firms avoid selling stock when adverse selection leads to undervalued stock prices and instead prefer other sources of financing. Of course, this action may also signal limited unused debt capacity as well. The implication for the market for corporate control is that a party showing a willingness to sell at the current market price (target

¹¹ Kitching (1973) surveys acquiring firm managers to identify the factors that affect their post-merger performance. He finds that if the acquisition is made because the target firm was available as a takeover candidate, then the deal is more likely to be classified as a failure. Kitching argues that: "*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, page 188).

¹² The effect of the adverse selection problem on bid-ask spreads is previously examined by Copeland and Galai (1983), Glosten and Milgrom (1985) and Easley and O'Hara (1987).

firms in target-initiated deals) is on average overvalued. Therefore, takeover premia paid to such target firms are expected to be smaller than premia for bidder-initiated deals.¹³

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

Hypothesis 5: *Due to information asymmetry between merging parties, bidders offer lower purchase prices when target firms initiate deals, as bidders know that shareholders and managers of high-quality or undervalued target have much weaker incentives to sell at current market prices. This effect is amplified as information asymmetry rises.*

Oler and Smith (2008) examine target firms that publicly announce they are for sale. These “take-me-over” (TMO) firms experience significantly negative stock returns in the year after a TMO announcement if no takeover offer is forthcoming. Hence, failure to sell the firm is harmful to target shareholder value. This threat provides potential buyers with greater leverage in negotiating takeover premia, which could reinforce the effects predicted by Hypothesis 5.

¹³ Myers and Majluf take a more extreme view that “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” (p. 219).

3. The Data

3.1. Sample Formation

The merger, accounting and return data are from the SDC Platinum Mergers and Acquisitions, Standard & Poor's COMPUSTAT and Center for Research in Security Prices (CRSP) US Stock database, respectively. The first step in our analysis is to identify M&A deals that meet the sample selection criteria. The following restrictions are imposed on our sample: (i) 'Deal value' is greater than \$5 million; (ii) Both acquirer and target are publicly traded companies located in the US and are not in the financial services or utility industries; (iii) The legal form of the transaction is either 'a merger' or 'an acquisition of majority interest'; (iv) The deal announcement occurs between 1997 and 2012; (v) The deal status is 'completed',^{14 15}

SDC M&A data are matched with the CRSP and COMPUSTAT databases to yield a total sample of 1,639 deals. As a final step, we use the EDGAR database to search for company filings by acquirer and target firms to obtain initiation data for each deal. If the filings are available, the initiation data are extracted from the "Background of the Merger" or "Material Contacts and Board Deliberations" sections of the following documents: DEFM14A, PREM14A, 14D9, TO-T and S-4. The background section summarizes past contact and negotiations between acquirer and target, such as who initiated the merger, how senior managers of the two firms first met, how the negotiations proceeded, what decisions the boards of directors made, and which investment banks were hired, 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

¹⁴ 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 US. 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, since public companies are required to submit their filings through EDGAR as of May 6, 1996.

¹⁵ The SEC documents used to extract deal initiation data are filed before the deal closing. So it is possible for firms to file merger documents with the SEC, but then fail to complete the deal. However, such cases are relatively rare, and hence are not included in our analysis.

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 and solicit their interest in its businesses. 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, the target firm is not seeking to sell its business. A bidder or its investment banker approaches the target’s top management and expresses an interest in exploring a “strategic combination” with the firm. The target firm management takes this offer to its board of directors and then conveys its board’s decision back to the bidder. In some cases, target firms negotiate with the bidder and end up being bought, and in other cases, they contact third parties that might be interested in a combination with the target firm. Whether a target firm is eventually bought by the bidder that makes the initial offer, even when competing bidders are involved in the process, we classify it as a “bidder-initiated” deal. Appendix A provides examples of bidder and target-initiated deals.¹⁶

Deal initiation information is not available for all deals in our sample. In 81 deals, the SEC documents that should be filed by the merging firms could not be located in the EDGAR database and in 290 cases, we are unable to discern which party initiated the deal, even though the merging firms’ disclosure documents filed with the SEC are available.¹⁷ 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 where the deal initiator is known.

3.2. Construction of Variables & Data Summary

We define a *target-initiated* indicator variable to take a value of 1 if the deal is target initiated and a value of 0 if the deal is bidder initiated. A total of 35.4% of the identified deals are target

¹⁶ There are five white knight deals in our sample. We code them as bidder-initiated due to the fact that in all of these cases, the deal was initiated by the initial (although not successful) bidder.

¹⁷ In some cases identifying the deal initiator is not always possible. For example, an SEC filing can state “The CEOs of the acquirer and the target met in an industry convention and discussed the merits of a business combination involving the two companies”. That sentence does not point to either firm as the deal initiator. We exclude transactions of this type from the dataset and instead focus on cases where an acquirer clearly initiates contact with the target, or the target firm initiates contact with the acquirer. We also exclude merger-of-equals deals, as the classification of acquirer and target is less clear cut.

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 and they show mild time series variation.

[Figure 1]

To measure the impact of a successful deal on the market valuation of the merging firms, we calculate abnormal returns to acquirer and target stocks around the announcement date using a conventional one-factor market model. We estimate market model parameters over event 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).¹⁸ The target stock return variable is denoted by *target CAR* (-2, +2). The market reaction at the merger announcement will not reflect the full rise in target shareholder wealth if the deal is partially anticipated by the market since it has already partially capitalized the benefits into the stock price. As an alternative measure which mitigates this concern, we use a longer event window following Schwert (1996, 2000) for target CARs starting 63 trading days before a merger announcement, labeled *target CAR* (-63, +2). In addition, we estimate the offer bid premium (*bid premium*), defined as the offer price divided by pre-merger announcement target stock price (-63 days) minus one.¹⁹

Our first hypothesis argues that premia received by financially distressed targets are lower than those of financially healthy targets. Since capital markets can partially anticipate potential insolvency, expected bankruptcy costs should reduce target stock prices before merger announcements. 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

¹⁸ Mulherin and Simsir (2015) show that merger announcements are not always a surprise to the market if targets are involved in earlier merger-related activities. They suggest using the "Original Date Announced" (ODA) field in SDC to capture the market reactions to these types of events. Hence, we extend our event period to include the market reaction at the ODA, whenever it precedes the merger announcement date.

¹⁹ In untabulated results, we measure target abnormal returns over the alternative event windows (-1,+1), (-5,+5) and (-126,+2). Results using event window (-1,+1) or (-5,+5) are very similar to the CAR (-2,+2). Target CARs estimated over (-126,+2) yield similar results to CARs estimated over (-63,+2). In Appendix D, Table A-3, we replicate the key regressions in our paper for target CARs measured over (-126,+2).

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 within the three calendar year window centered on the announcement date. Construction of the deal value to EBITDA multiple, along with market-based premium measures are explained in detail in Appendix B.²⁰

Panel A of Table 1 reports 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 bid premium for target firms in our sample is 53.8% and the median premium is 44.2 %, while the excess deal value to EBITDA multiple has a mean value of 75.6%, and a median of -9.9%.²¹

[Table 1]

Market reactions to merger announcements are examined extensively in the M&A literature. A number of major deal and firm characteristics are documented to have cross sectional associations with merger partner abnormal announcement returns. We use many of these variables as controls in our analysis of target announcement returns including deal characteristics such as method of payment (Travlos, 1987; Chang, 1998), legal form of acquisition (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), acquirer and target paid termination fees (Bates and Lemmon, 2003; Officer, 2003) and financial characteristics of the merger partners such as Tobin's Q (Lang, Stulz, and Walkling, 1991; Servaes, 1991),²² financial leverage (Maloney, McCormick, and Mitchell, 1993), cash flow (Lang, Stulz, and Walkling, 1989), cash holdings (Harford, 1999) and equity capitalization

²⁰ Ang and Mauck (2011) analyze the relation between financial distress and market-based premia in crises and non-crises times. They find that financially distressed target firms receive higher premia than financially healthy target firms during both crises and non-crises periods.

²¹ 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. We also use alternative procedures to create benchmark portfolios (as discussed in Appendix B), such as relaxing the deal value range of the benchmark portfolio from (80%, 120%) to (70%, 130%) and the deal announcement range from three to two years. These results are quantitatively similar to those reported herein.

²² Our proxy for Tobin's Q is the market-to-book ratio of total assets.

(Moeller, Schlingemann, and Stulz, 2004).²³ We use these control variables in our analysis of target abnormal announcement returns and its relationship to the deal initiating party. Deal and merger partner characteristics are reported in Panels B, C and D of Table 1. Of our deal sample, 22% are tender offers, 64.2% are within-industry deals and 58.3% use an auction sales method.²⁴ Consistent with the earlier literature, target firms are smaller, less profitable, and have lower sales growth and Tobin's Q ratios compared to acquirers.

To assess whether a target firm is experiencing financial distress, we analyze its Altman's Z-score (Altman, 1968), interest coverage, liquidity and leverage ratios, S&P long-term credit rating on its public bonds and its stock price 63 trading days prior to the merger announcement.²⁵ We also analyze the set of targets with current ratios below and leverage ratios above their industry medians. These firms are more likely to face short-term liquidity problems and high long-term debt obligations at the same time (Pulvino, 1998).

To identify underperforming targets, we estimate the changes in a target's annual industry-adjusted return on assets (ROA) and Tobin's Q ratios and sales growth rates over the one and three calendar years prior to the initial merger announcement. In addition to operating performance measures, we calculate a target stock's buy-and-hold abnormal annual returns for one and three calendar years prior to the merger announcement. Our methodology for estimating target abnormal returns is similar to Agrawal and Jaffe (2003).

We investigate whether target firms are operating in competitive industries that may eventually lead to underperformance. One well accepted product market competition measure is the Herfindahl-Hirschman Index (HHI) estimated by Hoberg and Phillips (2013) using the text-based network industry classification. We create an indicator variable that is one if the HHI of the target industry is above the median industry HHI across all industries. Our second product market measure is the percent change in target market share in the one and three years prior to

²³ In untabulated analysis, we also examine price-earnings, return on equity, dividend yield, R&D and capital expenditure ratios of the merging firms as added controls, but they are statistically insignificant.

²⁴ Auctions are more likely in target-initiated deals than negotiated deals; 76% (48%) of the target-initiated (bidder-initiated) deals are auctions. These estimates are similar to those reported in Aktas, de Bodt and Roll (2010).

²⁵ Garlappi and Yan (2011) document that firms with stock prices less than \$5 have higher risks of entering financial distress compared to firms with stock prices greater than \$5.

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.

There are several alternative measures of a firm's financial constraints. The Kaplan and Zingales (1997) (KZ) and Whited and Wu (2006) (WW) develop indices based on linear combinations of a set of financial ratios to proxy for a firm's financial constraints. 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 show 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) shows 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, we create an industry shock index, based on the first principal component of these seven variables. To capture time series dynamics in these variables, we create a set of indicator variables (for each of the seven variables) that take a value of one if the change in the respective variable is above the 75th percentile of its industry distribution across all the years in the 1986-2012 sample period. Because industry-specific shocks are likely to trigger mergers, we also control for M&A activity in a target's industry in the deal announcement year (Schlingemann, Stulz and Walkling, 2002). Industry M&A activity is defined as the total dollar value of corporate control transactions completed in a year divided by end of year aggregate book value of total assets of listed firms in the target industry. The industries are defined by 2-digit SIC codes. We also measure M&A activity by the number of deals taking place in the industry, and scale them by the number of firms in the industry.

Finally, we measure economy-wide shocks using indicator variables for National Bureau of Economic Research (NBER) defined economic recession periods. NBER identifies two economic recessions within our sample period, which occur in 2001 and 2008. Mergers are planned and negotiated several months ahead of their public announcements. Thus, the effects of the economic recessions could be in play shortly before the formal start date of the recessions

and its effects on merger decisions can 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. Hence, our 2001 and 2008 economic recession indicators take a value of one for deals announced between September 2000 to May 2002 and June 2007 to December 2009, respectively. In Appendix C, we explain in detail the construction of all the variables in this section.

