

The effects of litigation on mergers and acquisitions

Kun Zhao

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Signed by the final examining committee:

Dr. Ingrid Chadwick Chair

Dr. Saif Ullah Examiner

Dr. Ravi Mateti Examiner

Dr. Thomas Walker and Dr. Frederick Davis Supervisor

Approved by _____

Chair of Department or Graduate Program Director

Dean of Faculty

Date _____

ABSTRACT

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This paper investigates whether litigation impacts merger and acquisition outcomes for defendant firms. Our results indicate that being a defendant of a single lawsuit within the last two years appears to significantly increase the premium paid to this firm when it becomes the target of a takeover attempt, while incurring multiple lawsuits over this timeframe decreases the premium (albeit not significantly so). Litigation is also correlated with takeover announcements, as incurring lawsuits within the last two years is associated with a significant increase in target firm candidacy (the likelihood of becoming a target), and incurring litigation after the takeover announcement is associated with a significant decrease in takeover completion. We explain our results through investor overreaction and uncertainty avoidance.

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I. Introduction

Merger and acquisition (M&A) activities have attracted global attention in recent years. In this context, predicting target candidacy and its underlying determinants are at the forefront of scholars' and investors' concerns. The development of statistical models is motivated by the fact that the capability to predict takeover targets is the foundation of potentially effective investment strategies (Brar, Giamouridis, and Liodakis, 2009). Besides exploring the characteristics of takeover targets (e.g., Shleifer and Vishny, 2003; Powell and Yawson, 2005), improving the accuracy of predicting merger announcement and takeover completion (e.g., Palepu, 1986; Brar, Giamouridis, and Liodakis, 2009; Cornett et al., 2011) is also a crucial issue within the M&A field.

Predicting target candidacy/merger announcements has been linked to a significant amount of publicly available information (e.g., Brar, Giamouridis, and Liodakis, 2009; Cornett et al., 2011), but few studies have considered the effects of litigation on this process. The need to hand-collect data is one major obstacle. Litigation should be a pivotal factor, as lawsuits result in a negative market reaction and place the defendant in financial distress (Bhagat, Brickley, and Coles, 1994). Litigation, paired with these market reactions, has the potential to be a good approach for predicting merger candidacy and takeover completion. In this paper, we fill in this gap by investigating the effects of litigation on mergers and acquisitions (hereafter M&As). Specifically, using a large and complete sample of shareholder class action lawsuits from 1998 to 2014 recorded by Stanford's Securities Class Action Clearinghouse (SCAC), we investigate how litigation affects the takeover process.

The contributions of this paper are as follows. First, this is the first study, to our knowledge, to explore the combined effects of all litigation lawsuits on M&As. Previous studies (e.g., Krishnan, Masulis, Thomas, and Thompson, 2012) focus on acquisition-oriented lawsuits, which incorporate only a small portion of litigation types. In addition, our analysis integrates research done by Brar, Giamouridis, and Liodakis (2009) with Cornett, Tanyeri, and Tehrani (2011) and extends their work by incorporating the effects of litigation. Using a comprehensive dataset of U.S. firms from 1998 to 2014, we find that litigation helps predict target candidacy, takeover completion, and takeover premium. Our results should be useful for investors by showing that they should consider potential litigation effects before they make their investment decisions.

The remainder of this paper is structured as follows. Section II provides a literature review and briefly summarizes some variables that measure firm and deal characteristics which are used in our analyses. In Section III, we outline our hypotheses. Section IV discusses our data and methodology. Section V interprets our results. Section VI concludes and Section VII discusses the limitations of this paper.

II. Literature Review

Takeover candidacy indicates that a company is a good candidate for purchase. Abundant empirical studies tend to predict takeover candidates by using financial and other publicly available information. Many researchers have explored and improved the models of predicting takeover likelihood. Previous studies suggest that certain variables can influence and determine a target's takeover probability. To find the determinants predicting takeover likelihood, Palepu (1986) uses a sample of 163 targets from 1971 to 1979 and tests six hypotheses that are frequently discussed in the literature. He demonstrates the firm size hypothesis, which states that the acquisition probability decreases as the firm size increases and illustrates that a target firm's size increases the cost associated with the target's defense, causing a negative sign in the acquisition likelihood. Gorton, Kahl, and Rosen (2009) also document that firm size is a determinant of M&A. They point out that it is more defensive for a target to have a similar size as its acquirer, showing that the relative size is also important. Acquirers are more interested in larger targets because of economies of scale. Potential bidders are required to make trade-offs. In addition, a robust size effect is that the abnormal return associated with acquiring small firms is larger than that of acquiring large firms. Moeller, Schlingemann, and Stulz (2004) show that this size effect is not reversed over time.

Marris (1964) and Kuehn (1969) first include the market-to-book ratio as a determinant of acquisition probability. The assumption is that a firm with lower market-to-book value is cheaper to buy. They also confirm this negative relation between the takeover likelihood and the market-to-book ratio. However, Palepu (1986) suspects this assumption by stating that the book value of a firm may not reflect its assets' replacement value. He finds statistically insignificant coefficients for the market-to-book ratio in his acquisition likelihood model using a U.S firm sample from 1971 to 1979 and demonstrates that his suspicion is right. Subsequently, Davis, Gerald, and Stout (1992) use takeover targets during 1980–1990 and find that firms with a higher

market-to-book value could lower the risk of takeover. They state that takeovers tend to locate underperforming firms; therefore, a higher market-to-book value indicates a lower risk. This result is consistent with early studies, but inconsistent with that of Palepu (1986). All in all, the influence of the market-to-book ratio on the takeover likelihood remains ambiguous.

Grossman and Hart (1982) show that leverage affects a firm's acquisition probability. They illustrate that leverage could affect a firm's market value and thus influences the probability of takeover. Using an assumption that a firm's financial structure is controlled by its management, the authors state that issuing debt makes a firm unsafe from bankruptcy and thus encourages the management to maximize profit. In this way, a firm gets a higher market value, which, in general, is positively related to the price a bidder needs to pay, and decreases the probability of takeover. Jensen (1986) points out that leverage is associated with costs. The optimal debt-to-equity ratio can raise agency costs and lower the acquisition likelihood. Using a sample from 1979 to 1990, Billett (1996) also finds that the likelihood of being acquired decreases as the firm's leverage increases. He illustrates this phenomenon as the coinsurance effect. The coinsurance effect states that regardless of whether the bidder's assets or the takeover synergy coinsures the target debt, wealth will transfer from the bidder and target equity holders to the target debt holders. Since this wealth transfer decreases takeover profit, it lowers the acquisition probability. These findings are not a spurious by-product of the negative correlation between the takeover probability and leverage.

Cash can either increase or decrease the takeover probability, and the results are inconsistent. On the one hand, some studies find that the likelihood of being acquired decreases as the firm's cash flow increases. First, if a target has excess cash flow, this could enhance its defense against an unwanted bid and decrease the likelihood of being a target (Harford, J. 1999). According to Bagwell (1991), Stulz (1988), and Dann and DeAngelo (1988), targets can use excess cash flow to repurchase their stock, file antitrust litigation, and acquire a bidder's competitor to defend a takeover. On the other hand, some papers illustrate that the probability of being acquired increases as the firm's cash flow increases. Powell (1997) argues that there is a positive relationship between cash flow and takeover probability. He demonstrates this by modeling takeover likelihood using a sample of U.K. firms from 1984 to 1991. Opler, Pinkowitz, Stulz, and Williamson (1999) also suggest that cash is positively related to acquisition likelihood, as it can

increase a bidder's gain by giving the bidder liquid assets that are useful to finance the acquisition.

Harford (2005) studies the characteristics that drive M&A waves and concludes that sales growth is one of the determinants. Brar, Giamouridis, and Liodakis (2009) use sales growth as a proxy for inefficient management and demonstrate a negative effect on acquisition likelihood. Higher sales growth indicates that a firm operates quite well and thus reduces its likelihood of being a target. Cornett, Tanyeri, and Tehranian (2011) utilize sales growth as a proxy for economies of scale and scope and state that mergers can be motivated by reducing cost through economies. Their final results also certify the negative relationship between sales growth and target candidacy.

The price-to-earnings (PE) ratio is the ratio of a company's share price to its earnings per share. It is used to measure a firm's performance. The PE ratio affects the takeover likelihood on both bidders' and targets' sides. Huang, Jiang, Lie, and Yang (2014) find a positive significant relationship between the PE ratio and the acquiring likelihood of bidders. Palepu (1986) uses the PE ratio to predict takeover targets and concludes that there is a positive but insignificant relationship. As a proxy for undervaluation, the PE ratio is included in the study done by Brar, Giamouridis, and Liodakis (2009) to predict European takeover targets.

In addition to all these tested variables, many researchers are still working on developing a prediction model. Brar, Giamouridis, and Liodakis (2009) test different variables, such as the industry disturbance dummy, profit margin, asset turnover, and return on equity to determine their associations with takeover bids. Cornett, Tanyeri, and Tehranian (2011) include more characteristics and use them to measure the management's motives related to M&As. Our paper includes not only variables that are frequently suggested in previous literature, but also a litigation dummy and a multiple suits dummy to examine the effects of litigation on M&A activities.

Furthermore, predicting takeover success has recently attracted researchers' attention, as it can help investors and arbitrageurs identify profitable situations. Many researchers have attempted to use publicly available information to predict takeover success. Hoffmeister and Dyl (1981) include many measurements to assess a target's financial situation, vulnerability to takeover attempts, status in its industry, and management attitude in their model; they document that the

target's management attitude, which is measured by whether it accepts cash tender offers or not, the firm's growth in earnings, its current ratio, payout ratio, and PE ratio have a significant influence on predicting takeover completion. Some researchers hold the idea that premiums are important in the takeover process, while unfortunately they have not found significant support for their thinking. Walkling (1985) uses logistic regression to test bid premium size, targets' managerial resistance, the percentage of shares owned by the bidder, solicitation fees, and the effect of competing bids on predicting takeover completion. Using tender offers from 1972 to 1977, he concludes that the bid premium is a determinant predicting takeover completion. He mentions that the insignificant previous findings are due to a failure to specify the premium. More recently, however, Branch and Yang (2003) still do not find a statistically significant relation between the bid premium and takeover completion.