3.3. Takeover Premia and Deal Initiation Parties: Univariate Tests

As the first step in our analysis, we compare target CARs, bid premia and deal value to EBITDA multiples across the two deal initiation groups. As shown in Table 2, bidder- and target-initiated deals differ significantly in terms of average target CARs for all four measures, indicating that target firm returns are significantly higher if deals are bidder-initiated. In particular, the *bid premium* averages 48.7% in target-initiated deals and 58.5% in bidder-initiated deals.²⁶ The mean difference in bid premia of 9.8% is statistically significant at the 1% level. The differences in mean premia across initiating parties remain significant after we further categorized deals by method of payment and mode of acquisition, except that the difference for tender offers is no longer statistically significant. This may be a result of the tender offer sample being much smaller than the other deal types.

[Table 2]

Panels B and C of Table 2 show the averages for our bid announcement return measures, *target CAR* (-2, +2) and *target CAR* (-63, +2). The first row of Panels B reveal that the target average announcement return, *target CAR* (-2, +2), is 22.7% in target-initiated deals and 30% in bidder-initiated deals, where the difference is statistically significant at the 1% level. 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. This difference in mean returns is also

²⁶ In contrast, the mean and median bid premium estimates in Betton, Eckbo and Thorburn (2008) are 48% and 39%, respectively (Table 5). Their premia are slightly lower potentially because their benchmark prices use target firm stock prices at trading day -42 instead of ours at -63 and our use of initial merger announcement is based on SDC's "Original Date Announced" field as opposed to the "Date Announced" field.

statistically significant at the 1% level. The average CAR (-63, +2) difference between initiation groups persist for pure equity and pure cash financed deals and merger subsamples, although in the tender offer sample the difference in target announcement CARs is insignificant.

Finally, we compare initiating party samples with respect to our fourth takeover premium measure, the excess *deal value to EBITDA* ratio. The first row of Panel D reveals that the average *deal value to EBITDA* ratio is 35.4% in target-initiated deals and 90.6% in bidder-initiated deals. The 55.2 percentage point difference is significant at the 5% level. The median values of the *deal value to EBITDA* multiples are significantly lower than their mean values, indicating the influence of large outliers in the distribution. As observed by Officer (2007), the deal multiples distributions have high standard deviations and large outliers (Panel A, Table 1), making analysis of these ratios more difficult. The remaining rows of Panel D show no significant differences in mean excess deal multiples across the two deal initiation groups, although median excess deal multiples are significantly lower in the target-initiated sample. For pure equity financed deals, deal initiation does not seem to affect excess deal multiples.

Evidence in Table 2 clearly shows that target bid premia and announcement CARs depend on whether deals are bidder or target initiated. Differences in premia and CARs are not due to asymmetric stock price movements in the two samples before or after bid announcements; otherwise our longer event window for *bid premium* and *target CAR* (-63, +2) would capture these effects and no significant difference in the two samples should then be observed.²⁷

4. The Determinants of Deal Initiation Party

4.1. 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, S&P long-term credit ratings than in bidder-initiated

²⁷ We also investigated how acquirers fare in target- and bidder-initiated deals. We did not find an effect of deal initiation on acquirer CARs in univariate and multivariate analysis; hence, we leave these results untabulated.

deals. The percent 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. Since the distribution of buy-and-hold returns is positively skewed (Barber and Lyon, 1997), we also report median values, which are -4.2% for target-initiated deals and 4.3% for bidder-initiated deals. The difference between bidder and target-initiated samples is statistically significant at the 5% level, for both the sample means and medians. The difference in the means versus the medians of the two samples indicates high and low performance outliers. One year target buy-and-hold abnormal returns are also lower for target-initiated deals relative to the bidder-initiated deals. This set of univariate evidence strongly suggests a self-selection effect regarding the initiating party in M&A deals and appears consistent with the predictions of Hypotheses 1-3.

Interestingly, the inferior target stock market performance in target-initiated deals does not appear to carry over to major operating performance measures. On the one hand, the average change in industry-adjusted ROA over the past one and three years before the merger announcement is lower for target-initiated deals. The difference in means between the two groups is statistically significant at the 1% level. Yet, the average one and three year changes in industry-adjusted Tobin's Q, sales and market share growth rates do not differ significantly across the two deal initiation samples. Overall, the findings in Table 3 are consistent with Hypothesis 1: target firms typically exhibit weaker financials in target-initiated deals.

[Table 3]

Panel C of Table 3 presents means and medians for our three firm 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. The mean and median differences are 0.12 and 0.11 respectively, and they are

statistically significant at the 1% level. The results are similar using the WW-index. However, the KZ-index produces just the opposite findings.²⁸ Hadlock and Pierce's extensive analysis of firm financial constraint measures is based on reading firm SEC disclosure filings to identify when firms are actually financially constrained. They also reproduce the KZ and WW indices for their sample firms and examine whether high index firms actually mention financial constraints in their SEC documents. They find that KZ-index performs poorly, while the WW-index performs fairly well. They then construct their own alternative index (SA-index) as a further improvement and show that it has superior explanatory power compared to the KZ and WW indices. Using the SA and WW indices, we conclude that the typical target firms in the target-initiated sample are more financially constrained than those in the bidder-initiated sample.

To test the claim that acquirers have substantial liquidity immediately before acquisitions in target-initiated deals, we calculate industry-adjusted cash holdings for acquiring firms (cash holdings divided by the book value of total assets and current assets divided by the book value of total assets). In untabulated analysis, we find that the means of both measures are significantly positive for both target-initiated and bidder-initiated deals. This piece of evidence provides additional support for the target financial constraints hypothesis.

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 and the industry M&A activity measures (based on merger values and numbers) 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 16.2% of target-initiated deals are announced in the same period. In the second part of Panel D, we analyze the time series properties of the industry shock indicators, which are based on the seven variables identified in Harford (2005). Given that the cutoff value for identifying shocks is the top 25th percentile of the respective variable over the full sample period, the mean value of each shock indicator variable

²⁸ 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 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).

should be 0.25 if the shocks are randomly distributed over the sample period. For both bidder- and target-initiated deals, the mean values of the seven indicator variables exceed 0.25, which is consistent with industry-specific shocks preceding industry-level M&A activity (Harford, 2005). However, the means and medians of all seven indicators are not significantly different across the two deal initiating party samples.

4.2. Probit Regressions

To address potential selection issues regarding the initiating party choice, we estimate a probit regression model for target-initiated deals. Control variables are grouped into four 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*), the level of competition in the target's industry (*high HHI indicator*), target financial constraints measures (*SA-index*) and finally economic shock indicators (*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 to be able to choose a friendly acquirer. This variable is measured by the total number of target-initiated or auction deals in a target firm'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, de Bodt and Roll (2010) use a target's institutional ownership measures and Tobin's Q to predict target-initiated deals. They show 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 also include these variables in our set of controls. The final set of control variables includes industry indicators. Because several of the year indicators are significantly correlated with the economic recession indicators, year indicators are excluded from this set of regressions.

The results of our selection regressions are summarized in Table 4. Regressions in columns (1) and (2) are identical, except that column (1) excludes the two target institutional ownership variables and its Tobin's Q from the set of controls. Since data on institutional ownership and shareholding concentration are unavailable for several deals in our sample, our observation size drops when these added control variables are included. One concern is that target firm Tobin's Qs are highly correlated with Altman's Z-scores (correlation of 0.59), which may give rise to multicollinearity concerns. Thus, we estimate probit regressions with and without these variables to assess their impact on our results.

[Table 4]

The significant variables in column (1) are target *liquidity*, *change in ROA over the past three 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 percentage points. Target firms that operate in concentrated industries (*high HHI* indicator equaling one) tend to initiate deals more often. More specifically, the probability of a target-initiated deal goes up by 6.1 percentage points if a target firm operates in a concentrated industry. Poor target firm operating performance before a merger has a positive effect on the probability of a target-initiated deal. A one standard deviation fall in the *change in ROA over the past three years* (0.61) results in a 3.1 percentage point rise in the probability of a target-initiated deal. Finally, deals announced during the 2001 economic recession are 10 percentage points more likely to be target-initiated deals than at other times. On the other hand, the 2008 economic recession indicator is not a significant predictor of deal initiation, meaning that the two economic recessions have quite different impacts on takeover market dynamics.²⁹ These results are consistent with our first three hypotheses, namely that target financial and competitive weakness (Hypothesis 1), financial constraints (Hypothesis

²⁹ 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.

2) and negative industry specific and economy wide shocks (Hypothesis 3) increase the likelihood of a target-initiated deal.

Column (2) includes three additional controls, but they are all insignificant. In contrast, Aktas, de Bodt and Roll (2010) report significantly negative coefficients for a target's institutional ownership and Tobin's Q and a significantly positive coefficient for institutional shareholding concentration. However, estimating a regression model analogous to Aktas, de Bodt and Roll (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).

Finally, we investigate whether the target financial weakness and financial constraints hypotheses (Hypotheses 1 and 2) are more relevant during industry-specific or economy-wide shock periods (Hypotheses 3). For instance, financially distressed target firms may be particularly vulnerable to shocks and they may have additional incentives to contact potential acquirers during these periods. To test for the significance of this effect, we interact several of the target financial weakness and financial constraint measures with the economic shock variables and include them as control variables in our probit regressions. Consistent with this conjecture, the results show that underperforming target firms (measured by *change in ROA over the past 3 years*) or financially constrained target firms (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 the target *Altman's Z-score* and *BHAR over the past 1 year*. Due to space constraints, these results are shown in Table A-1 in Appendix D.

5. The Determinants of Premia Paid to Target Firms

In Section 3.3, we show that the deal initiating party has a significant association to the offer premia. We now reexamine 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 4. 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*), competitiveness of the target's industry (*high HHI indicator*), a target financial constraint measure (*SA-index*), and an industry-specific shock indicator (*industry shock index*). Year and industry fixed effects are included as additional controls.³⁰

Table 5 presents regression estimates of target premiums, deal announcement CARs and excess deal multiples. The dependent variables in columns (1) to (4) are *bid premium, target CAR (-2, +2), target CAR (-63, +2)* and the *deal value to EBITDA* multiple, respectively. The regression estimates indicate that deal initiation significantly affects offer premia, and this result holds across different offer premium measures. In column (1), we see that the *bid premium* is significantly reduced economically and statistically in *target-initiated* deals. The coefficient estimate of -0.126 indicates that target firms on average receive 12.6 percentage points smaller premia when they initiate deals relative to bidders making unsolicited offers. The *target-initiated* deal indicators in columns (2) and (3) have coefficients of -0.074 and -0.109 respectively, which are also economically and statistically significant. In column (4), the excess *deal value to EBITDA* coefficient estimate indicates that in target-initiated deals, this deal multiple is 45.1 percentage points lower, which is statistically significant and qualitatively consistent with our earlier univariate findings.^{31, 32}

All four regressions in Table 5 include variables that capture the three types of economic factors posited by Hypotheses 1-3 to motivate targets to initiate deals. Thus, the *target-initiated* coefficient measures its direct relation to offer premia, after controlling for a target's financial and economic weakness, financial constraints and industry-specific shocks, which can motivate targets to initiate deals. Since the *target-initiated* indicator has a statistically significant and economically large coefficient, even after controlling for all these economic motives, we

³⁰ 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 if it is included.

³¹ We replicate these regressions in Appendix D (Table A-2) after excluding all the control variables capturing target financial and competitive weakness, target financial constraints and industry specific shocks. As the first row of Table A-2 shows, the *target-initiated* indicator is very similar to the estimates reported in Table 5.

³² 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.

conclude that these three economic factors have a limited capacity to explain the lower premia observed 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 the predictions of Hypothesis 4.

[Table 5]

However, a weaker form of Hypothesis 4 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 target firms than for financially healthy target firms. Such evidence would support the view that target financial distress influences the premia received by target firms, even though it does not fully explain it. To examine whether the effect of the *target-initiated* indicator on the takeover premia depends on these three economic factors or some other deal initiation factors, we interact the *target-initiated* indicator with each of these factors separately and re-estimate the same set of regressions shown in Table 5 with each of the interaction terms included as an extra control.