Price movements are also predictors in the tender offer completion model (Samuelson and Rosenthal, 1986). They propose that a target's stock prices during the offer period are informative and help predict takeover completion. The result shows that higher stock prices increase the probability of takeover completion, leading to the conclusion that market prices have the ability to calibrate themselves well. Based on the limitations of their sample data, however, these conclusions need to be verified with more consideration. Branch and Yang (2003) also attempt to use the post-price variable to predict takeover completion, but they find it to be statistically insignificant.

The takeover payment method also has its place in predicting takeover completion. Myers and Majluf (1984) show that cash payment has a positive influence on takeover success, as using cash gives the market a positive signal about the acquirer's financial ability. On the contrary, Mitchell and Pulvino (2001) state that a cash payment increases the failure of takeover completion. Following their work, Branch and Yang (2003) use tender offers from the 1991 to 2001 period and find a positive significant relationship between cash payment and takeover completion, which supports Myers and Majluf's idea.

Moreover, Branch, Wang, and Yang (2008) collect a sample from 1991 to 2004 and demonstrate that four variables, target resistance, arbitrage spread, deal structure, and transaction size, play significant and dominated roles in their takeover success prediction model. Since abundant variables have been used to test their associations with predicting takeover completion, our paper

also includes a number of firm characteristics and deal characteristics. We aim to find a model with a reduced number of significant variables. Our main objection, however, is to identify litigation's effects in the takeover completion process.

Researchers never lose their interest in finding the determinants of takeover payment, as the means of financing is crucial to investors. Corporate finance usually emphasizes the influence of acquisition finance on taxation and information asymmetries (Franks, Harris, and Mayer, 1988). Using the sample of U.K. and U.S. acquisitions, Franks, Harris, and Mayer (1988) fail to find a theory of the takeover payment choice.

The relative size between the target and the bidder is a determinant predicting the takeover payment method, but the results remains inconsistent. Grullon, Michaely, and Swary (1997) find a negative relationship between the relative size and all-cash payment. However, Martin (1996) finds insignificant results. One possible explanation for this inconsistency could be the different measurements of relative size. Zhang (2001) uses U.K. acquisitions from 1990 to 1999 and confirms that the all-cash payment method is negatively associated with the relative size between the target and the acquirer.

Faccio and Masulis (2005) state that takeover payment has a strong relationship with a bidder's debt situation. Since cash payment usually leads to debt financing, increasing the stress of a firm's financial situation, if the acquirer has a high leverage ratio, it would decline a cash payment. They also argue that cash payment relates to the management's need to maintain the current corporate structure. Unfortunately, they fail to test this theory due to data limitations. Moreover, they document that cross-border deals are positively associated with cash payment. Bidders tend to choose cash payment in cross-border deals because of the high trading costs in foreign markets, the high exchange risk, and more government limitations.

Over the past twenty years, takeover premium has played an important role in the M&A field since it closely relates to returns. Officer (2003) uses a Securities Data Corporation (SDC) sample from 1988 to 2000 and documents that the market value of both targets and bidders affects takeover premium. A larger target's market value leads to a lower takeover premium while a larger bidder's market value causes them to pay a higher premium. He also tests deal characteristics' explanatory power, but his results are insignificant.

Bugeja and Walter (1995) state that a target's previous performance affects takeover premium. They hypothesize that the target's poor performance leads to a higher premium since bidders believe that their management is much more efficient. However, this hypothesis is rejected, as the findings are insignificant. In addition, a significant and negative relationship between free cash flow and takeover premium is confirmed in their paper.

The subject of litigation is popular in the field of law. Unfortunately, however, the effects of litigation are not fully explored within M&A, and existing empirical studies mainly focus on acquisition-oriented litigation or shareholder litigation in M&A transactions, which constitute only a small portion of litigation types. One potential reason is the need to hand-collect data. Thompson and Thomas (2004) study acquisition-oriented litigation lawsuits and find that acquisition-oriented lawsuits lead to a higher premium since the bidders offer a higher price to buy the targets' shareholders' support. Krishnan, Masulis, Thomas, and Thompson (2012) explore the types of bids that are likely to trigger litigation, finding that larger offers, offers in which the bidder has previous shareholdings in the target, and offers that involve more cash financing are more likely to be involved in shareholder litigation problems. They also state that the takeover premium is higher if the target becomes involved in shareholder litigation in the M&A process. In this way, they find that M&A-related litigation can influence the bidding process.

Even though the effects of litigation on M&As have not been fully explored, many researchers hold the position that investors should take potential litigation effects into consideration before they make their investment decisions. In the case of Qwest Communications International Inc., analysts think litigation is undesirable within takeovers, as investors are unsure about the actions of any potential suitors; thus, they need to wait at least one or two years.¹ To provide new evidence on the importance of litigation in the M&A field, in this paper, we explore the effects of litigation on M&As using a significantly larger and more complete sample than those utilized in other papers. We obtain our lawsuit sample from SCAC. Our sample contains lawsuits filed from 1998 to 2014. Unlike other studies, we do not focus on exploring the effects of acquisitions on litigation; on the contrary, we are more interested in the effects of litigation on M&As. In

¹ Retrieved from https://0-global.factiva.com.mercury.concordia.ca/ha/default.aspx#/!/?&_suid=1452285419713000910475174896419.

addition, we do not restrict our litigation type to a merger-oriented one since we are more interested in observing the effects of all litigation types within M&As.

III. Hypotheses

HYPOTHESIS I: A firm is more likely to become a target if it has been subject to a lawsuit.

A firm's stock price usually fluctuates when it is subject to a lawsuit. In general, the market reacts negatively to the firm and causes its stock price to drop (Bhagat, Brickley, and Coles, 1994; Gande, and Lewis, 2009). The theory behind this is the investors' overreaction to the firm's stock price. Psychological phenomena, such as misvaluation (Rhodes-Kropf and Viswanathan, 2004), are thus reflected in the stock returns. If a firm's price decreases too much, the firm can be undervalued in this litigation period and become a good candidate for purchase. Further, lawsuit types expose many potential firm problems, such as management inefficiencies, insider trading problems, and false revenue disclosures. This gives bidders a chance to reevaluate both the market and the defendant. Once bidders find out that the defendant is not as bad as its price reflects, they could make a bid. In this way, we suppose that the probability of receiving a tender offer is increased if the firm has been involved in a litigation lawsuit.

HYPOTHESIS II-a: Once a takeover bid is announced, the probability of takeover completion is no longer impacted by a prior lawsuit, which is conditional upon the announcement.

The hypothesis is that once a takeover bid is announced, the probability of takeover completion will not be influenced, regardless of whether the target is involved in a litigation lawsuit prior to the takeover announcement or not. Bidders choose to give a tender offer only when they find out that the target serves their interests. In hypothesis I, we propose that litigation lawsuits should incorporate useful information about the target, and that investors should take this into consideration when they plan to make a tender offer. Since this happens before the takeover announcement, litigation lawsuits and multiple suits should not have a significant effect on takeover completion.

HYPOTHESIS II-b: The probability of takeover completion will decrease if the target is involved in a litigation lawsuit after the takeover announcement.

According to Krishnan, Masulis, Thomas, and Thompson (2012), the probability of takeover completion is lower if the M&A bids are subject to shareholder litigations. Based on their results,

we also presume that a litigation lawsuit following a takeover announcement would reduce the probability of takeover completion.

A litigation lawsuit following a takeover announcement gives bidders more information about the target and helps them to reconsider their offers. If the expected net benefits decrease after reconsideration, bidders may choose to quit. In addition, some firms might dislike dealing with the target's lawsuit uncertainty, and thus may also choose to give up completing this merger process.

HYPOTHESIS III: The probability of cash payment in a takeover will increase if a target is subject to a litigation lawsuit or multiple suits.

We predict that bidders prefer to make cash payments when the target is involved in a one or more litigation lawsuits. Bhagat, Brickley, and Coles (1994) document that lawsuits result in wealth loss for affected firms whereas settlements of such litigation produce wealth gain. Thus, the post-lawsuit yet pre-settlement period may provide bidders an opportunity to buy an undervalued target. Myers and Majluf (1984) show that cash payment has a positive influence on takeover success. We propose that if the bidder wants to speed up the takeover process, they may prefer to pay in cash. What's more, Bhagat, Brickley, and Coles (1994) state that lawsuits can take a firm into a position of financial distress rather than economic distress.² Even if the effects of litigation lawsuits on revealing asymmetry information remain uncertain, the market reacts negatively to the targets. Bidders dislike involving target's management in their board. To avoid changing the existing corporate capital structure, bidders do not choose stock considerations. Furthermore, litigations and multiple suits lead to fluctuations in targets' stock prices (Bhagat, Brickley, and Coles, 1994; Gande, and Lewis, 2009). To avoid stock uncertainty, bidders may have a higher incentive to pay cash.

HYPOTHESIS IV: A target earns a higher premium if it has been subject to litigation before an M&A announcement.

A target could be more attractive after litigation and earn a higher premium. Gande and Lewis (2009) note a price drop after a litigation announcement. Bhagat, Brickley, and Coles (1994)

² Wruck (1990) shows that a firm's leverage in its capital structure can result in financial distress, while poor operating behaviors can trigger economic distress. These two distresses usually occur at the same time, but financial distress can happen without economic distress.

document that lawsuits result in wealth loss and settlements produce wealth gain. This trend indicates a firm's potential undervaluation following a litigation announcement; as such, we hypothesize that if investors make a bid after the target's litigation, they are willing to offer a higher price. Moreover, litigation gives bidders a chance to evaluate the target more carefully. If they still want to buy the firm after litigation, this shows that bidders value the target more than its current price. Targets can be more attractive after lawsuit; as such, bidders tend to compete and offer a higher price, which increases the premium.

IV. Data & Methodology

4.1 Data and Sample Selection

Our dataset includes firms that are available in the Compustat Fundamentals Quarterly dataset between January, 1998 and December, 2014. We match them with the federal securities class action lawsuits obtained from SCAC and an M&A dataset that we extract from the SDC U.S. Mergers and Acquisitions database. The data collection process is as follows:

First, 668,881 firm-quarter observations are exported from the Compustat Fundamentals Quarterly dataset. We also identify 3,614 lawsuits between January 1, 1998 and December 31, 2014 that meet the following criteria:

1. U.S. publicly traded firms whose lawsuit filing dates cover the period from January 1, 1998 to December 31, 2014. A total of 3614 firms are recorded by SCAC.
2. In total, 705 privately traded firms, firms with an undermined ticker and firms without PERMNO and GVKEY are excluded.

Second, we obtain our acquisition sample from the SDC:

1. U.S. firms whose takeover announcement dates cover the period from January 1, 1998 to December 31, 2014.
2. Exclude spinoffs, recapitalizations, self-tenders, and repurchases.
3. Targets are publicly traded firms.
4. The percent of shares owned after the transaction is greater than 50%.
5. Remove duplicates.
6. Remove firms without PERMNO and GVKEY.

We also require firms to have annual financial statement information available in Compustat one year prior to either the litigation announcement or the acquisition announcement, and their price and return data are available in CRSP 42 days prior to the announcement. The final sample contains 244,696 firm-quarter observations, and descriptive statistics are shown in Table 1.

Panel A of Table 1 provides descriptive statistics for the variables used in our regression for predicting target candidacy. Our final sample in this regression contains 2,385 merger announcements. Panel B of Table 1 displays the variables used to predict takeover completion and cash payment. We finally include 1,429 merger announcements here after incorporating more control variables such as acquirers' characteristics and deal characteristics. The number of completed bids is 1,325. Our sample includes 331 cash offers. Panel C of Table 1 focuses on the variables used to predict takeover premium. Our final sample contains 1,393 firms in this regression.

In addition, to reduce the outliers' effect, we follow Cornett, Tanyeri, and Tehranian (2011) and windsorize variables in the sample at the 1st and 99th percentiles. For variables with high standard deviations, such as the market-to-book ratio (Target), the PE ratio (Target), the return on equity ratio (ROE) (Target), and the market-to-book ratio (Acquirer), we windsorize them at the 10th and 90th percentiles.

Table 2 describes the Pearson correlation coefficients in this paper. Panel A of Table 2 shows the Pearson correlation coefficients of variables in predicting takeover target candidacy. Panel B of Table 2 presents the coefficients of variables in predicting takeover completion and takeover cash payment. Panel C of Table 2 contains the correlation coefficients of variables in the takeover premium model. We find no high correlations here since all coefficients are below 0.5.

4.2 Variable Construction

4.2.1 Independent Variable Construction

To test the effects of litigation on M&As, we introduce five independent dummy variables:

- (1) *Litigation One Year Prior*: *Litigation One Year Prior* is a dummy variable that equals one if a firm has undergone a lawsuit during (-4,-1) quarters prior to the observation period (quarter 0), and it is zero otherwise.

- (2) *Litigation Two Year Prior*: *Litigation Two Year Prior* is a dummy variable that equals one if a firm has at least one lawsuit in the last two years prior to the observation period, and it is zero otherwise.
- (3) *Suit Before Announcement*: *Suit Before Announcement* refers to securities class action lawsuits. It equals one if a firm has been involved in a lawsuit two years prior to a takeover, and it is zero otherwise.
- (4) *Suit After Announcement*: *Suit After Announcement* refers to securities class action lawsuits, which happens between the takeover announcement date and completion date. It equals one if a firm is involved in a lawsuit in the period between the takeover announcement and takeover completion, and it is zero otherwise.
- (5) *Suit*: *Suit* is a dummy variable that combines both the *Suit Before* and *Suit After Announcements*. It equals one if a firm is involved in a lawsuit two years prior to a takeover announcement or in the period between the takeover announcement and takeover completion date, and it is zero otherwise.
- (6) *Multiple Suits*: *Multiple Suits* refer to firms involved in more than one lawsuit within the last two years prior to the observation period. It equals one if a firm has more than one lawsuit within the last two years, and it is zero otherwise.

4.2.2 Dependent Variable Construction

- (1) *Probability of Candidacy*: *Probability of Candidacy* is a dummy variable that measures the tender offer a firm receives. It takes the value of one if the firm receives at least one tender offer, and it is zero otherwise.
- (2) *Probability of Completion*: *Probability of Completion* is a dummy variable that measures whether the takeover is completed or not. It equals one if the firm completes its takeover process, and it is zero otherwise.
- (3) *All Cash*: Following Betton, Eckbo, Thompson, and Thorburn (2014), *All Cash* is a dummy that equals one if the consideration in the SDC is cash only, and it is zero otherwise.
- (4) *Premium (Combined)*: We apply Officer's (2003) methodology to calculate takeover premium and exclude outliers. Following his definition, the target premium is calculated as $\{(\text{Bidder's offer} / \text{Target's pre-bid market value of equity}) - 1\}$. Three methods are used to

calculate a bidder's offer. First, we use the component data, where the SDC records each transaction value offered by the bidder. Second, we use the price data. The SDC reports initial offer prices per target share and outstanding target shares. Third, the price data are also used and we choose final offer prices per target share. To measure target's pre-bid market value of equity, we find the target's market value of equity 4 weeks prior to the bid announcement. Then, a fourth measurement, the combined premium, is used to exclude the extreme positive and negative outliers resulting from previous measures. The combined premium depends on both the component and price data. If the component data are between 0 and 2, we define the combined premium as equal to the component data; if not, the combined premium relies on the initial price data (or the final price data if the initial price data is unavailable), which is also between 0 and 2. We exclude firms whose premium falls outside of the range [0, 2], similar of Officer (2003). The author finds that most of premiums lie in this range and it's a good way to exclude troubling outliers. Only the combined premium is used in our paper.

4.2.3 Control Variables

In addition to the independent variables, we need to control other variables that can affect takeover candidacy, completion, payment, and premium to draw reliable inferences. We consider firm characteristics, including a firm's previous mergers, size, market-to-book ratio, leverage ratio, cash ratio, sales growth, PE ratio, ROE ratio, financial situation dummy, which is based on the Altman Z-score, share turnover, price change, price run-up, the relative size between the target and the bidder, and deal characteristics, such as the number of bidders, industry surprise dummy, horizontal dummy, hostile dummy, all cash dummy, all stock dummy, and cross border dummy. Definitions of all control variables are shown in Appendix A. Moreover, the hypothesized signs of control variables are shown in Appendix B.

4.3 Methodology

As in Palepu (1986) and Brar et al. (2009), we employ a logistic regression model to examine whether prior litigation against a firm and its other characteristics affect the takeover candidacy likelihood, the acquisition completion likelihood, and the takeover payment method as follows:

$$\text{Prob}_{(i,t)} = [1 + \exp(-X'\beta)]^{-1}$$

where $\text{Prob}_{(i,t)}$ means the probability that firm i will receive at least one tender offer at time t , the probability that the acquisition of firm i at time t will complete, and the probability firm i will receive a cash offer at time t , respectively. X' is a vector of independent variables, and β is a vector of unknown parameters. In addition, we define $X'\beta$ as follows:

To predict takeover target candidacy,

$$X'\beta = \beta_0 + \beta_1 \text{Litigation One Year Prior} + \sum_{m=2}^m \beta_m x_{mi}$$

$$X'\beta = \beta_0 + \beta_1 \text{Litigation Two Year Prior} + \sum_{m=2}^m \beta_m x_{mi}$$

To predict takeover completion,

$$X'\beta = \beta_0 + \beta_1 \text{Suit Before Announcement} + \beta_2 \text{Multiple Suits} + \sum_{m=3}^m \beta_m x_{mi}$$

$$X'\beta = \beta_0 + \beta_1 \text{Suit After Announcement} + \beta_2 \text{Multiple Suits} + \sum_{m=3}^m \beta_m x_{mi}$$

$$X'\beta = \beta_0 + \beta_1 \text{Suit Before Announcement} + \beta_2 \text{Suit After Announcement} + \beta_3 \text{Multiple Suits} + \sum_{m=4}^m \beta_m x_{mi}$$

To predict takeover cash payment,

$$X'\beta = \beta_0 + \beta_1 \text{Suit Before Announcement} + \sum_{m=2}^m \beta_m x_{mi}$$

$$X'\beta = \beta_0 + \beta_1 \text{Suit Before Announcement} + \beta_2 \text{Multiple Suits} + \sum_{m=3}^m \beta_m x_{mi}$$

where, x_{mi} is a vector of the explanatory variables mentioned in 4.2.

Then, ordinary least squares (OLS) regression is used to test whether the variables *Suit Before Announcement*, *Suit After Announcement*, *Suit*, and *Multiple Suits* can affect takeover premium. Since premium measures in the SDC result in outlier problem, we follow Officer's (2003) methodology and compute a composite premium to eliminate any extreme effect.

A panel data regression for predicting takeover premiums is as follows:

$$\text{Premium (Combined)} = \beta_0 + \beta_1 x_1 + \beta_2 \text{Multiple Suits} + \sum_{m=3}^m \beta_m x_{mi} + \varepsilon_i$$

where the dependent variable is takeover premium, a composite premium calculated using Officer's (2002) methodology. x_1 is *Suit Before Announcement*, *Suit After Announcement*, and

Suit, respectively. x_{mi} is a vector of the explanatory variables, including the target, bidder, and deal characteristics.