Table 6 reports the regression results. In Panel A, we interact the *target-initiation* indicator with the target's *Altman Z-score*. The control variables, which are identical to Table 5, are suppressed to conserve space. In this model, a positive coefficient on the interaction term indicates that the marginal effect of target initiation (which is negative) declines in the target's Altman Z-score (where scores rise with a firm's financial health). Assuming the premium gap between target- and bidder-initiated deals is lower for financially healthy target firms, the sign of the interaction variable should be positive. However, as the estimates show, the coefficient of the interaction term is statistically indistinguishable from zero, meaning that target financial health does not moderate the relationship.

[Table 6]

We interact the *target-initiated* indicator with the *BHAR over the past 1 year* and the *SA* and the *industry shock indices* in the remaining panels of Table 6. The results show that the

coefficients of the interaction terms in these regressions are statistically insignificant.³³ In untabulated analysis, we perform a similar analysis with alternative measures of target financial distress, pre-merger operating performance and financial constraints and uncover 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 4). These findings may be due to the market previously discounting target stock prices for these various forms of competitive and financial weakness.

6. 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 if unaddressed, could bias the coefficient estimates of the explanatory variables. We use a Heckman two-step model to address this potential self-selection bias (Heckman, 1979). The first step involves estimating a selection equation for the target-initiation decision. The second step involves estimating the effects of control variables and the estimated inverse mills ratio on the outcome variable (target premia).³⁴

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 firm's

³³ When we jointly include the measures for all three hypotheses in a single regression, all the interaction terms are insignificant as well.

³⁴ In the original Heckman model, the outcome variable is observable only for the selection subsample; so the outcome equation is estimated for this subsample. In our case, the outcome variable, takeover premium, is observed in both target- and bidder-initiated deals. Hence, we estimate the outcome equation using the entire sample of deals. The only modification of the Heckman procedure we need is inclusion of the estimated inverse mills ratio for the non-selected group (bidder-initiated deals) and a standard errors correction for the coefficients in the outcome equation (Heckman, 1979; Greene, 1981). For a similar application of the Heckman model, see Puri (1996).

private information. As Prabhala and Li (2005) show, the expected value of the error term, conditional on the target's deal initiation decision, is equal to the inverse mills ratio. Therefore, testing for the existence of a 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 an estimate of target managers' private information enables us to directly test the information asymmetry hypothesis (Hypothesis 5), which predicts that target firms receive lower premia when they initiate deals because this decision reveals to potential bidders the target's negative private information. Thus, bidders update their beliefs about the private information held by targets when targets initiate deals. A significantly negative inverse mills ratio in the outcome equation indicates that private information held by target managers has a negative effect on takeover premia. Observing such a negative coefficient estimate is consistent with the information asymmetry hypothesis.

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), Table 4). To pass the exclusivity condition, the IV must only affect the target offer premia through the target-initiation decision. Managers of firms that operate within the same industry may face similar motivations and trade-offs before putting their firms up for sale. Hence, their deal initiation decisions are likely to be positively related to the frequency of prior target-initiated and auction deals in their industries. On the other hand, there is no clear economic rationale for *prior industry target-initiated deal & auction activity* to affect a target firm's offer premium directly, as the primary deal initiation effect on the offer premia is captured by the target-initiated indicator. In the second step equation, we regress target premia on the control variables used in the Table 5 OLS regressions, augmented by the estimated first step inverse mills ratio.³⁵

³⁵ Since inclusion of institutional ownership variables in the probit regressions reduces 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.

We estimate the second step regression using our four measures of target premia as dependent variables. Because the choice of target premia alters the number of 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 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 (ρ) are significantly negative. These results imply that the private information held by target firms lead them to initiate deals, and the very same private information leads to lower target premia. In other words, targets with more negative private information have stronger incentives to contact potential bidders, and when they reveal their private information to bidders through their deal initiation decisions, they receive lower takeover premia. The types of valuable private firm-specific information that the target managers can possess include undisclosed sales and profit forecasts, changing production costs, R&D projects and outcomes, financing issues, legal liabilities, and indications of financial difficulties, among others.

[Table 7]

The significantly negative *target information* coefficients in Table 7 are consistent with the information asymmetry hypothesis (Hypothesis 5). We further test the implications of this hypothesis by assessing whether the effect of target-initiation on offer premia is more severe when the information asymmetry between acquirer and target is relatively high. For instance, the adverse selection problem that acquirers face could be worse when targets are more difficult to value. If Hypothesis 5 is true, then we should observe a larger negative *target information* coefficient for target firms having this characteristic.

To measure the direct 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 measured by the daily stock return standard deviation (net of the value-weighted CRSP portfolio returns) over trading days (-252,-63). Moeller, Schlingemann and Stulz (2007) and Officer, Poulsen and Stegemoller (2009) use this measure to capture information asymmetry between merging firms and outside investors.

2. The dispersion and accuracy of analyst forecasts of target earnings. Forecast dispersion is measured as the standard deviation of the per-share earnings forecast divided by its beginning of period stock price. Analyst forecast error is estimated as the absolute value of the difference between actual per-share earnings and the median analyst per-share earnings forecast in the same period, divided by its stock price. A high level of forecast dispersion and analyst forecast errors is likely to indicate larger disagreement among analysts and more information asymmetry between managers and outsiders (Krishnaswami and Subramaniam, 1999; Thomas, 2002).

3. Target size measured by the most recent year-end book value of total assets prior to the merger announcement. Larger firms typically experience greater information acquisition activity by investors, analysts and outsiders, which should help bidders more accurately assess the market value of larger targets (Barth, Kasznik, McNichols, 2001).

4. Target R&D expenses (Officer, Poulsen and Stegemoller, 2009). Firms with higher R&D intensity are more often in early stages of major risky investment projects, which are inherently more difficult to value.

5. The number and quality of acquirer financial advisors (i.e., investment bankers). The quality of financial advisors is measured by the advisor's market share of M&A deal flow (Rau, 2000; Bao and Edmans, 2011; Krishnan and Masulis, 2013). We measure an advisor's average market share over the three years before the merger announcement date. The bidder's use of more high quality advisors is expected to lessen the adverse selection problem they face.

6. Target tangible asset intensity measured by the ratio of net plant, property and equipment scaled by total assets at the year-end prior to a bid (Leary and Roberts, 2010; Barth, Kasznik, McNichols, 2001). Serious differences of opinion about intangible asset values often exist, which makes valuation of these assets more difficult.

7. Target firm abnormal accruals. Financial statements of target firms are generally less informative when abnormal accruals are high (Lee and Masulis, 1993). We measure abnormal accruals following Kothari, Leone, and Wasley (2005), which is outlined in Appendix C.

8. Distance between merger partner headquarters, measured in miles. Geographically closer firms facilitate a more informed bidder screening/monitoring process, given 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 multicollinearity problem that using multiple information asymmetry measures would entail. The objective of factor analysis is to uncover the common underlying factor or factors captured by the information asymmetry measures discussed above. The details of the construction of the information asymmetry factor are explained in Appendix E.

To identify high and low information asymmetry subsamples, we calculate the sample median for the information asymmetry factor. Deals with above median information asymmetry measure are classified as high information asymmetry deals and the remainder as low information asymmetry deals. We estimate the Heckman procedure separately for the two subsamples using the identical set of control variables that are used in Table 7. Because we have four target premium measures, we must estimate a total of eight regressions. The regression 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.

[Table 8]

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 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 regressions 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.

Overall, our findings are consistent with the information asymmetry hypothesis, which argues that target firms receive lower premia in target-initiated deals because the deal initiation decision reveals important negative private information about a target's value. Bidders are likely to view deal initiating targets to be riskier, and particularly so for difficult to value target firms. As a result, offer premia are reduced further when difficult to value target firms initiate deals. The empirical evidence that we provide in this section is consistent with these predictions.

7. Conclusion

The empirical M&A literature implicitly assumes that acquirers are the parties who initiate M&A deals. In the 1997-2012 period, we show that about 35% of deals in our sample are actually 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 target firms seek to avoid expected bankruptcy costs through preemptive mergers, financially constrained targets seek to merge with cash rich or financially strong

partners to obtain external capital to finance their valuable projects, and underperforming and inefficient firms choose to be taken over during economic recessions as a survival strategy.

Deal initiating target firms receive significantly lower bid premia, announcement CARs and deal value to EBITDA multiples compared to target firms in bidder-initiated deals. We investigate whether the factors that motivate target firms to initiate deals also explain the low premia in target-initiated deals. For instance, we consider and test the hypothesis that financially distressed target firms are willing to accept lower premia to avoid expected bankruptcy costs. While we find evidence that financially distressed target firms receive modestly lower deal multiples, the target-initiated deal indicator remains significantly negative even 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 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. One interpretation of this ratio is that it captures a target's private information, and it 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 the prices offered to targets initiating deals. This adverse selection problem is exacerbated as the information asymmetry between bidder and target firms rises. To further test the information asymmetry hypothesis, we use factor analysis to create an information asymmetry factor that captures the common variability in an array of commonly used firm information asymmetry measures. We 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 power of adverse target financial and competitive conditions to explain lower takeover premia observed in target-initiated deals is that the market has already incorporated into the target's stock price most of the negative information associated with its current poor economic situation. Thus, a target's stock price can be substantially discounted for these factors before the deal announcements. However, the fact that among the firms with similar publicly known weaknesses, a particular target firm decides to sell itself while its stock price is seriously depressed, may reveal even more negative private information held by target managers. Moreover, it is also possible that firms with weak financial or competitive position are more vulnerable to additional 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 these questions for future research.

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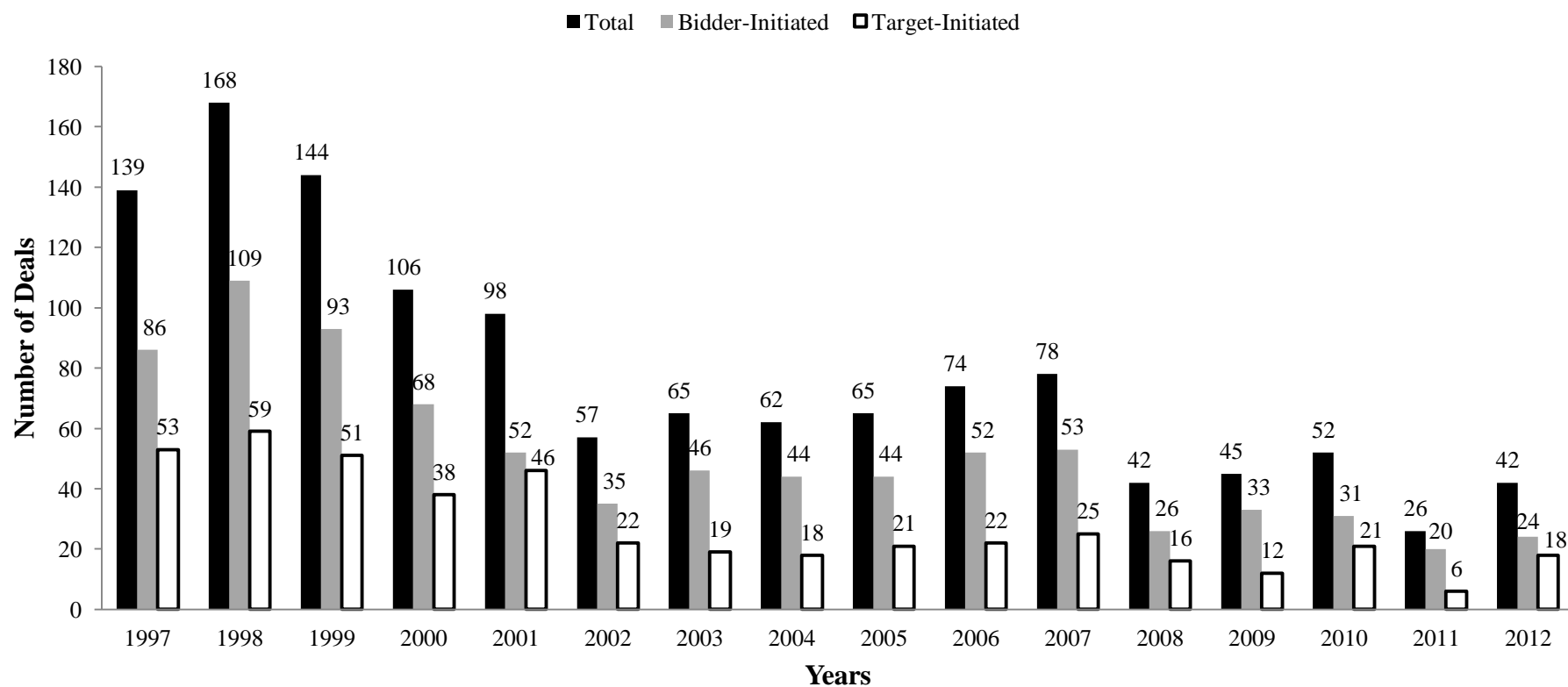


Figure 1. Deal initiation over time

This figure shows 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 US, form of transaction is either ‘merger’ or ‘acquisition of majority interest’, deal status is ‘completed’, and the deal announcement date falls in between 1/1/1997 and 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.

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 US 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 in between 1/1/1997 and 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. *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 offer price divided by 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 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 | | | | | | |
| <i>bid premium</i> | 1,571 | 0.538 | 0.442 | 0.601 | -0.610 | 3.429 |
| <i>target CAR (-2,+2)</i> | 1,636 | 0.264 | 0.219 | 0.269 | -0.286 | 1.307 |
| <i>target CAR (-63,+2)</i> | 1,636 | 0.366 | 0.331 | 0.443 | -0.831 | 1.868 |
| <i>deal value to EBITDA</i> | 856 | 0.756 | -0.099 | 2.883 | -0.940 | 15.319 |
| <i>acquirer CAR (-2,+2)</i> | 1,637 | -0.019 | -0.012 | 0.102 | -0.625 | 0.688 |
| PANEL B. DEAL CHARACTERISTICS | | | | | | |
| <i>percent cash</i> | 1,588 | 0.447 | 0.321 | 0.451 | 0 | 1 |
| <i>tender</i> | 1,639 | 0.220 | 0 | 0.414 | 0 | 1 |
| <i>asset relatedness</i> | 1,639 | 0.642 | 1 | 0.480 | 0 | 1 |
| <i>relative size</i> | 1,634 | 0.269 | 0.121 | 0.358 | 0 | 1.870 |
| <i>acquirer termination fee</i> | 1,639 | 0.006 | 0.000 | 0.017 | 0 | 0.209 |
| <i>target termination fee</i> | 1,639 | 0.052 | 0.046 | 0.049 | 0 | 0.635 |
| <i>toehold</i> | 1,639 | 0.007 | 0.000 | 0.048 | 0 | 0.483 |
| <i>auction</i> | 1,268 | 0.583 | 1 | 0.493 | 0 | 1 |
| PANEL C. ACQUIRER CHARACTERISTICS | | | | | | |
| <i>Tobin's Q</i> | 1,626 | 2.632 | 1.953 | 2.100 | 0.640 | 13.253 |
| <i>book leverage</i> | 1,620 | 0.478 | 0.482 | 0.216 | 0.066 | 1.077 |
| <i>ROA</i> | 1,629 | 0.077 | 0.099 | 0.144 | -0.568 | 0.340 |
| <i>sales growth</i> | 1,617 | 0.301 | 0.115 | 0.699 | -0.487 | 4.990 |
| <i>size</i> | 1,629 | 11,732 | 2,000 | 24,249 | 18 | 130,730 |
| PANEL D. TARGET CHARACTERISTICS | | | | | | |
| <i>Tobin's Q</i> | 1,609 | 2.133 | 1.583 | 1.695 | 0.539 | 11.197 |
| <i>book leverage</i> | 1,607 | 0.460 | 0.429 | 0.263 | 0.058 | 1.457 |
| <i>ROA</i> | 1,617 | -0.027 | 0.053 | 0.270 | -1.405 | 0.289 |
| <i>sales growth</i> | 1,604 | 0.276 | 0.091 | 0.749 | -0.581 | 5.073 |
| <i>size</i> | 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 US 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 in between 1/1/1997 and 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 offer price divided by 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 variation 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. <i>bid premium</i> | | | | | | | | | | |
| <i>entire sample</i> | 424 | 0.487 | 0.388 | 796 | 0.585 | 0.491 | -0.098*** | 0.005 | -0.103*** | 0.000 |
| <i>all equity</i> | 136 | 0.457 | 0.328 | 227 | 0.608 | 0.510 | -0.150** | 0.042 | -0.182*** | 0.002 |
| <i>all cash</i> | 139 | 0.508 | 0.422 | 293 | 0.597 | 0.487 | -0.089* | 0.087 | -0.065** | 0.032 |
| <i>tender</i> | 84 | 0.588 | 0.438 | 216 | 0.626 | 0.537 | -0.038 | 0.605 | -0.098 | 0.168 |
| <i>merger</i> | 340 | 0.462 | 0.378 | 580 | 0.570 | 0.473 | -0.108*** | 0.008 | -0.094*** | 0.000 |
| Panel B. <i>target CAR</i> (-2,+2) | | | | | | | | | | |
| <i>entire sample</i> | 448 | 0.227 | 0.179 | 818 | 0.300 | 0.247 | -0.073*** | 0.000 | -0.068*** | 0.000 |
| <i>all equity</i> | 145 | 0.161 | 0.113 | 233 | 0.241 | 0.200 | -0.081*** | 0.003 | -0.087*** | 0.001 |
| <i>all cash</i> | 145 | 0.310 | 0.276 | 297 | 0.363 | 0.320 | -0.053* | 0.058 | -0.043** | 0.045 |
| <i>tender</i> | 85 | 0.376 | 0.321 | 216 | 0.383 | 0.333 | -0.007 | 0.852 | -0.012 | 0.782 |
| <i>merger</i> | 363 | 0.192 | 0.156 | 602 | 0.270 | 0.227 | -0.078*** | 0.000 | -0.072*** | 0.000 |
| Panel C. <i>target CAR</i> (-63,+2) | | | | | | | | | | |
| <i>entire sample</i> | 448 | 0.335 | 0.284 | 818 | 0.409 | 0.366 | -0.074*** | 0.004 | -0.081*** | 0.001 |
| <i>all equity</i> | 145 | 0.262 | 0.174 | 233 | 0.375 | 0.309 | -0.113** | 0.022 | -0.135*** | 0.005 |
| <i>all cash</i> | 145 | 0.407 | 0.358 | 297 | 0.484 | 0.426 | -0.077* | 0.070 | -0.068* | 0.096 |
| <i>tender</i> | 85 | 0.526 | 0.493 | 216 | 0.507 | 0.446 | 0.019 | 0.733 | 0.047 | 0.947 |
| <i>merger</i> | 363 | 0.290 | 0.250 | 602 | 0.374 | 0.334 | -0.084*** | 0.003 | -0.083*** | 0.001 |
| Panel D. <i>deal value to EBITDA</i> | | | | | | | | | | |
| <i>entire sample</i> | 219 | 0.354 | -0.217 | 441 | 0.906 | -0.034 | -0.552** | 0.021 | -0.182*** | 0.003 |
| <i>all equity</i> | 62 | 0.512 | -0.157 | 121 | 0.833 | -0.148 | -0.320 | 0.493 | -0.009 | 0.874 |
| <i>all cash</i> | 74 | 0.565 | -0.127 | 170 | 1.067 | 0.039 | -0.502 | 0.236 | -0.166** | 0.034 |
| <i>tender</i> | 37 | 0.268 | -0.365 | 125 | 0.646 | -0.034 | -0.378 | 0.401 | -0.331** | 0.037 |
| <i>merger</i> | 182 | 0.372 | -0.183 | 316 | 1.009 | -0.043 | -0.637** | 0.024 | -0.140** | 0.020 |

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 US 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 in between 1/1/1997 and 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. The definitions of the 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 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) | | | |
|---|----------------------|---------|--------|----------------------|--------|--------|------------------|---------|-----------|---------|
| | N | mean | median | N | mean | median | mean | p-value | median | p-value |
| PANEL A. TARGET FINANCIAL DISTRESS MEASURES | | | | | | | | | | |
| <i>Altman's Z-score</i> | 439 | 3.618 | 2.812 | 790 | 4.838 | 3.216 | -1.220** | 0.011 | -0.404*** | 0.004 |
| <i>interest coverage ratio</i> | 358 | -24.464 | 2.261 | 631 | 1.763 | 3.641 | -26.22** | 0.014 | -1.380*** | 0.001 |
| <i>liquidity ratio</i> | 443 | 0.545 | 0.572 | 803 | 0.563 | 0.580 | -0.018 | 0.226 | -0.007 | 0.287 |
| <i>book leverage</i> | 447 | 0.479 | 0.431 | 802 | 0.461 | 0.440 | 0.018 | 0.250 | -0.010 | 0.838 |
| <i>S&P long term credit rating</i> | 84 | 12.44 | 13.00 | 176 | 11.40 | 12.00 | 1.043** | 0.013 | 1.000*** | 0.006 |
| <i>current ratio less than industry median and book leverage greater than industry median</i> | 450 | 0.291 | 0 | 818 | 0.253 | 0 | 0.038 | 0.143 | | |
| <i>stock price on day -63 less than \$5</i> | 450 | 0.331 | 0 | 818 | 0.233 | 0 | 0.098*** | 0.000 | | |
| PANEL B. TARGET OPERATING AND STOCK PERFORMANCE MEASURES | | | | | | | | | | |
| over the past three years: | | | | | | | | | | |
| <i>change in ROA</i> | 434 | -0.246 | -0.013 | 778 | -0.086 | 0.040 | -0.161*** | 0.000 | -0.053*** | 0.003 |
| <i>change in Tobin's Q</i> | 376 | 1.227 | 0.258 | 684 | 1.373 | 0.136 | -0.146 | 0.576 | 0.122 | 0.564 |
| <i>sales growth</i> | 385 | 1.147 | 0.043 | 718 | 1.293 | 0.065 | -0.146 | 0.641 | -0.022 | 0.501 |
| <i>market share growth</i> | 385 | 1.108 | 0.153 | 718 | 1.253 | 0.153 | -0.145 | 0.604 | 0.000 | 0.417 |
| <i>BHAR</i> | 336 | 0.126 | -0.042 | 646 | 0.290 | 0.043 | -0.164** | 0.037 | -0.086** | 0.025 |
| over the past one year: | | | | | | | | | | |
| <i>change in ROA</i> | 447 | -0.090 | 0.001 | 809 | -0.027 | 0.018 | -0.063*** | 0.000 | -0.016** | 0.014 |
| <i>change in Tobin's Q</i> | 445 | 0.285 | -0.038 | 804 | 0.381 | -0.022 | -0.096 | 0.268 | -0.016 | 0.568 |
| <i>sales growth</i> | 443 | 0.162 | -0.001 | 803 | 0.162 | 0.004 | -0.001 | 0.985 | -0.005 | 0.285 |
| <i>market share growth</i> | 443 | 0.203 | 0.047 | 803 | 0.206 | 0.049 | -0.003 | 0.949 | -0.002 | 0.299 |
| <i>BHAR</i> | 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 |
| <i>SA-index</i> | 447 | -2.875 | -2.935 | 809 | -2.991 | -3.046 | 0.116*** | 0.000 | 0.112*** | 0.000 |
| <i>WW-index</i> | 443 | -0.245 | -0.239 | 789 | -0.267 | -0.260 | 0.022*** | 0.000 | 0.021*** | 0.000 |
| <i>KZ-index</i> | 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 |
| <i>industry shock index</i> | 450 | -0.001 | 0.027 | 818 | 0.004 | 0.029 | -0.005 | 0.813 | -0.002 | 0.544 |
| <i>M&A activity (value)</i> | 450 | 0.101 | 0.073 | 818 | 0.102 | 0.072 | 0.000 | 0.937 | 0.002 | 0.742 |
| <i>M&A activity (number)</i> | 450 | 0.474 | 0.403 | 818 | 0.457 | 0.399 | 0.017 | 0.222 | 0.004 | 0.379 |
| <i>2001 economic recession</i> | 450 | 0.162 | 0 | 818 | 0.110 | 0 | 0.052*** | 0.008 | | |
| <i>2008 economic recession</i> | 450 | 0.096 | 0 | 818 | 0.105 | 0 | -0.010 | 0.590 | | |
| Time-series shock indicators | | | | | | | | | | |
| <i>net income / sales shock</i> | 450 | 0.318 | 0 | 818 | 0.333 | 0 | -0.015 | 0.593 | | |
| <i>asset turnover shock</i> | 450 | 0.382 | 0 | 818 | 0.344 | 0 | 0.039 | 0.169 | | |
| <i>R&D shock</i> | 450 | 0.313 | 0 | 818 | 0.296 | 0 | 0.017 | 0.517 | | |
| <i>capital expenditure shock</i> | 450 | 0.291 | 0 | 818 | 0.253 | 0 | 0.038 | 0.143 | | |
| <i>ROA shock</i> | 450 | 0.318 | 0 | 818 | 0.284 | 0 | 0.034 | 0.203 | | |
| <i>employee growth shock</i> | 450 | 0.409 | 0 | 818 | 0.373 | 0 | 0.036 | 0.208 | | |
| <i>sales growth shock</i> | 450 | 0.369 | 0 | 818 | 0.358 | 0 | 0.011 | 0.705 | | |