V. Results

5.1 Effects of Litigation on Predicting Takeover Target Candidacy

Table 3 presents the estimation results for three different versions of the takeover target candidacy prediction model, and p-values are shown in parentheses. Model 1 includes all the control variables, model 2 incorporates the independent variable *Litigation One Year Prior*, and model 3 includes *Litigation Two Year Prior* based on model 2. Control variables that influence the likelihood of takeover candidacy are a firm's size, its market-to-book ratio, PE ratio, industry surprise dummy, financial situation dummy, share turnover, and last year's price return. Model 1 in Table 3 shows that a small firm's asset size ($p<0.0001$), low market-to-book ratio ($p=0.0005$), high PE ratio ($p=0.0029$), more industry merger surprise ($p<0.0001$), having been in financial distress ($p<0.0001$), high share turnover ($p<0.0001$), and its small stock return ($p<0.0001$) can help predict target candidacy.

The above result remains unchanged when the variable *Litigation One Year Prior* is included in model 2 (Table 3). There is a positive relationship between a firm's likelihood of target candidacy and the firm's prior litigation lawsuits, but the result is statistically insignificant, indicating that litigation is not a key determinant predicting takeover candidacy. This is reasonable since fluctuations in a firm's stock price could incorporate this information and result in its insignificance. As our results demonstrate, the negative reaction in the stock market positively associates with the probability of being a target.

Based on model 2 in Table 3, we include the variable *Litigation Two Year Prior* in model 3. The sign and significance of all the above variables remain consistent. The coefficient of *Litigation Two Year Prior* shows a positive and significant sign, which suggests that suits within the last two years relates to the probability of a firm becoming a target. We believe that lawsuits result in the market's overreaction and a firm's undervaluation; in this way, investors may think a firm is a good candidate for purchase. This confirms our thinking that investors take litigation into consideration.

5.2 Effects of Litigation on Takeover Completion

Table 4 depicts the estimation results for three different versions of the model predicting takeover completion, and p-values are shown in parentheses. Model 1 includes *Suit Before Announcement*, *Multiple Suits*, and all firm and deal characteristic variables. Only the target's financial situation dummy, which indicates its financial problems ($p=0.0798$), the target's low share turnover ($p=0.055$), and the acquirer's low leverage ratio ($p=0.052$) predict takeover completion in our model. None of them is significant below the 5% level. Less obvious significance or insignificance of the control variables can be expected, as investors may have thought about this information before they made a bid. Moreover, neither *Suit Before Announcement* nor *Multiple Suits* help to predict takeover completion. We think this is reasonable, as investors have already considered these before they enacted their investment strategies. We also believe that if no major news is announced when the merger announcement is pending, a firm's status would be relatively stable, and investors would be unlikely to change their decisions.

In model 2 (Table 4), we use *Suit After Announcement* to replace the variable *Suit Before Announcement* to examine the litigation effect in the post-bid period. *Suit After Announcement* has a significant negative relationship with takeover completion, which means that the probability of takeover completion decreases if the target is involved in a lawsuit between the takeover announcement date and the takeover effective date. This confirms our hypothesis. A litigation lawsuit following a takeover announcement gives investors a chance to reconsider their offer; they may find out that the expected net benefits will decrease after this litigation lawsuit, and thus they often lose their interest in the target. In addition, the target can be less attractive if investors dislike dealing with its lawsuit uncertainty. This result is consistent with the findings of Krishnan, Masulis, Thomas, and Thompson (2012).

Model 3 in Table 4 presents the estimation results including all variables, including *Suit Before Announcement*, *Suit After Announcement*, and *Multiple Suits*. After adding *Suit Before Announcement*, the negative and significant relationship between *Suit After Announcement* and the probability of takeover completion remains unaltered, which reinforces our previous finding. *Suit Before Announcement* and *Multiple Suits* still enter into the regression insignificantly, showing their insignificant effect on predicting takeover completion.

5.3 Effects of Litigation on Predicting Takeover Payment

Table 5 details the effects of litigation on predicting takeover all-cash payment. Model 1 includes both firm and deal characteristic variables; model 2 includes *Suit Before Announcement* to test the effects of litigation; and in model 3, the variable *Multiple Suits* is entered into the regression.

Model 1 in Table 5 reports that the firm characteristics that predict cash payment are small firm size ($p<0.0001$), the target's low market-to-book ratio ($p=0.0002$), the target's low leverage ratio ($p=0.0557$), the target's low sales growth ($p=0.0241$), the target's price change in the run-up period ($p=0.0713$), and the relative size between the target and the acquirer ($p<0.0001$). It also shows that deal characteristics, including the number of bidders ($p=0.0954$), the target's industry surprise dummy ($p=0.0446$), a horizontal merger dummy ($p=0.0275$), and a dummy indicating the merger is cross border ($p=0.0417$) predict takeover all-cash payment as well.

The above variables' sign and significance remain unaltered after the variable *Suit Before Announcement* enters into the regression model 2. The positive coefficient of *Suit Before Announcement* suggests that investors tend to prefer cash payment if the target is involved in a litigation lawsuit prior to the takeover announcement, which is consistent with our hypothesis. However, this result is statistically insignificant. One potential reason is that since the target's price change in the run-up period is much closer to the takeover announcement date and it could incorporate this news, investors do not further consider the litigation effect when determining the payment method.

In model 3, we include the variable *Multiple Suits*. The significance of all control variables still remains unaltered. The coefficient of *Multiple Suits* is also positive and statistically insignificant. Neither *Suit Before Announcement* nor *Multiple Suits* is the determinant predicting takeover cash payment.

5.4 Determinants of Takeover Premiums

Table 6 presents the results for the models predicting takeover premiums. There are four different versions we use. Model 1 uses the variable *Suit* to assess whether a litigation lawsuit is a determinant of takeover premiums; model 2 separates *Suit* into *Suit Before Announcement* and *Suit After Announcement* to test the litigation effect in different periods; model 3 only includes *Suit Before Announcement*, and model 4 only uses *Suit After Announcement*. From model 1, we find that the control variables, a target's previous mergers, a target's firm size, a target's market-

to-book ratio, a target's leverage ratio, a target's sales growth rate, the relative size between the target and the acquirer, the number of bidders, the hostile takeover dummy, and the all-cash payment dummy are the determinants of takeover premiums. More previous mergers of a target, a target's larger size, the target's high market-to-book ratio, a target's low leverage ratio, a target's small sales growth rate, a considerable difference in relative size, a small number of bidders, a friendly takeover, and cash payment can reduce the takeover premium. The coefficient of the variable *Suit* is positive and statistically significant in model 1. It shows that if the target is involved in a litigation lawsuit prior to the completion of the takeover, its premium could increase around 10%. As mentioned previously, litigation can lead to low stock price returns, and investors are willing to pay more since they believe the effects of litigation can be relatively short-lived and the net benefits of M&A can still be considerable after offering a higher bid. The negative coefficient of *Multiple Suits* shows that investors tend to pay less if the target is involved in more than one lawsuit. This makes sense, as *Multiple Suits* implies that the target has serious management problems. However, this result is statistically insignificant.

In model 2 (Table 6), *Suit Before Announcement* and *Suit After Announcement* represent litigation lawsuits in different periods. The sign and significance of all the above control variables remain unaltered. The results show that a litigation lawsuit occurring prior to a takeover announcement has a positive and significant effect on takeover premiums; however, such a lawsuit between the takeover announcement and the takeover effective date is not a determinant of takeover premiums. This insignificant result of *Suit After Announcement* does not support the findings of Thompson and Thomas (2004) and Krishnan, Masulis, Thomas, and Thompson (2012) indicating a positive relationship between acquisition-oriented suits and takeover premium. Since acquisition-oriented suits are only a small portion of all litigation types and our model does not distinguish between allegation types, we believe that suits other than acquisition-oriented ones may be one of the reasons for the insignificant results in our finding. Moreover, the *Multiple Suits* result remains insignificant in this model.

Model 3 drops *Suit After Announcement*. We still find that *Suit Before Announcement* positively and significantly relates to takeover premiums, which reinforces our previous finding. Model 4 includes *Suit After Announcement* only. The insignificant result shows that it is not a key determinant of takeover premiums.

VI. Conclusion

Our results shed light on the effects of litigation on M&A. Besides integrating celebrated empirical studies, in this paper we explore the role of litigation in the M&A field using a large and complete sample of shareholder class action lawsuits from 1998 to 2014 recorded by SCAC. Our results indicate that even if litigation within the last year is not a key determinant predicting takeover candidacy, suits within the last two years are positively related to a firm's likelihood of becoming a target. This result confirms our thinking about market overreaction. Suits within the last two years potentially indicate that a firm is undervalued by the market and is a good candidate for purchase. Another potential explanation is that the manage boards of defendant firms dislike the uncertainty caused by multiple suits, so they undervalue their firms voluntary to attract buyers and to get out of business. We also find several publically available information, such as a firm's size, its market-to-book ratio, PE ratio, industry surprise dummy, financial situation dummy, share turnover, and last year's price return, play a role in predicting takeover candidacy.

Our findings highlight that once the bid is announced, investors rarely make substantial changes based on past known information. In this process, neither a litigation lawsuit prior to the takeover announcement nor multiple suits will affect the probability of takeover completion. In addition, our results indicate that investors adjust their investment strategies based on new incoming information since the probability of takeover completion decreases when the target is involved in at least one litigation lawsuit in the post-bid period. This result is also consistent with the findings of Krishnan, Masulis, Thomas, and Thompson (2012) showing that acquisition-oriented lawsuits prohibit the completion of a takeover. Exploring the effects of litigation by separating lawsuit types remains a topic for future study.

To predict takeover cash payment by incorporating firm characteristics and deal characteristics, we find that several types of firm information, such as the firm's size, its market-to-book ratio, its sales growth rate, its price change in the run-up period, and the relative size between the target and the bidder help predict cash offers. Deal characteristics such as cross-border deals also play an important role. This result is consistent with Faccio and Masulis (2005). We did not find a significant effect of litigation on predicting cash offers. This indicates that litigation is not an important consideration when investors determine their takeover payment method. Moreover, our

results show that litigation before an M&A announcement has a positive effect on takeover premiums. This confirms our thinking that there is a potential undervaluation after the firm's litigation.