Table 4. Predicting target-initiated deals

This table presents results of 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 US 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 in between 1/1/1997 and 12/31/2006. This sample is then matched with CRSP and COMPUSTAT databases. Deal initiation data comes from the SEC filings of the merging firms. Due to space limitations, the construction of 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).

| VARIABLES | (1) | (2) |
|--|-------------------------|-------------------------|
| | <i>target-initiated</i> | <i>target-initiated</i> |
| <i>Altman's Z-score</i> | -0.0006 (-0.118) | 0.0013 (0.192) |
| <i>liquidity</i> | -0.472** (-2.167) | -0.458** (-2.068) |
| <i>change in ROA over the past 3 years</i> | -0.131* (-1.847) | -0.150** (-2.009) |
| <i>BHAR over the past 1 year</i> | -0.132 (-1.620) | -0.132 (-1.559) |
| <i>high HHI</i> | 0.162** (1.964) | 0.176** (2.095) |
| <i>SA-index</i> | 0.329*** (3.276) | 0.303** (2.013) |
| <i>industry shock index</i> | 0.052 (0.491) | 0.044 (0.404) |
| <i>2001 economic recession</i> | 0.253** (2.170) | 0.246** (2.076) |
| <i>2008 economic recession</i> | -0.104 (-0.667) | -0.095 (-0.604) |
| <i>prior industry target-initiated deal & auction activity</i> | 0.652** (1.991) | 0.665** (2.020) |
| <i>institutional shareholding concentration</i> | | 0.061 (0.209) |
| <i>institutional ownership</i> | | -0.002 (-0.011) |
| <i>Tobin's Q</i> | | -0.0137 (-0.398) |
| Constant | 0.645* (1.720) | 0.601 (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 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 US 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 in between 1/1/1997 and 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 offer price divided by 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 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).

| VARIABLES | (1) | (2) | (3) | (4) |
|---|-----------------------|---------------------------|----------------------------|-----------------------------|
| | <i>bid premium</i> | <i>target CAR (-2,+2)</i> | <i>target CAR (-63,+2)</i> | <i>deal value to EBITDA</i> |
| <i>target-initiated</i> | -0.126*** (-3.415) | -0.074*** (-4.399) | -0.109*** (-4.449) | -0.451* (-1.808) |
| <i>percent cash</i> | -0.019 (-0.224) | 0.052** (2.060) | 0.047 (1.260) | 0.562 (1.326) |
| <i>tender</i> | 0.024 (0.506) | 0.073*** (2.991) | 0.052 (1.591) | -0.509 (-1.472) |
| <i>asset relatedness</i> | 0.040 (1.114) | 0.005 (0.314) | 0.003 (0.118) | -0.193 (-0.753) |
| <i>acquirer termination fee</i> | 1.512 (1.322) | -0.489 (-1.138) | 0.645 (0.911) | -1.611 (-0.196) |
| <i>target termination fee</i> | 3.503*** (4.793) | 0.254 (1.587) | 1.707*** (4.868) | 2.613 (0.580) |
| <i>toehold</i> | 0.727 (1.073) | -0.286 (-1.196) | 0.219 (0.648) | 2.380 (0.657) |
| <i>ln(relative size)</i> | -0.056*** (-4.951) | -0.028*** (-4.743) | -0.061*** (-7.881) | -0.026 (-0.276) |
| <i>acquirer Tobin's Q</i> | -0.003 (-0.303) | 0.0008 (0.199) | -0.012* (-1.770) | 0.160 (1.611) |
| <i>acquirer ROA</i> | -0.145 (-0.818) | 0.046 (0.613) | -0.012 (-0.109) | -3.981** (-2.274) |
| <i>Altman's Z-score</i> | -0.004* (-1.791) | -0.0034*** (-3.825) | -0.005*** (-3.321) | 0.068*** (2.700) |
| <i>liquidity</i> | 0.061 (0.573) | 0.029 (0.611) | 0.041 (0.614) | 1.416** (2.113) |
| <i>change in ROA over the past 1 year</i> | 0.051 (1.276) | 0.019 (1.130) | 0.038 (1.405) | -1.261** (-2.540) |
| <i>BHAR over the past 1 year</i> | -0.089** (-2.125) | -0.069*** (-4.999) | -0.280*** (-10.64) | 0.023 (0.0670) |
| <i>high HHI</i> | 0.015 (0.423) | 0.001 (0.062) | -0.014 (-0.585) | -0.541** (-2.162) |
| <i>SA-index</i> | 0.066 (1.160) | 0.035 (1.390) | 0.045 (1.257) | 0.147 (0.426) |
| <i>industry shock index</i> | -0.083 (-1.160) | -0.020 (-0.881) | -0.074* (-1.788) | -0.153 (-0.292) |

| | | | | |
|--------------------------|------------------|-------------------|------------------|------------------|
| Constant | 0.353 (1.624) | 0.173* (1.897) | 0.225 (1.625) | 0.556 (0.408) |
| Observations | 1,005 | 1,037 | 1,037 | 555 |
| Adjusted R-squared | 0.187 | 0.183 | 0.300 | 0.110 |
| 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 US 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 in between 1/1/1997 and 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 offer price divided by 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 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%.

| | <i>bid premium</i> | <i>target CAR (-2,+2)</i> | <i>target CAR (-63,+2)</i> | <i>deal value to EBITDA</i> |
|--|----------------------|---------------------------|----------------------------|-----------------------------|
| Regression 1: financial distress measure is <i>Altman's Z-score</i> | | | | |
| <i>target-initiated</i> | -0.104** (-2.00) | -0.077*** (-3.73) | -0.109*** (-3.49) | -0.187 (-0.64) |
| <i>Altman's Z-score</i> | -0.002 (-0.72) | -0.003*** (-3.34) | -0.004*** (-2.65) | 0.088*** (2.81) |
| <i>Altman's Z-score x target-initiated</i> | -0.005 (-0.89) | 0.001 (0.30) | 0.000 (-0.03) | -0.061* (-1.84) |
| N | 1005 | 1037 | 1037 | 555 |
| F-test p-value | 0.000 | 0.000 | 0.000 | 0.032 |
| Regression 2: target performance measure is <i>BHAR over the past 1 year</i> | | | | |
| <i>target-initiated</i> | -0.110*** (-2.98) | -0.075*** (-4.50) | -0.110*** (-4.53) | -0.515** (-2.15) |
| <i>BHAR over the past 1 year</i> | -0.079 (-1.58) | -0.077*** (-5.02) | -0.283*** (-8.97) | 0.025 (0.06) |
| <i>BHAR over the past 1 year x target-initiated</i> | 0.007 (0.09) | 0.027 (0.89) | 0.048 (0.92) | -0.013 (-0.02) |
| N | 1051 | 1085 | 1085 | 573 |
| F-test p-value | 0.005 | 0.000 | 0.000 | 0.099 |
| Regression 3: financial constraints measure is <i>SA-index</i> | | | | |
| <i>target-initiated</i> | -0.323 (-1.14) | -0.097 (-0.86) | -0.347** (-1.97) | -2.163 (-1.60) |
| <i>SA-index</i> | 0.090 (1.54) | 0.038 (1.30) | 0.074* (1.89) | 0.354 (0.81) |
| <i>SA-index x target-initiated</i> | -0.067 (-0.74) | -0.008 (-0.21) | -0.081 (-1.43) | -0.565 (-1.34) |
| N | 1005 | 1037 | 1037 | 555 |
| F-test p-value | 0.002 | 0.000 | 0.000 | 0.123 |

Regression 4: shock measure is *industry shock index*

| | | | | |
|--|----------------------|----------------------|----------------------|--------------------|
| <i>target-initiated</i> | -0.130*** (-3.60) | -0.069*** (-4.09) | -0.102*** (-4.17) | -0.403* (-1.84) |
| <i>industry shock index</i> | -0.123 (-1.62) | -0.026 (-1.12) | -0.089** (-2.05) | -0.480 (-1.08) |
| <i>industry shock index x target-initiated</i> | 0.086 (0.72) | -0.036 (-0.87) | 0.046 (0.66) | 0.426 (0.72) |
| N | 1005 | 1037 | 1037 | 555 |
| F-test p-value | 0.001 | 0.000 | 0.000 | 0.181 |

Table 7. Selection bias, deal initiation and target premia

This table presents results of 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 US 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 in between 1/1/1997 and 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 offer price divided by 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. Due to space limitations, the construction of 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).

| VARIABLES | (1) <i>bid premium</i> | (2) <i>target CAR (-2,+2)</i> | (3) <i>target CAR (-63,+2)</i> | (4) <i>deal value to EBITDA</i> |
|--|---------------------------|----------------------------------|-----------------------------------|------------------------------------|
| <i>target information</i> | -0.078*** (-3.61) | -0.045*** (-4.49) | -0.067*** (-4.58) | -0.288* (-1.93) |
| <i>percent cash</i> | -0.011 (-0.22) | 0.052** (2.16) | 0.047 (1.35) | 0.564 (1.51) |
| <i>tender</i> | 0.023 (0.51) | 0.073*** (3.35) | 0.052 (1.63) | -0.513 (-1.58) |
| <i>asset relatedness</i> | 0.039 (1.10) | 0.005 (0.32) | 0.002 (0.11) | -0.196 (-0.78) |
| <i>acquirer termination fee</i> | 1.519 (1.36) | -0.485 (-0.92) | 0.651 (0.85) | -1.596 (-0.20) |
| <i>target termination fee</i> | 3.502*** (9.95) | 0.253 (1.56) | 1.705*** (7.23) | 2.585 (0.87) |
| <i>toehold</i> | 0.727* (1.88) | -0.285* (-1.68) | 0.219 (0.89) | 2.381 (0.79) |
| <i>ln(relative size)</i> | -0.056*** (-4.72) | -0.028*** (-5.07) | -0.061*** (-7.68) | -0.026 (-0.31) |
| <i>acquirer Tobin's Q</i> | -0.003 (-0.30) | 0.0008 (0.17) | -0.012* (-1.74) | 0.161** (2.06) |
| <i>acquirer ROA</i> | -0.146 (-0.98) | 0.046 (0.68) | -0.013 (-0.13) | -3.988*** (-2.72) |
| <i>Altman's Z-score</i> | -0.004* (-1.85) | -0.003*** (-2.88) | -0.005*** (-2.90) | 0.070*** (3.94) |
| <i>liquidity</i> | 0.082 (0.87) | 0.041 (0.94) | 0.059 (0.93) | 1.517** (2.32) |
| <i>change in ROA over the past 3 years</i> | 0.055* (1.71) | 0.021 (1.44) | 0.042* (1.93) | -1.300*** (-3.64) |
| <i>BHAR over the past 1 year</i> | -0.083** (-2.45) | -0.066*** (-4.14) | -0.276*** (-11.79) | 0.032 (0.12) |
| <i>high HHI</i> | 0.007 (0.21) | -0.003 (-0.19) | -0.020 (-0.85) | -0.579** (-2.35) |
| <i>SA-index</i> | 0.051 (1.06) | 0.026 (1.17) | 0.031 (0.98) | 0.086 (0.25) |

| | | | | |
|-----------------------------|-------------------|-------------------|---------------------|-------------------|
| <i>industry shock index</i> | -0.084 (-1.49) | -0.022 (-0.84) | -0.076** (-2.01) | -0.166 (-0.41) |
| Constant | 0.259 (1.44) | 0.117 (1.39) | 0.142 (1.17) | 0.192 (0.15) |
| Observations | 1,005 | 1,037 | 1,037 | 555 |
| Adjusted R-square | 0.187 | 0.183 | 0.300 | 0.110 |
| 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 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 US 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 in between 1/1/1997 and 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 offer price divided by 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 low asymmetry subsample is smaller than that of in the high information subsample. All regressions include year and industry dummies (coefficients not reported).

| Information Asymmetry Proxy | (1) | | (2) | | (3) | | (4) | | (5) | | (6) | | (7) | | (8) | |
|---|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|-----------------------------|---------------------------|-----------------------------|---------------------------|
| | <i>bid premium</i> | | <i>target CAR (-2,+2)</i> | | <i>target CAR (-63,+2)</i> | | <i>target CAR (-63,+2)</i> | | <i>target CAR (-63,+2)</i> | | <i>target CAR (-63,+2)</i> | | <i>deal value to EBITDA</i> | | <i>deal value to EBITDA</i> | |
| | High information asymmetry | Low information asymmetry | High information asymmetry | Low information asymmetry | High information asymmetry | Low information asymmetry | High information asymmetry | Low information asymmetry | High information asymmetry | Low information asymmetry | High information asymmetry | Low information asymmetry | High information asymmetry | Low information asymmetry | High information asymmetry | Low information asymmetry |
| <i>target information</i> | -0.102*** (-2.71) | -0.049** (-2.21) | -0.064*** (-4.03) | -0.027** (-2.20) | -0.094*** (-3.96) | -0.047** (-2.69) | -0.094*** (-3.96) | -0.047** (-2.69) | -0.094*** (-3.96) | -0.047** (-2.69) | -0.723** (-2.71) | -0.211 (-1.33) | -0.723** (-2.71) | -0.211 (-1.33) | -0.723** (-2.71) | -0.211 (-1.33) |
| Observations | 487 | 477 | 508 | 488 | 508 | 488 | 508 | 488 | 508 | 488 | 240 | 298 | 240 | 298 | 240 | 298 |
| Adjusted R-square | 0.131 | 0.304 | 0.195 | 0.197 | 0.277 | 0.312 | 0.277 | 0.312 | 0.277 | 0.312 | 0.164 | 0.037 | 0.164 | 0.037 | 0.164 | 0.037 |
| H ₀ : m _{high} >m _{low} (p-value) | | 0.119 | | 0.035 | | 0.058 | | 0.058 | | 0.058 | | | | | | 0.050 |
| 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 | High information asymmetry | Low information asymmetry | High information asymmetry | Low information asymmetry | High information asymmetry | Low information asymmetry | High information asymmetry | Low information asymmetry |
| <i>target information</i> | -0.130*** (-3.90) | -0.039* (-1.85) | -0.059*** (-3.64) | -0.026** (-2.09) | -0.109*** (-4.44) | -0.040** (-2.39) | -0.109*** (-4.44) | -0.040** (-2.39) | -0.109*** (-4.44) | -0.040** (-2.39) | -0.481 (-1.53) | -0.397* (-1.97) | -0.481 (-1.53) | -0.397* (-1.97) | -0.481 (-1.53) | -0.397* (-1.97) |
| Observations | 411 | 423 | 429 | 429 | 429 | 429 | 429 | 429 | 429 | 429 | 164 | 299 | 164 | 299 | 164 | 299 |
| Adjusted R-square | 0.178 | 0.336 | 0.200 | 0.172 | 0.269 | 0.348 | 0.269 | 0.348 | 0.269 | 0.348 | 0.002 | 0.165 | 0.002 | 0.165 | 0.002 | 0.165 |
| H ₀ : m _{high} >m _{low} (p-value) | | 0.012 | | 0.059 | | 0.011 | | 0.011 | | 0.011 | | | | | | 0.411 |

| 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 |
|---|----------------------------------|---------------------------------|----------------------------------|---------------------------------|----------------------------------|---------------------------------|----------------------------------|---------------------------------|
| <i>target information</i> | -0.125*** (-3.80) | -0.012 (-0.45) | -0.070*** (-4.66) | -0.027** (-2.06) | -0.093*** (-4.15) | -0.033* (-1.82) | -0.312 (-1.59) | -0.249 (-1.14) |
| Observations | 495 | 510 | 514 | 523 | 514 | 523 | 266 | 289 |
| Adjusted R-square | 0.160 | 0.249 | 0.183 | 0.223 | 0.255 | 0.381 | 0.147 | 0.106 |
| H ₀ : m _{high} >m _{low} (p-value) | | 0.005 | | 0.016 | | 0.022 | | 0.416 |
| 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 |
| <i>target information</i> | -0.121*** (-3.08) | -0.038* (-2.03) | -0.056*** (-3.34) | -0.047*** (-4.13) | -0.102*** (-4.00) | -0.041*** (-2.90) | -0.702** (-2.35) | -0.075 (-0.50) |
| Observations | 484 | 521 | 507 | 530 | 507 | 530 | 218 | 337 |
| Adjusted R-square | 0.146 | 0.274 | 0.158 | 0.234 | 0.274 | 0.345 | 0.106 | 0.173 |
| H ₀ : m _{high} >m _{low} (p-value) | | 0.028 | | 0.323 | | 0.019 | | 0.031 |

Appendix A. Examples of bidder- and target-initiated deals

Note: Information on the initiating party is italicized.

A.1. Bidder-initiated deal

"International Paper Company" acquiring "Union Camp Corporation". From S-4 filed to the SEC on 3/30/1999:

Beginning in June 1998, Mr. John T. Dillon, International Paper's Chairman and Chief Executive Officer, discussed on several occasions with International Paper's board of directors the competitive trends in the forest products industry and the importance of focusing on areas where International Paper could develop a more competitive position. During these discussions, Mr. Dillon identified and compared domestic and international competitors, finally focusing on an intensive review of five or six domestic competitors as candidates for merger or acquisition [...]. To pursue these objectives, Mr. Dillon secured the board of directors' approval to investigate the possibility of a merger with another forest products company.

Ultimately, Mr. Dillon concluded that a combination transaction with Union Camp was the most compelling and strategic choice, as he viewed Union Camp as providing the best fit and requiring the least restructuring in a combination with International Paper [...]

On October 13, 1998, International Paper's board of directors reviewed the advisability of a merger with Union Camp. After this review, it authorized Mr. Dillon to pursue a transaction by contacting Union Camp.

On October 21, 1998, Mr. Dillon called Mr. W. Craig McClelland, Union Camp's Chairman and Chief Executive Officer, to express International Paper's interest in combining with Union Camp and to advise Mr. McClelland that he was sending a letter to him proposing a transaction [...]

A.2. Target-initiated deal

"Eastern Enterprises" acquiring "Colonial Gas Company". From S-4 filed to SEC on 12/16/1998:

During the past several years, the Colonial Board had periodically evaluated Colonial's long-term position and strategic alternatives in view of the trend toward deregulation and consolidation in the gas distribution industry [...]

The Colonial Board retained Salomon Smith Barney in March 1998 to assist it in exploring its strategic options [...]

In its assessment of strategic options, Colonial, with the assistance of Salomon Smith Barney, identified six companies, including Eastern, that fit one or more of its strategic combination objectives. Preliminary discussions with these six companies took place in June and July 1998. From these discussions, Colonial identified three companies, including Eastern, with which it might have an interest in pursuing a business combination transaction, depending on whether the terms of such a transaction would meet the objectives of achieving benefits for stockholders, customers and employees.

Following a meeting of the Colonial Board on July 15, 1998, Colonial invited the three companies to engage in a diligence investigation after signing confidentiality agreements with Colonial [...]

On September 23, 1998, the Eastern Board met and authorized Eastern's management to proceed with an offer to acquire Colonial based upon the terms and conditions as presented at the meeting. Representatives of Merrill Lynch, Pierce, Fenner & Smith Incorporated, Eastern's financial advisor, were present at the meeting and gave a preliminary presentation to the Eastern Board regarding the proposed offer price and the terms and conditions of the proposed acquisition.

Appendix B. Definitions of abnormal returns, bid premia and deal value to EBITDA multiples

We estimate market model parameters $(\hat{\alpha}, \hat{\beta})$ by running an OLS regression in the estimation period.

$$R_{i,t} = \alpha_i + \beta_i R_{m,t} + \varepsilon_{i,t} \quad (A1)$$

where $R_{i,t}$ is the return to firm i at day t , $R_{m,t}$ are the returns to the value-weighted CRSP market portfolio at day t , and $\varepsilon_{i,t}$ is the zero mean constant variance error term. Following Schwert (2000), we set the estimation period as $(-316,-64)$ trading days relative to the announcement day of the merger (day 0).

The abnormal returns in the event period are calculated as,

$$CAR_i^k = \sum_{t=-k}^k AR_{i,t} \quad (A2)$$

$$AR_{i,t} = R_{i,t} - (\hat{\alpha}_i + \hat{\beta}_i R_{m,t}) \quad (A3)$$

where $2k+1$ is the event window size, $AR_{i,t}$ the abnormal returns to firm i on day t and CAR_i^k is the cumulative abnormal returns to firm i in the event window. We choose $k=2$ and accumulate abnormal returns over $(-2,+2)$. As an alternative measure, we calculate CARs over the $(-63,+2)$ period. If the target firm is involved in a merger related activity within the $(-126,-63)$ period, we extend the event window for that deal to capture the "Original Date Announced" field in SDC (Mulherin and Simsir, 2015).

The bid premium (*bid premium*) is defined as follows,

$$bid\ premium = \frac{\text{offer price}}{\text{target stock price at trading day}-63} - 1 \quad (A4)$$

where trading day -63 is with respect to the "Original Date Announced" field in SDC.

We follow the same procedure as in Officer (2007) for creating the deal value to EBITDA multiple. For each deal in our sample, we download from SDC the portfolio of deals satisfying the following criteria: (i) the reference target firm is in the same 2-digit SDC code of the target firm, (ii) the reference target firm is public (the target firms in our sample are all public), (iii) the deal value (excluding the

assumed liabilities) of the reference deal is within 20% of the deal value, (iv) the announcement date of the reference deal is within the three calendar year window centered on the announcement date of the deal, and (v) the deal value to EBITDA multiples of the reference deals are not missing. We restrict reference deals to those for more than 50% of shares, where the percent of shares owned by the acquirer after the merger is greater than 50%. SDC does not calculate deal value to EBITDA multiple when the EBITDA is negative. To increase the sample size, we estimate the average EBITDA using the mean of the past two years' data before the merger announcement date, and use it to replace the negative EBITDA value (including reference deals). To prevent fractional EBITDA values from substantially inflating the EBITDA multiples, we eliminate observations where EBITDA values that are less than 1 million USD.

After identifying the reference deals, we calculate the mean deal value to EBITDA value of the reference portfolio. The excess deal value to EBITDA multiple of a particular deal is calculated as the percent difference between the deal value to EBITDA multiple and the mean deal value to EBITDA multiple of the reference portfolio. As Officer (2007) recognizes, the excess deal value to EBITDA multiple have significant outliers. Therefore, we winsorize the distribution of excess deal value to EBITDA multiples at the 2% and 98% levels.