In this paper, we first used a large and complete sample of shareholder class action lawsuits to explore the effects of litigation on M&As. To conclude, we found that litigation does impact the M&A process. Our results can be used to remind investors of the importance of considering potential litigation effects before making investment decisions.

VII. Limitations

One potential future prospect is to specify different lawsuit types and test their effect on M&A activities. Separating lawsuits by their settlement status may also give us a better understanding of the effects of litigation on M&As.

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Tables

Table 1 Descriptive Statistics

This table provides descriptive statistics for the variables used in our regression models. In each panel, we provide the number of observations, as well as the mean, standard deviation, minimum, and maximum value of each variable. Panel A focuses on the variables used to predict takeover candidacy, Panel B displays the variables used to predict takeover completion and cash payment, while Panel C focuses on the variables used to predict takeover premiums. All variable definitions are contained in Appendix A.

Panel A

Variable	Mean	Std. Dev.	Minimum	Maximum
Firm Characteristics				
Previous Mergers	0.0113	0.1097	0	3
Log of Assets	2.6409	0.9596	0.68842	5.07221
Market to Book Ratio	2.3275	1.5626	0.67339	5.6455
Leverage	0.1804	0.2086	0	4.39409
Sales Growth	0.1123	0.2306	-0.21841	0.56674
PE Ratio	45.9730	61.0326	-52.25	153.30769
ROE	0.0113	0.0496	-0.09744	0.07397
Financial Situation	0.5359	0.4987	0	1
Share Turnover	0.3761	0.4258	0.00671	2.36749
Industry Surprise	0.6487	0.4774	0	1
Return One Year Prior	0.0387	0.8287	-2.94937	3.8897
Litigation One Year Prior	0.0249	0.1558	0	1
Litigation Two Year Prior	0.0004	0.0209	0	1
No. of Observations	244696			
Number of Merger Announcements	2385			

Panel B

Variable	Mean	Std. Dev.	Minimum	Maximum
Firm Characteristics				
Previous Mergers (Target)	0.0105	0.1086	0	2
Log of Assets (Target)	2.4083	0.7734	-0.0462	4.7525
Market to Book Ratio (Target)	2.6013	1.7146	0.7333	6.1312
Leverage (Target)	0.1628	0.2133	0	1.7217
Cash Ratio (Target)	0.167	0.1768	0	0.9336
Sales Growth (Target)	0.2683	0.8886	-1.0656	15.8664
PE Ratio (Target)	10.6844	19.7479	-19.1429	46.7717
ROE (Target)	-0.0232	0.3963	-0.8709	0.596
Financial Situation (Target)	0.4234	0.4943	0	1
Share Turnover (Target)	1.9494	1.7981	0.0742	9.1884
Price Change (Target)	-0.0081	0.1721	-0.976	3.8505
Run Up (Target)	-0.4174	0.5819	-4.2632	2.6585
Market to Book Ratio (Acquirer)	3.4081	2.2086	1.0938	8.0407
Leverage (Acquirer)	0.1795	0.1844	0	2.0691
Relative Size	0.3291	0.5064	0.0007	2.9402
Suit Before Announcements	0.0609	0.2392	0	1
Suit After Announcements	0.0266	0.1609	0	1
Multiple Suits	0.0084	0.0913	0	1
Deal Characteristics				
Number of Bidders	1.0525	0.2553	1	4
Industry Surprise (Target)	0.7607	0.4268	0	1
Horizontal	0.4283	0.495	0	1
Hostile	0.0063	0.0791	0	1
All Stock	0.1428	0.35	0	1
Cross Border	0.1267	0.3327	0	1
No. of Observations	1429 ³			
Number of Completed Bids	1325			
Number of Cash Offers	331			

³ The number discrepancy between panel A and panel B is caused by incorporating more control variables, such as acquirers' characteristics and deal characteristics.

Table 1 Continued

Panel C				
Variable	Mean	Std. Dev.	Minimum	Maximum
Firm Characteristics				
Previous Mergers (Target)	0.0072	0.0845	0	1
Log of Assets (Target)	2.4085	0.777	-0.0462	4.7525
Market to Book Ratio (Target)	2.6182	1.7121	0.7333	6.1312
Leverage (Target)	0.1597	0.2104	0	1.7217
Cash Ratio (Target)	0.1679	0.1781	0	0.9336
Sales Growth (Target)	0.2687	0.8964	-1.0656	15.8664
PE Ratio (Target)	10.563	19.668	-19.1429	46.7717
ROE (Target)	-0.0259	0.3863	-0.8709	0.596
Financial Situation (Target)	0.42	0.4937	0	1
Share Turnover (Target)	1.9716	1.7937	0.0742	9.1884
Price Change (Target)	-0.0078	0.1736	-0.976	3.8505
Run Up (Target)	-0.4261	0.5808	-4.2632	2.6585
Market to Book Ratio (Acquirer)	3.4397	2.2126	1.0938	8.0407
Leverage (Acquirer)	0.1777	0.1841	0	2.0691
Relative Size	0.3301	0.5097	0.0007	2.9402
Suit Before Announcements	0.061	0.2395	0	1
Suit After Announcements	0.0273	0.163	0	1
Multiple Suits	0.0086	0.0925	0	1
Deal Characteristics				
Number of Bidders	1.0538	0.2584	1	4
Industry Surprise (Target)	0.7581	0.4284	0	1
Horizontal	0.43	0.4953	0	1
Hostile	0.005	0.0707	0	1
All Cash	0.2261	0.4185	0	1
All Stock	0.1436	0.3508	0	1
No. of Observations	1393			
Average Premium (Combined)	0.6059			

Table 2 Correlation Coefficients

Panel A

This table contains Pearson correlation coefficients for a sample of 244,696 observations between 1998 and 2014. Variables are (1)Probability of Candidacy (2)Previous Mergers (3)Log of Assets (4)Market to Book Ratio (5)Leverage Ratio (6)Sales Growth (7)PE ratio (8)Industry Surprise (9)ROE (10) Financial Situation (11)Share Turnover (12) Litigation One Year Prior (13) Litigation Two Year Prior (14) Return One Year Prior. All variable definitions are contained in Appendix A. P-values are provided in parentheses.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1)	1													
(2)	0.00	1												
(3)	-0.00	-0.00	1											
(4)	-0.01	-0.02	-0.05	1										
(5)	0.01	0.02	0.22	-0.08	1									
(6)	0.00	-0.01	-0.03	0.21	0.02	1								
(7)	0.00	-0.01	0.21	0.14	-0.05	0.10	1							
(8)	0.02	0.04	-0.04	0.04	-0.05	0.05	-0.02	1						
(9)	0.00	-0.01	0.30	0.06	0.02	0.16	0.45	-0.06	1					
(10)	0.02	0.03	0.21	-0.34	0.38	-0.11	-0.17	0.09	-0.14	1				
(11)	0.01	-0.02	0.13	0.21	0.00	0.10	0.01	0.01	-0.03	-0.17	1			
(12)	0.00	0.00	0.07	0.05	0.01	0.02	-0.01	0.01	-0.02	-0.02	0.15	1		
(13)	0.01	0.00	0.03	0.01	0.00	0.00	0.01	0.00	0.00	0.02	0.04	1		
(14)	-0.01	0.01	-0.01	-0.01	0.00	0.01	-0.02	-0.01	0.01	0.00	0.00	-0.03	0.00	1

The bold text indicates that the significance level is less than 1%.

Table 2 Continued**Panel B**

This table contains Pearson correlation coefficients for a sample of 1,429 observations between 1998 and 2014. Variables are (1)Probability of Completion (2)All Cash (3)Previous Mergers (Target) (4)Log of Assets (Target) (5)Market to Book Ratio (Target) (6)Leverage Ratio (Target) (7)Cash Ratio (Target) (8)Sales Growth (Target) (9)PE Ratio (Target) (10)ROE (Target) (11)Financial Situation (Target) (12)Share Turnover (Target) (13)Price Change (Target) (14)Run Up (Target) (15)Market to Book Ratio (Acquirer) (16)Leverage (Acquirer) (17)Relative Size (18)Suit Before Announcement (19) Suit After Announcement (20) Multiple Suits (21)Number of Bidders (22)Industry Surprise (Target) (23)Horizontal (24)Hostile (25)All Stock. All variable definitions are contained in Appendix A.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
(1)	1																								
(2)	-0.01	1																							
(3)	0.03	0.01	1																						
(4)	-0.04	-0.24	-0.01	1																					
(5)	-0.01	-0.08	-0.02	-0.04	1																				
(6)	0.03	-0.13	0.05	0.34	-0.05	1																			
(7)	0.01	0.07	0.06	-0.39	0.18	-0.33	1																		
(8)	0.01	-0.07	-0.02	-0.02	0.16	0.02	0.06	1																	
(9)	-0.01	-0.06	-0.00	0.22	0.09	-0.04	-0.15	-0.05	1																
(10)	-0.03	-0.07	-0.03	0.33	0.01	0.09	-0.23	-0.05	0.45	1															
(11)	0.06	-0.02	0.02	-0.05	0.01	0.31	0.05	0.01	-0.29	-0.33	1														
(12)	-0.06	-0.08	-0.05	0.27	0.19	-0.07	0.07	0.09	0.03	0.07	-0.10	1													
(13)	0.01	-0.02	0.00	0.04	0.09	0.07	-0.06	0.01	0.06	0.10	0.00	-0.10	1												
(14)	0.01	0.05	0.06	-0.03	-0.01	0.05	0.04	0.01	-0.02	0.00	0.07	-0.03	0.00	1											
(15)	0.00	0.02	-0.03	-0.10	0.34	-0.10	0.18	0.13	0.04	-0.03	-0.05	0.15	-0.01	0.04	1										
(16)	-0.03	-0.09	0.07	0.20	-0.05	0.34	-0.22	-0.05	0.08	0.11	0.12	-0.10	0.07	-0.00	-0.05	1									
(17)	-0.02	-0.18	0.04	0.27	-0.13	0.12	-0.14	-0.01	0.00	0.08	0.08	0.07	0.02	0.01	-0.04	0.07	1								
(18)	0.02	0.01	-0.02	0.04	0.02	-0.06	0.04	-0.03	-0.06	-0.08	-0.00	0.21	-0.19	-0.02	0.04	-0.02	0.00	1							
(19)	-0.05	-0.03	0.02	0.13	-0.04	0.02	-0.04	0.02	0.00	0.01	0.02	0.10	-0.00	-0.02	-0.05	-0.02	0.03	0.01	1						
(20)	-0.00	0.00	-0.01	0.06	-0.04	-0.02	0.00	0.01	0.02	0.00	-0.00	0.07	-0.03	0.02	-0.03	-0.02	0.01	0.10	0.13	1					
(21)	-0.01	0.00	0.06	0.11	-0.05	0.03	-0.04	-0.02	0.00	0.04	-0.02	0.02	0.02	-0.01	-0.03	0.01	0.11	0.02	0.02	-0.02	1				
(22)	-0.01	0.05	0.01	-0.11	0.15	-0.08	0.22	0.06	-0.05	-0.10	0.11	0.05	-0.03	-0.01	0.16	-0.09	-0.03	0.06	-0.05	0.02	-0.05	1			
(23)	-0.04	-0.09	-0.03	0.06	-0.01	0.03	-0.00	0.00	-0.02	-0.00	0.06	0.06	-0.00	0.01	-0.04	0.05	0.15	0.03	-0.00	-0.03	0.03	0.11	1		
(24)	0.02	-0.02	0.07	0.03	-0.01	-0.01	-0.03	-0.00	0.01	0.01	0.02	-0.03	0.00	-0.03	-0.01	0.06	0.06	-0.02	-0.01	-0.02	0.04	0.02	1		
(25)	0.01	-0.22	0.02	-0.15	0.07	-0.06	0.11	0.14	-0.05	-0.05	0.01	0.06	-0.02	-0.01	0.16	-0.09	0.11	-0.02	-0.03	-0.02	-0.06	0.09	-0.01	-0.03	1