Appendix C. Variable definitions

Unless otherwise stated, deal and financial variables are calculated using the most recent annual financial statements (at the financial year end prior to the merger announcement). Firm level variables are winsorized at 1st and 99th percentiles. Dummy and industry-level variables are not winsorized.

| PANEL A. DEAL CHARACTERISTICS | DEFINITION | SOURCE | COMPUSTAT DATA ITEM |
|--|---|---------------|--|
| <i>Percent cash</i> | Percent of total payments to the target firm that is in cash. | SDC | |
| <i>Tender</i> | 1 if tender offer, 0 otherwise. | SDC | |
| <i>Asset relatedness</i> | 1 if 2-digit SIC codes of the merging firms match, 0 otherwise. | SDC | |
| <i>Relative size</i> | Market value of equity of the target firm divided by the market value of equity of the buyer firm, evaluated 63 trading days before the first merger announcement. | CRSP | |
| <i>Acquirer termination fee</i> | Termination fee for the target divided by the market value of equity of the target firm evaluated 63 trading days before the first merger announcement. | SDC | |
| <i>Target termination fee</i> | Termination fee for the buyer divided by the market value of equity of the buyer firm evaluated 63 trading days before the first merger announcement. | SDC | |
| <i>Toehold</i> | Percent of target firm shares held by the acquirer at the merger announcement date. | SDC | |
| <i>Auction</i> | 1 if the target firm contacts and negotiates with more than 1 bidder in the private phase of the merger negotiations, 0 otherwise. | SEC documents | |
| PANEL B. FINANCIAL CHARACTERISTICS OF THE MERGING FIRMS | | | |
| <i>Tobin's Q</i> | Market value of assets divided by the book value of assets. Market value of assets is calculated as total assets – book value of equity + market value of equity (number of common shares outstanding times share price). | COMPUSTAT | (at-seq+mcap)/at |
| <i>Book leverage</i> | Book value of debt divided by the book value of assets. | COMPUSTAT | lt/at |
| <i>ROA</i> | EBIT divided by book value of total assets. | COMPUSTAT | ebit/at |
| <i>Sales growth</i> | Percent growth of inflation-adjusted total sales over the past year. | COMPUSTAT | [sale _t -sale _{t-1}]/sale _{t-1} |
| <i>Size</i> | Inflation-adjusted market value of equity. | COMPUSTAT | csho*prcc_f |
| PANEL C. TARGET FINANCIAL DISTRESS MEASURES | | | |
| <i>Altman's Z-score</i> | $1.2*(\text{Working capital}/T. \text{ Assets}) + 1.4*(\text{Retained earnings}/T.\text{Assets}) + 3.3*(\text{EBIT}/T.\text{Assets}) + 0.6*(\text{MV Equity}/\text{BV Debt}) + 0.999*(\text{Sales}/T.\text{Assets})$ | COMPUSTAT | $1.2*[(\text{act-lct})/\text{at}] + 1.4*[\text{re}/\text{at}] + 3.3*[(\text{pi}+\text{xint})/\text{at}] + 0.6*[\text{csho}*\text{prcc}_f/\text{lt}] + 0.999*[\text{sale}/\text{at}]$ |
| <i>Interest coverage ratio</i> | EBIT divided by interest expense. | COMPUSTAT | ebit/xint |
| <i>Liquidity</i> | Current assets divided by total assets | COMPUSTAT | act/at |
| <i>S&P long-term credit rating</i> | S&P long term credit rating of the target firm in numerical format. AAA corresponds to 1, AA+ corresponds to 2, AA corresponds to 3, and so on. The numerical values of high ratings are therefore lower. | COMPUSTAT | splticrm |

| | | |
|---|--|-----------|
| <i>Current ratio less than industry median and book leverage greater than industry median</i> | 1 if the current ratio of the target firm is less than the median current ratio of the firms in the target firm's industry and the book leverage of the same target firm is less than the median book leverage of the firms in the same industry, 0 otherwise. Industries are defined using the 2-digit SIC codes. | COMPUSTAT |
| <i>Stock price on day -63 less than \$5</i> | 1 if the stock price of the target firm on trading day -63 (relative to the first merger announcement date) is less than \$5, and 0 otherwise. | CRSP |

PANEL D. TARGET OPERATING AND STOCK PERFORMANCE MEASURES

| | | |
|--|--|--------------------------------------|
| <i>High HHI</i> | HHI is the Herfindahl-Hirschman Index of the industry that the target firm is operating in. The industries are defined using the text-based network industry classification methodology employed by Hoberg and Phillips (2010). The indicator variable takes a value of 1 if the HHI of the target firm's industry is greater than the median, 0 otherwise. | COMPUSTAT, Hoberg and Phillips |
| <i>Change in ROA, Tobin's Q, sales growth (1 or 3 years)</i> | The absolute change in the industry adjusted ROA of the target firm over the past 1 (or 3) years. Industries are defined using 2-digit SIC codes. Other variables are calculated similarly. | COMPUSTAT |
| <i>Market share growth (1 or 3 years)</i> | The percent growth in the market share of the target firm. For a given fiscal year, the market share of a company is the ratio of its annual sales to the total sales of the firms in its industry. Industries are defined using 2-digit SIC codes. | COMPUSTAT |
| <i>BHAR (1 or 3 years)</i> | Buy-and-Hold abnormal returns to the target firms 1 (or 3) years before the merger announcement date. For each target in our sample, we go back 1 year and identify the group of firms in the target firm's industry (2-digit SIC) that have similar characteristics. These firms are first divided into quintiles based on target size (market value of equity) and each quintile is then divided into quintiles based on their Book-to-Market ratios. We take the group of firms as control firms that fall into our target firm's group, and estimate their returns over the (-12 month, -3 month) period (we exclude the three month period or about 63 trading days prior to the merger announcement date to eliminate any bias that may arise in the merger announcement run-up period). The buy-and-hold abnormal return is then defined as the target firm's buy-and-hold returns minus the median of the buy-and-hold returns to the control group. | CRSP, COMPUSTAT |

PANEL E. TARGET FINANCIAL CONSTRAINTS VARIABLES

| | | |
|-----------------|---|-----------|
| <i>SA-index</i> | $SA\text{-index} = -0.737*(Size) + 0.043*(Size^2) - 0.04*(Age)$, where size is the natural log of the inflation adjusted (to 2004 USD) book value of assets and age is the number of years the firm has been on Compustat with a non-missing stock price. We winsorize size at 4.5 billion USD and age at 37. Calculations follow Hadlock and Pierce (2010). | COMPUSTAT |
|-----------------|---|-----------|

| | | |
|-----------------|---|-----------|
| <i>WW-index</i> | WW-index = $-0.091 \times (\text{Cash flow}) - 0.062 \times (\text{Dividend payer indicator}) + 0.021 \times (\text{Leverage}) - 0.044 \times \log(\text{Book value of Assets}) + 0.102 \times (\text{Industry sales growth}) - 0.035 \times (\text{Firm sales growth})$. Calculations follow Whited and Wu (2006). | COMPUSTAT |
| <i>KZ-index</i> | KZ-index = $-1.001909 \times (\text{Cash flow}) + 3.139193 \times (\text{Leverage}) - 39.36780 \times (\text{Dividend}) - 1.314759 \times (\text{Cash holdings}) + 0.2826389 \times (\text{Q ratio})$. Calculations follow Lamont, Polk and San-Requejo (2001). Note that cash flow and leverage variables are calculated differently from that of the WW-index. | COMPUSTAT |

PANEL F. INDUSTRY SPECIFIC AND ECONOMY WIDE SHOCK VARIABLES

| | | | |
|--|---|-------------------|--------------------------------------|
| <i>Industry shock index</i> | Following Harford (2005), we estimate, for each industry (defined by 2-digit SIC code), the median change in firm profitability, asset turnover, R&D expenditures, capital expenditures, employee growth, ROA and sales growth. The industry shock index is the first principal component of these seven variables. We lag the industry shock index one year so that it measures the economic shock the year before the merger announcement date. The calculation of the variables is explained below. | COMPUSTAT | |
| <i>Net income / sales shock</i> (indicator) | We estimate the yearly changes in firm profitability, asset turnover, R&D expenditures, capital expenditures, employee growth, ROA and sales growth figures over the 1986-2012 period. We then estimate the median change in the respective variable for each industry (defined by 2-digit SIC code), which yields 27 yearly observations for each variable at the industry level. We also identify the 75th percentile of the distribution of the 27 observations for each variable at the industry level. Indicators take a value of 1 if the variable value is greater than the 75th percentile. | COMPUSTAT | |
| <i>Asset turnover shock</i> (indicator) | | | ni/sale |
| <i>R&D shock</i> (indicator) | | | sale _t /at _{t-1} |
| <i>Capital expenditure shock</i> (indicator) | | | xrd _t /at _{t-1} |
| <i>ROA shock</i> (indicator) | | | capx _t /at _{t-1} |
| <i>Employee growth shock</i> (indicator) | ebit/at | | |
| <i>Sales growth shock</i> (indicator) | [emp _t -emp _{t-1}]/emp _{t-1} | | |
| <i>Sales growth shock</i> (indicator) | [sale _t -sale _{t-1}]/sale _{t-1} | | |
| <i>M&A activity</i> | Total value of mergers in target firms' industry divided by the total book value of assets of firms in target firms' industry, where both figures are estimated in the same year the deal is announced. Mergers include LBOs, tenders offers, spinoffs, exchange offers, minority stock purchases, acquisitions of minority interest, privatizations and equity carve-outs, and excludes undisclosed value deals, self-tenders and share repurchases. Industries are defined by 2-digit SIC codes. | SDC, COMPUSTAT | |
| <i>2001 economic recession</i> | 1 if the deal is announced between September 2000 and May 2002, 0 otherwise. | NBER | |
| <i>2008 economic recession</i> | 1 if the deal is announced between June 2007 and December 2009, 0 otherwise. | NBER | |

PANEL G. INFORMATION ASYMMETRY MEASURES

| | | | |
|---|---|-----------|----------|
| <i>Target idiosyncratic volatility</i> | Standard deviation of target firm stock returns (net of value-weighted CRSP portfolio) over (-252,-63), relative to the deal announcement date. | CRSP | |
| <i>Target book value of total assets</i> | Inflation adjusted book value of total assets. | COMPUSTAT | at |
| <i>Target R&D expenses</i> | Research and development expenditures divided by total sales. | COMPUSTAT | xrd/at |
| <i>Target tangibility</i> | Net plant, property and equipment divided by total assets. | COMPUSTAT | ppent/at |
| <i>Target abnormal accruals</i> | Our performance-adjusted abnormal accruals calculations are based on Kothari et.al (2005). We first use the modified Jones model to estimate the abnormal accruals for each firm. We require at least 10 observations in the respective industry-year pair to run the regression. Then, we subtract the median abnormal accrual value for the set of firms that have similar ROA values for the past year, from the abnormal accrual value. Performance-adjusted abnormal accruals is then defined as the absolute value of the resulting estimate. The details of the estimation procedure are explained in Karpoff, Lee and Masulis (2013). | COMPUSTAT | |
| <i>Distance between headquarters</i> | The distance between merging firm headquarters in nautical miles. Zip codes of the headquarters are obtained from SDC. | SDC | |
| <i>Target analyst forecast error</i> | Analyst forecast error is defined as the absolute value of the difference between announced per-share earnings and the median analyst forecast for the same earnings period. The most recent analyst forecasts that are made right before the earnings announcements are used to calculate the median forecast. Forecast errors are deflated by the stock price of the firm. Because forecast errors can be calculated quarterly, we calculate the average analyst forecast error over the four quarters preceding the first merger announcement date. | I/B/E/S | |
| <i>Target analyst forecast dispersion</i> | Analyst forecast dispersion is defined as the standard deviation of analyst forecasts deflated by the firm stock price. The most recent analyst forecasts that are made right before the earnings announcements are used to calculate the standard deviation. We calculate analyst forecast dispersion for each of the four quarterly earnings announcements that immediately precede the first merger announcement. At the final step, we take the average of the four forecast dispersion estimates. | I/B/E/S | |
| <i>Number of acquirer advisors</i> | The number of financial advisors retained by the acquiring firm. | SDC | |
| <i>Acquirer advisor quality</i> | Advisor quality is proxied by the market shares of financial advisors, as reported in the SDC's league tables. The league tables are estimated yearly. We take the average market share of the advisors over the three years preceding the first merger announcement date. When an acquirer has multiple financial advisors, we take the maximum market share of its advisors. | SDC | |