The bold text indicates that the significance level is less than 1%.

Table 2 Continued**Panel C**

This table contains Pearson correlation coefficients for a sample of 1,393 observations between 1998 and 2014. Variables are (1)Premium (Combined) (2)Previous Mergers (Target) (3)Industry Surprise (Target) (4)Horizontal (5)Hostile (6)Number of Bidders (7)All Stock (8)All Cash (9)Log of Assets (Target) (10)Market to Book Ratio (Target) (11)Cash Ratio (Target) (12)Leverage Ratio (Target) (13)PE Ratio (Target) (14)ROE (Target) (15)Share Turnover (Target) (16)Sales Growth (Target) (17)Relative Size (18)Market to Book Ratio (Acquirer) (19)Leverage Ratio (Acquirer) (20)Run up (Target) (21)Price Change (Target) (22)Financial Situation (Target) (23)Suit Before Announcement (24)Suit After Announcement (25)Suit (26)Multiple Suits. All variable definitions are contained in Appendix A.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)
(1)	1																									
(2)	-0.04	1																								
(3)	0.02	-0.01	1																							
(4)	-0.01	-0.02	0.11	1																						
(5)	0.05	0.11	0.04	0.02	1																					
(6)	0.06	0.08	-0.05	0.03	-0.01	1																				
(7)	0.00	-0.01	0.09	-0.01	-0.03	-0.06	1																			
(8)	-0.05	-0.01	0.05	-0.09	-0.04	0.01	-0.22	1																		
(9)	-0.07	-0.01	-0.12	0.07	0.04	0.11	-0.16	-0.24	1																	
(10)	-0.05	-0.02	0.15	-0.02	-0.00	-0.05	0.08	-0.08	-0.04	1																
(11)	-0.02	0.03	0.22	0.00	-0.03	-0.04	0.10	0.08	-0.40	0.18	1															
(12)	0.16	-0.01	-0.09	0.03	-0.00	0.03	-0.07	-0.14	0.35	-0.04	-0.34	1														
(13)	-0.09	-0.01	-0.05	-0.01	0.02	0.00	-0.04	-0.07	0.23	0.08	-0.15	-0.03	1													
(14)	-0.05	0.00	-0.10	0.00	0.02	0.04	-0.05	-0.07	0.33	0.01	-0.24	0.12	0.44	1												
(15)	-0.06	-0.03	0.05	0.06	-0.02	0.02	0.05	-0.07	0.27	0.19	0.07	-0.06	0.04	0.07	1											
(16)	0.07	-0.03	0.06	0.00	-0.01	-0.02	0.14	-0.07	-0.02	0.16	0.07	0.02	-0.05	-0.06	0.10	1										
(17)	-0.05	0.05	-0.03	0.15	0.08	0.11	0.11	-0.17	0.27	-0.13	-0.14	0.13	0.00	0.08	0.06	-0.01	1									
(18)	0.01	-0.00	0.17	-0.05	-0.01	-0.03	0.16	0.04	-0.10	0.34	0.19	-0.09	0.05	-0.03	0.14	0.13	-0.04	1								
(19)	0.07	0.09	-0.10	0.05	0.09	0.01	-0.10	-0.09	0.20	-0.05	-0.22	0.33	0.08	0.11	-0.10	-0.05	0.08	-0.04	1							
(20)	-0.01	0.05	-0.01	0.01	-0.05	-0.00	-0.01	0.05	-0.03	-0.01	0.05	0.03	-0.03	-0.00	-0.02	0.01	0.01	0.05	-0.00	1						
(21)	0.03	0.00	-0.03	-0.00	0.00	0.02	-0.02	-0.02	0.04	0.09	-0.06	0.08	0.07	0.10	-0.10	0.01	0.02	-0.01	0.07	0.01	1					
(22)	0.12	0.01	0.11	0.06	0.02	-0.02	0.01	-0.02	-0.06	0.02	0.05	0.30	-0.29	-0.33	-0.10	0.01	0.08	-0.05	0.11	0.06	0.01	1				
(23)	0.04	-0.02	0.06	0.03	-0.02	0.02	-0.02	0.02	0.04	0.02	0.04	-0.07	-0.07	-0.08	0.22	-0.03	0.01	0.04	-0.02	-0.02	-0.18	-0.01	1			
(24)	-0.00	0.04	-0.05	-0.04	-0.01	0.07	-0.03	-0.03	0.13	-0.04	-0.04	0.02	0.00	0.01	0.10	0.02	0.03	-0.05	-0.02	-0.01	-0.00	0.02	0.01	1		
(25)	0.04	0.00	0.02	0.03	-0.02	0.03	-0.03	-0.00	0.10	-0.01	0.02	-0.05	-0.06	-0.07	0.23	-0.01	0.02	0.01	-0.03	-0.02	-0.15	0.01	0.83	0.55	1	
(26)	-0.03	-0.01	0.02	-0.03	-0.01	-0.02	-0.02	0.01	0.06	-0.04	0.00	-0.01	0.02	0.00	0.07	0.01	0.01	-0.03	-0.02	0.02	-0.03	-0.00	0.11	0.13	0.11	1

The bold text indicates that the significance level is less than 1%.

Table 3 Logistic Regression for Predicting Target Candidacy

This table provides the results for predicting takeover target candidacy. ***, **, * denote statistical significance at the 1%, 5%, and 10% level, respectively. Dependent variable is Probability of Candidacy; independent variables are Previous Mergers, Log of Assets, Market to Book Ratio, Leverage, Sales Growth, PE Ratio, Industry Surprise, ROE, Financial Situation, Share Turnover, Return One Year Prior, Litigation One Year Prior, and Litigation Two Year Prior. All variable definitions are contained in Appendix A. P-values are provided in parentheses.

Parameter	Model One	Model Two	Model Three
Intercept	-4.9953*** (<.0001)	-4.9925*** (<.0001)	-4.9879*** (<.0001)
Previous Mergers	0.111 (0.5059)	0.1102 (0.5089)	0.1113 (0.5049)
Log of Assets	-0.0997*** (<.0001)	-0.101*** (<.0001)	-0.1029*** (<.0001)
Market to Book Ratio	-0.0528*** (0.0005)	-0.053*** (0.0005)	-0.0533*** (0.0005)
Leverage	0.1296 (0.19)	0.1291 (0.1917)	0.1297 (0.1895)
Sales Growth	-0.0631 (0.4956)	-0.0639 (0.4896)	-0.063 (0.4963)
PE Ratio	0.00113*** (0.0029)	0.00114*** (0.0028)	0.00114*** (0.0027)
Industry Surprise	0.4533*** (<.0001)	0.4528*** (<.0001)	0.4528*** (<.0001)
ROE	0.7085 (0.1439)	0.7205 (0.1373)	0.7245 (0.1351)
Financial Situation	0.3973*** (<.0001)	0.3981*** (<.0001)	0.3983*** (<.0001)
Share Turnover	0.3246*** (<.0001)	0.3193*** (<.0001)	0.3185*** (<.0001)
Return One Year Prior	-0.1221*** (<.0001)	-0.1214*** (<.0001)	-0.1211*** (<.0001)
Litigation One Year Prior	- -	0.1039 (0.4034)	0.0882 (0.4797)
Litigation Two Year Prior	- -	- -	1.3599*** (0.0082)
Number of Obs.	244696	244696	244696
Pseudo R-squared	1.03%	1.03%	1.05%

Table 4 Logistic Regression for Predicting Takeover Completion

This table provides the results for predicting takeover completion. ***, **, * denote statistical significance at the 1%, 5%, and 10% level, respectively. Dependent variable is Probability of Completion; independent variables are Previous Mergers (Target), Log of Assets (Target), Market to Book Ratio (Target), Leverage (Target), Cash Ratio (Target), Sales Growth (Target), PE Ratio (Target), ROE (Target), Financial Situation (Target), Share Turnover (Target), Price Change (Target), Run Up (Target), Market to Book Ratio (Acquirer), Leverage (Acquirer), Relative Size, Suit Before Announcement, Suit After Announcement, Multiple Suits, Number of Bidders, Industry Surprise (Target), Horizontal, Hostile, All Stock, and All Cash. All variable definitions are contained in Appendix A. P-values are provided in parentheses.