PANEL H. OTHER VARIABLES

| | | |
|--------------------------------|--|--------------|
| <i>Institutional ownership</i> | Percent of target firm shares owned by institutions. | SDA/Spectrum |
|--------------------------------|--|--------------|

| | | |
|--|---|--------------|
| <i>Institutional shareholding concentration</i> | Herfindahl-Hirschman Index of institutional shareholdings in the target firm. | SDA/Spectrum |
| <i>Prior industry target-initiated deal & auction activity</i> | The total number of target-initiated or auction deals in target firm's industry (defined by 2-digit SIC codes) within the past two calendar years of the first merger announcement date divided by the total number of mergers completed within the same industry over the same period. The overall sample of mergers needs to satisfy the following criteria: i) 'Deal value' is greater than \$5 million; (ii) Targets are publicly traded companies located in the US and are not finance or utility firms; (iii) The legal form of transaction is either 'merger' or 'acquisition of majority interest'; (iv) The deal status is 'completed'. | SDC |

Appendix D. Additional tests

Table A-1. Predicting target-initiated deals: Interaction of hypotheses

This table presents results of 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 US 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 in between 1/1/1997 and 12/31/2006. This sample is then matched with CRSP and COMPUSTAT databases. Deal initiation data comes from the SEC filings of the merging firms. Due to space limitations, the construction of 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).

| VARIABLES | (1) <i>target-initiated</i> | (2) <i>target-initiated</i> | (3) <i>target-initiated</i> | (4) <i>target-initiated</i> |
|--|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| <i>Altman's Z-score</i> | -0.0017 (-0.300) | -0.0003 (-0.066) | -0.0019 (-0.351) | -0.0022 (-0.391) |
| <i>change in ROA over the past 3 years</i> | -0.047 (-0.552) | -0.112 (-1.545) | -0.125* (-1.771) | -0.131* (-1.858) |
| <i>BHAR over the past 1 year</i> | -0.123 (-1.497) | -0.131 (-1.609) | -0.154* (-1.877) | -0.156* (-1.905) |
| <i>SA-index</i> | 0.348*** (3.447) | 0.281*** (2.721) | 0.327*** (3.252) | 0.330*** (3.284) |
| <i>industry shock index</i> | 0.057 (0.528) | 0.063 (0.577) | 0.139 (1.206) | 0.071 (0.682) |
| <i>2001 economic recession</i> | 0.188 (1.528) | 1.863** (2.387) | 0.266** (2.278) | 0.257** (2.203) |
| <i>change in ROA over the past 3 years x 2001 economic recession</i> | -0.248* (-1.729) | | | |
| <i>SA-index x 2001 economic recession</i> | | 0.562** (2.084) | | |
| <i>Altman's Z-score x industry shock index</i> | | | -0.017** (-2.100) | |
| <i>BHAR over the past 1 year x industry shock index</i> | | | | -0.269* (-1.803) |
| Constant | 0.702* (1.864) | 0.501 (1.305) | 0.608 (1.616) | 0.632* (1.684) |
| Observations | 1,072 | 1,072 | 1,072 | 1,072 |
| LR chi-square statistic | 45.62 | 49.23 | 48.28 | 47.91 |
| Prob>LR chi-square | 0.000 | 0.000 | 0.000 | 0.000 |
| Industry dummies (SIC-1) | Yes | Yes | Yes | Yes |
| Other controls shown in Table 4 | Yes | Yes | Yes | Yes |

Table A-2. OLS model without key explanatory variables

This table presents results of the OLS regressions without the financial and competitive weakness, financial constraints and the industry and economic shocks variables. 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 US 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 in between 1/1/1997 and 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 experienced by target firms over the (-2,+2) period. *target CAR (-63,+2)* is estimated similarly. The normal returns are calculated using the market model with an estimation window of (-316,-64). *bid premium* is offer price divided by 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. *target-initiated* is 1 if the deal is classified as target-initiated, and 0 if bidder-initiated. Due to space limitations, the construction of deal and financial characteristics of the merging firms 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 (not reported).

| VARIABLES | (1) | (2) | (3) | (4) |
|---------------------------------|---------------------------|----------------------------|-----------------------|-----------------------------|
| | <i>target CAR (-2,+2)</i> | <i>target CAR (-63,+2)</i> | <i>bid premium</i> | <i>deal value to EBITDA</i> |
| <i>target-initiated</i> | -0.088** (-2.469) | -0.065*** (-4.224) | -0.078*** (-3.233) | -0.564** (-2.397) |
| <i>percent cash</i> | -0.002 (-0.040) | 0.063*** (2.677) | 0.072* (1.949) | 0.658* (1.742) |
| <i>tender</i> | 0.021 (0.490) | 0.072*** (3.149) | 0.067** (2.058) | -0.492 (-1.557) |
| <i>asset relatedness</i> | 0.073** (2.253) | 0.018 (1.154) | 0.028 (1.137) | 0.041 (0.160) |
| <i>acquirer termination fee</i> | 1.593 (1.367) | -0.406 (-0.975) | 0.931 (1.290) | -2.752 (-0.364) |
| <i>target termination fee</i> | 3.451*** (5.538) | 0.223 (1.461) | 1.468*** (4.975) | 2.438 (0.599) |
| <i>toehold</i> | 0.650 (1.216) | -0.217 (-1.156) | 0.342 (1.149) | 2.315 (0.756) |
| <i>ln(relative size)</i> | -0.057*** (-5.899) | -0.028*** (-5.292) | -0.064*** (-8.206) | -0.062 (-0.705) |
| <i>acquirer Tobin's Q</i> | -0.013 (-1.567) | -0.003 (-0.826) | -0.016** (-2.067) | 0.357*** (3.396) |
| <i>acquirer ROA</i> | -0.131 (-0.896) | -0.045 (-0.669) | -0.275** (-2.535) | -5.175*** (-2.955) |
| Constant | 0.145* (1.757) | 0.054 (1.631) | 0.030 (0.557) | 0.318 (0.603) |
| Observations | 1,177 | 1,217 | 1,217 | 636 |
| Adjusted R-squared | 0.161 | 0.154 | 0.180 | 0.042 |
| Industry dummies (SIC-1) | Yes | Yes | Yes | Yes |
| Year dummies | Yes | Yes | Yes | Yes |

Table A-3. OLS and Heckman regressions with target CARs estimated over (-126,+2)

This table presents results of the OLS and Heckman regressions. The dependent variable is *target CAR (-126,+2)*. 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 US 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 in between 1/1/1997 and 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 (-126,+2)* is the abnormal returns to the target firms over the (-126,+2) period. The normal (expected) returns are calculated using the market model with an estimation window of (-316,-126). The event study procedure is 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 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).

| VARIABLES | (1) - OLS | (2) - OLS | (3) - Heckman |
|---|-----------------------------|-----------------------------|-----------------------------|
| | <i>target CAR (-126,+2)</i> | <i>target CAR (-126,+2)</i> | <i>target CAR (-126,+2)</i> |
| <i>target-initiated</i> | -0.122*** (-3.375) | -0.104*** (-3.064) | -0.075*** (-3.579) |
| <i>percent cash</i> | 0.046 (0.848) | 0.047 (0.897) | 0.046 (0.918) |
| <i>tender</i> | 0.0520 (1.084) | 0.053 (1.139) | 0.0518 (1.137) |
| <i>asset relatedness</i> | -0.051 (-1.453) | 0.008 (0.254) | -0.051 (-1.482) |
| <i>acquirer termination fee</i> | 0.814 (0.882) | 0.250 (0.263) | 0.820 (0.749) |
| <i>target termination fee</i> | 4.077*** (5.230) | 3.838*** (5.595) | 4.076*** (12.109) |
| <i>toehold</i> | 0.319 (0.660) | 0.548 (1.291) | 0.320 (0.911) |
| <i>ln(relative size)</i> | -0.059*** (-5.061) | -0.062*** (-5.659) | -0.059*** (-5.180) |
| <i>acquirer Tobin's Q</i> | -0.029*** (-2.624) | -0.038*** (-3.313) | -0.029*** (-2.944) |
| <i>acquirer ROA</i> | 0.0154 (0.0929) | -0.330** (-2.309) | 0.0149 (0.105) |
| <i>Altman's Z-score</i> | -0.008*** (-3.215) | | -0.008*** (-3.341) |
| <i>liquidity</i> | 0.088 (0.954) | | 0.109 (1.194) |
| <i>change in ROA over the past 1 year</i> | 0.094** (2.550) | | 0.099*** (3.179) |
| <i>BHAR over the past 1 year</i> | -0.284*** (-7.187) | | -0.279*** (-8.391) |
| <i>high HHI</i> | -0.044 (-1.295) | | -0.051 (-1.492) |
| <i>SA-index</i> | 0.068 (1.362) | | 0.053 (1.147) |
| <i>industry shock index</i> | -0.133** (-2.265) | | -0.136** (-2.503) |
| Constant | 0.186 (0.960) | -0.0285 (-0.363) | 0.0937 (0.540) |
| Observations | 1,037 | 1,216 | 1,037 |
| Adjusted R-squared | 0.285 | 0.200 | 0.300 |
| Year & Industry (SIC-1) dummies | Yes | Yes | Yes |

Appendix E. Construction of the information asymmetry factor

The factor analysis procedure produces four factors that have positive eigenvalues (Table A-4). Among the four factors, the first factor has the largest eigenvalue that is significantly greater than one, suggesting that the first factor should be retained as the information asymmetry factor (Kaiser criterion). The average Kaiser-Meyer-Olkin (KMO) statistics of 0.679 suggest that the overall sampling adequacy of the factor analysis is satisfied. The factor loadings for a target's idiosyncratic volatility, R&D intensity, abnormal accruals, analyst forecast dispersion, analyst forecast error and the distance between merging firm headquarters are positive, while the factor loadings for a target's book value of assets, asset tangibility, number of acquirer advisors and acquirer advisor quality are negative. The signs of the information asymmetry measures are consistent with theoretical predictions. That is to say, the information asymmetry factor is expected to have a positive association with a target's idiosyncratic volatility, R&D intensity, abnormal accruals, analyst forecast dispersion, analyst forecast error and the distance between merging firm headquarters and a negative association with the remaining variables.

Table A-4. Information asymmetry factor

This table presents results of a factor analysis used for creating the information asymmetry factor. 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 US 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 in between 1/1/1997 and 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. Variable definitions are described in Appendix C. The factors having negative eigenvalues are not reported in the table. KMO stands for the Kaiser-Meyer-Olkin statistics.

| | predicted correlation with information asymmetry | Factor 1 | Factor 2 | Factor 3 | Factor 4 | KMO |
|---|---|-------------|-------------|-------------|-------------|-------|
| <i>target idiosyncratic volatility</i> | + | 0.199 | -0.056 | -0.017 | -0.066 | 0.811 |
| <i>target analyst forecast dispersion</i> | + | 0.326 | 0.362 | 0.028 | 0.158 | 0.592 |
| <i>target analyst forecast error</i> | + | 0.270 | 0.313 | -0.070 | -0.142 | 0.604 |
| <i>target abnormal accruals</i> | + | 0.049 | -0.063 | 0.141 | 0.135 | 0.757 |
| <i>distance between headquarters</i> | + | 0.044 | -0.058 | 0.134 | -0.174 | 0.741 |
| <i>target R&D expenses</i> | + | 0.044 | -0.043 | 0.135 | 0.176 | 0.637 |
| <i>target book value of total assets</i> | - | -0.250 | 0.303 | -0.084 | -0.024 | 0.716 |
| <i>target tangibility</i> | - | -0.093 | 0.138 | -0.243 | 0.078 | 0.705 |
| <i>number of acquirer advisors</i> | - | -0.122 | 0.201 | 0.219 | 0.026 | 0.737 |
| <i>acquirer advisor quality</i> | - | -0.096 | 0.162 | 0.280 | -0.059 | 0.691 |
| KMO overall | | | | | | 0.679 |
| Eigenvalue | | 2.122 | 1.191 | 0.317 | 0.103 | |