Parameter	Model One	Model Two	Model Three
Intercept	3.2587*** (<.0001)	3.2039*** (<.0001)	3.233*** (<.0001)
Firm Characteristics			
Previous Mergers (Target)	13.4961 (0.9882)	13.5334 (0.9876)	13.5659 (0.9874)
Log of Assets (Target)	-0.154 (0.3908)	-0.1151 (0.5243)	-0.1216 (0.4996)
Market to Book Ratio (Target)	-0.0498 (0.4761)	-0.0472 (0.5)	-0.0526 (0.4534)
Leverage (Target)	0.9628 (0.1809)	0.8862 (0.2153)	0.9427 (0.1907)
Cash Ratio (Target)	0.2463 (0.7364)	0.2567 (0.7268)	0.2484 (0.7346)
Sales Growth (Target)	0.1169 (0.5002)	0.1039 (0.5412)	0.1203 (0.4857)
PE Ratio (Target)	0.00482 (0.4304)	0.0044 (0.4683)	0.00501 (0.4126)
ROE (Target)	-0.0851 (0.8071)	-0.1297 (0.711)	-0.1073 (0.7584)
Financial Situation (Target)	0.4521* (0.0798)	0.4556* (0.0777)	0.4633* (0.0736)
Share Turnover (Target)	-0.1097* (0.055)	-0.0888 (0.1155)	-0.104* (0.0695)
Price Change (Target)	0.5687 (0.5615)	0.1491 (0.8148)	0.5976 (0.5487)
Run Up (Target)	0.0271 (0.8806)	0.0188 (0.9171)	0.0227 (0.9001)
Market to Book Ratio (Acquirer)	0.0315 (0.5481)	0.027 (0.6055)	0.0285 (0.5875)
Leverage(Acquirer)	-1.0884* (0.052)	-1.0112* (0.0621)	-1.0963** (0.0493)
Relative Size	-0.1768 (0.3922)	-0.1782 (0.3865)	-0.1889 (0.3609)
Suit Before Announcement	0.7566 (0.1818)	-	0.7517 (0.188)
Suit After Announcement	- -	-0.8955* (0.0638)	-0.885* (0.0672)
Multiple Suits	-0.1974 (0.8539)	0.2411 (0.8246)	0.0131 (0.9904)

Table 4 Continued

Parameter	Model One	Model Two	Model Three
Deal Characteristics			
Number of Bidders	0.0386 (0.9223)	0.0348 (0.9301)	0.0392 (0.9216)
Industry Surprise (Target)	-0.1869 (0.4726)	-0.1944 (0.4564)	-0.2086 (0.4249)
Horizontal	-0.2872 (0.1739)	-0.288 (0.1736)	-0.2879 (0.1741)
Hostile	13.7062 (0.9909)	13.6529 (0.9909)	13.6759 (0.9909)
All Stock	0.0741 (0.8261)	0.0572 (0.8657)	0.074 (0.8269)
All Cash	-0.2507 (0.3406)	-0.2499 (0.343)	-0.2551 (0.3332)
Number of Obs.	1429	1429	1429
Pseudo R-squared	3.35%	3.45%	3.74%

Table 5 Logistic Regression for Predicting Cash Payment

This table provides the results for predicting cash payments in takeovers. ***, **, * denote statistical significance at the 1%, 5%, and 10% level, respectively. Dependent variable is All Cash; independent variables are Previous Mergers (Target), Log of Assets (Target), Market to Book Ratio (Target), Leverage (Target), Cash Ratio (Target), Sales Growth (Target), PE Ratio (Target), ROE (Target), Financial Situation (Target), Share Turnover (Target), Price Change (Target), Run Up (Target), Market to Book Ratio (Acquirer), Leverage (Acquirer), Relative Size, Suit Before Announcement, Multiple Suits, Number of Bidders, Industry Surprise (Target), Horizontal, Hostile, and Cross Border. All variable definitions are contained in Appendix A. P-values are provided in parentheses.

Parameter	Model One	Model Two	Model Three
Intercept	0.7804* (0.0685)	0.7902* (0.0657)	0.7898* (0.0658)
Firm Characteristics			
Previous Mergers (Target)	0.0432 (0.9428)	0.0479 (0.9366)	0.0488 (0.9354)
Log of Assets (Target)	-0.6779*** (<.0001)	-0.6806*** (<.0001)	-0.6833*** (<.0001)
Market to Book Ratio (Target)	-0.168*** (0.0002)	-0.1682*** (0.0002)	-0.1675*** (0.0002)
Leverage (Target)	-0.7883* (0.0557)	-0.7817* (0.0579)	-0.7771* (0.0595)
Cash Ratio (Target)	-0.6886 (0.1012)	-0.6874 (0.1019)	-0.69 (0.1007)
Sales Growth (Target)	-0.2936** (0.0241)	-0.2894** (0.0262)	-0.2896** (0.026)
PE Ratio (Target)	-0.00249 (0.5274)	-0.00242 (0.5404)	-0.0024 (0.5365)
ROE (Target)	0.0836 (0.6788)	0.0895 (0.6583)	0.0902 (0.656)
Financial Situation (Target)	-0.0192 (0.9059)	-0.0188 (0.9081)	-0.0205 (0.8996)
Share Turnover (Target)	0.00825 (0.8525)	0.00453 (0.9199)	0.0043 (0.9244)
Price Change (Target)	0.1638 (0.6933)	0.2131 (0.6016)	0.2112 (0.6059)
Run Up (Target)	0.2065* (0.0713)	0.2069* (0.0707)	0.2056* (0.0726)
Market to Book Ratio (Acquirer)	0.0342 (0.2926)	0.0339 (0.2968)	0.0343 (0.2925)
Leverage (Acquirer)	-0.7324 (0.1068)	-0.7291 (0.1078)	-0.7262 (0.1093)
Relative Size	-1.156*** (<.0001)	-1.1527*** (<.0001)	-1.1523*** (<.0001)
Suit Before Announcement	- -	0.1444 (0.6221)	0.1362 (0.6434)
Multiple Suits	- -	- (0.7125)	0.2718

Table 5 Continued

Parameter	Model One	Model Two	Model Three
Deal Characteristics			
Number of Bidders	0.4594* (0.0954)	0.455* (0.0992)	0.4575* (0.0974)
Industry Surprise (Target)	0.3471** (0.0446)	0.3443** (0.0465)	0.3425** (0.0478)
Horizontal	-0.3124** (0.0275)	-0.3135** (0.027)	-0.3114** (0.0282)
Hostile	-0.8328 (0.4599)	-0.8251 (0.4641)	-0.8227 (0.4654)
Cross Border	0.3884** (0.0417)	0.3849** (0.0439)	0.3862** (0.0432)
Number of Obs.	1429	1429	1429
Pseudo R-squared	11.43%	11.44%	11.45%

Table 6 OLS Regression for Predicting Takeover Premiums

This table provides the results for predicting the determinants of takeover premiums. ***, **, * denote statistical significance at the 1%, 5%, and 10% level, respectively. Dependent variable is Premium (Combined); independent variables are Previous Mergers (Target), Log of Assets (Target), Market to Book Ratio (Target), Leverage (Target), Cash Ratio (Target), Sales Growth (Target), PE Ratio (Target), ROE (Target), Financial Situation (Target), Share Turnover (Target), Price Change (Target), Run Up (Target), Market to Book Ratio (Acquirer), Leverage (Acquirer), Relative Size, Suit Before Announcement, Suit After Announcement, Suit, Multiple Suits, Number of Bidders, Industry Surprise (Target), Horizontal, Hostile, All Stock, and All Cash. All variable definitions are contained in Appendix A. P-values are provided in parentheses.

Variable	Model One	Model Two	Model Three	Model Four
Intercept	0.6263*** (<.0001)	0.6268*** (<.0001)	0.6263*** (<.0001)	0.6207*** (<.0001)
Firm Characteristics				
Previous Mergers (Target)	-0.2563* (0.0544)	-0.2490* (0.062)	-0.2459* (0.0649)	-0.2548* (0.0566)
Log of Assets (Target)	-0.0828*** (<.0001)	-0.0816*** (<.0001)	-0.0808*** (<.0001)	-0.0803*** (<.0001)
Market to Book Ratio (Target)	-0.0195*** (0.0071)	-0.0198*** (0.0064)	-0.0199*** (0.006)	-0.0197*** (0.0068)
Leverage (Target)	0.3438*** (<.0001)	0.3436*** (<.0001)	0.3431*** (<.0001)	0.3362*** (<.0001)
Cash Ratio (Target)	-0.0266 (0.7176)	-0.0267 (0.7171)	-0.0268 (0.7155)	-0.0274 (0.71)
Sales Growth (Target)	0.0314** (0.0136)	0.0320** (0.0118)	0.0322** (0.0114)	0.0303** (0.0174)
PE Ratio (Target)	-0.0009 (0.1812)	-0.0009 (0.1871)	-0.0009 (0.1861)	-0.0009 (0.1459)
ROE (Target)	0.0088 (0.8009)	0.0094 (0.7863)	0.0092 (0.7927)	0.0041 (0.9068)
Financial Situation (Target)	0.043 (0.1024)	0.0445* (0.091)	0.0450* (0.0876)	0.0435* (0.0995)
Share Turnover (Target)	-0.002 (0.7786)	-0.0021 (0.7622)	-0.0019 (0.7867)	0.0011 (0.8754)
Price Change (Target)	0.088 (0.1784)	0.0936 (0.1542)	0.0939 (0.1528)	0.0689 (0.2897)
Run Up (Target)	-0.0136 (0.4774)	-0.0136 (0.4776)	-0.0138 (0.473)	-0.0143 (0.4565)
Market to Book Ratio (Acquirer)	0.0078 (0.1564)	0.0077 (0.1635)	0.0076 (0.1674)	0.0079 (0.1553)
Leverage (Acquirer)	0.0895 (0.1725)	0.086 (0.1903)	0.0847 (0.1965)	0.0917 (0.1633)
Relative Size	-0.0571** (0.0157)	-0.0571** (0.0156)	-0.0572** (0.0155)	-0.0569** (0.0162)

Table 6 Continued

Variable	Model One	Model Two	Model Three	Model Four
Suit Before Announcement	-	0.1251*** (0.0099)	0.1247** (0.0101)	-
Suit After Announcement	-	0.0338 (0.6257)	-	0.0309 (0.6568)
Suit	0.1032** (0.0125)	-	-	-
Multiple Suits	-0.1076 (0.3731)	-0.1156 (0.3418)	-0.1088 (0.3677)	-0.0861 (0.4778)
Deal Characteristics				
Number of Bidders	0.1329*** (0.0022)	0.1327*** (0.0023)	0.1326*** (0.0023)	0.1347*** (0.002)
Industry Surprise (Target)	0.0267 (0.328)	0.0252 (0.358)	0.0247 (0.3673)	0.0280 (0.3073)
Horizontal	-0.0182 (0.4282)	-0.0182 (0.4278)	-0.0183 (0.4259)	-0.0173 (0.4504)
Hostile	0.387** (0.0149)	0.3858** (0.0152)	0.3845** (0.0155)	0.3784** (0.0175)
All Stock	-0.0286 (0.4067)	-0.0287 (0.4053)	-0.0288 (0.402)	-0.0309 (0.3708)
All Cash	-0.0846*** (0.0034)	-0.0851*** (0.0032)	-0.0851*** (0.0032)	-0.0840*** (0.0037)
Number of Obs.	1393	1393	1393	1393
Adj. R-squared	6.63%	6.60%	6.65%	6.21%

Appendices

Appendix A

Independent Variables	Description
Litigation One Year Prior	Litigation One Year Prior is a dummy variable that equals one if a firm has undergone a lawsuit during (-4,-1) quarters prior to the observation period (quarter 0), and it is zero otherwise.
Litigation Two Year Prior	Litigation Two Year Prior is a dummy variable that equals one if a firm has at least one lawsuit in the last two years prior to the observation period, and it is zero otherwise.
Suit Before Announcement	Suit Before Announcement refers to securities class action lawsuits. It equals one if a firm has been involved in a lawsuit two years prior to a takeover, and it is zero otherwise.
Suit After Announcement	Suit After Announcement refers to securities class action lawsuits, which happens between the takeover announcement date and completion date. It equals one if a firm is involved in a lawsuit in the period between the takeover announcement and takeover completion, and it is zero otherwise.
Suit	Suit is a dummy variable that combines both the Suit Before and Suit After Announcements. It equals one if a firm is involved in a lawsuit two years prior to a takeover announcement or in the period between the takeover announcement and takeover completion date, and it is zero otherwise.
Multiple Suits	Multiple Suits refer to firms involved in more than one lawsuit within the last two years prior to the observation period. It equals one if a firm has more than one lawsuit within the last two years, and it is zero otherwise.

Dependent Variables	Description
Probability of Candidacy	Probability of Candidacy is a dummy variable that measures the tender offer a firm receives. It takes the value of one if the firm receives at least one tender offer, and it is zero otherwise.
Probability of Completion	Probability of Completion is a dummy variable that measures whether the takeover is completed or not. It equals one if the firm completes its takeover process, and it is zero otherwise.
All Cash	Following Betton, Eckbo, Thompson, and Thorburn (2014), All Cash is a dummy that equals one if the consideration in the SDC is cash only, and it is zero otherwise.
Premium (Combined)	We apply Officer's (2003) methodology to calculate takeover premium and exclude outliers. Following his definition, the target premium is calculated as $\{(Bidder's\ offer/Target's\ pre-bid\ market\ value\ of\ equity) - 1\}$. Three methods are used to calculate a bidder's offer. First, we use the component data, where the SDC records each transaction value offered by the bidder. Second, we use the price data. The SDC reports initial offer prices per target share and outstanding target shares. Third, the price data are also used and we choose final offer prices per target share. To measure target's pre-bid market value of equity, we find the target's market value of equity 4 weeks prior to the bid announcement. Then, a fourth measurement, the combined premium, is used to exclude the extreme positive and negative outliers resulting from previous measures. The combined premium depends on both the component and price data. If the component data are between 0 and 2, we define the combined premium as equal to the component data; if not, the combined premium relies on the initial price data (or the final price data if the initial price data is unavailable), which is also between 0 and 2. We exclude firms whose premium falls outside of the range [0, 2]. Only the combined premium is used in our paper.

Appendix A Continued

Control Variables	Description
Previous Mergers (Target)	As Cornett et al. (2011), previous mergers count for the number of times a firm receives a bid in the prior two years. Data source: SDC.
Log of Assets (Target)	The logarithm of total book value of a firm's assets. Firm's total assets are derived from COMPUSTAT. We use the data that at the end of the fiscal year preceding the observation year. The units are millions of dollars.
Market to Book Ratio	To be consistent with Palepu (1986) and Davis and Stout (1992), we define market-to-book ratio as the market value of the common equity of a firm divided by its book equity. The annual data on a firm's market-to-book ratio can be obtained from COMPUSTAT. The variable is measured at the fiscal year prior to the observation year. Market value (MKVALT), total assets (AT) and total liabilities (LT) are exported from COMPUSTAT. MTB = MKVALT / (AT-LT). We calculate this variable for both targets and acquirers.
Leverage	Leverage is calculated as the ratio of the long-term debt to the firm's total assets. The sum of a firm's preferred and common equity is its total equity. Leverage ratio is measured at the fiscal year prior to the observation year. Firm's total assets (AT) and long-term debt are exported from COMPUSTAT. Leverage is calculated for both targets and acquirers.
Cash Ratio (Target)	Cash ratio can be used to measure a firm's liquidity situation. Cash ratio is measured as the ratio of cash to total assets. Cash and assets are at the end of the fiscal year preceding the observation year. Source: COMPUSTAT.
Sales Growth (Target)	Sales growth is measured as $(Salest_1 - Salest_2) / Salest_2$. Observation year is year 0. Data are at the end of each fiscal year. Source: COMPUSTAT.
PE Ratio (Target)	Price-to-earnings (PE) ratio is defined as Stock price/ Earnings per share. Data are at the end of the fiscal year preceding the observation year. Data source: COMPUSTAT.
ROE (Target)	We use return on equity to measure a firm's profitability. Return on equity is the ratio of net income to shareholder's equity. Data are at the end of the fiscal year preceding the observation year. Net income (NI) and shareholder's equity (CEQ) are exported from COMPUSTAT.
Financial Situation (Target)	Financial situation is a dummy variable. It equals to one if Altman Z-Score is below 1.8 and it is zero otherwise. Altman Z-Score = $1.2A + 1.4B + 3.3C + 0.6D + 1.0E$. Where A = Working capital/Total assets; B = Retained earnings/Total assets; C = Earnings before interest and tax/Total assets; D = Market value of equity/Total liabilities; E = Sales/Total assets. If Altman Z-Score is below 1.8, it means that the company has financial situations and probably goes to bankruptcy. Data are at the end of the fiscal year preceding the observation year. Source: COMPUSTAT.
Share Turnover (Target)	As Cornett et al. (2011), we also define share turnover as "the ratio of the number of shares of stock traded for the firm to the total shares outstanding and use this measure as a proxy for discrepancies in valuation." Common shares traded (CSHTR_C) and common shares outstanding (CSHO) are exported from COMPUSTAT annual database. Data are at the end of fiscal year preceding the observation year.
Return One Year Prior	It represents a firm's stock return 4 quarters prior to the observation period.
Price Change (Target)	In general a firm experiences stock price fluctuation prior to the lawsuit filing date. To reflect this phenomenon, we calculate percent change of a target's stock price over one year prior to lawsuit filing date. Data source: CRSP.
Run Up (Target)	Price run-up is used to measure targets' price change between -42 and -2 days prior to the announcement. It is calculated as $(\text{stock price}_{-2} - \text{stock price}_{-42}) / \text{stock price}_{-42}$. The announcement date is day 0.

Appendix A Continued

Control Variables	Description
Relative Size	Relative size compares the target's firm size with its acquirer's. It is the ratio of the target's total asset to its bidder's asset. All firm size data are exported from COMPUSTAT. The data are at the end of fiscal year preceding the observation year.
Number of Bidders	It counts the number of bidders when a takeover is announced. Data source: SDC.
Industry Surprise (Target)	Industry surprise is used to measure merger intensity. It equals to one if at least one acquisition happens in the sample firms' industry one year prior to the observation year and zero otherwise. The industry is defined as four-digit SIC code by COMPUSTAT.
Horizontal	Horizontal is a dummy variable showing whether the target and the bidder are in the same industry or not. It takes the value of one if both the target and the bidder are in the same industry and it is zero otherwise. The industry is defined as four-digit SIC code by COMPUSTAT.
Hostile	Follow Cornett et al. (2011), hostile is a dummy variable. It equals to one if the tender offer is defined as "hostile" or "unsolicited" by SDC and it is zero otherwise. Source: SDC.
All Cash	All Cash is a takeover payment measurement. It is a dummy variable which equals to one if consideration is recorded as "cash only" by SDC and it is zero otherwise.
All Stock	All Stock is a dummy variable which equals to one if consideration is recorded as "stock only" by SDC and it is zero otherwise.
Cross Border	Cross Border is a dummy variable which equals to one if the deal is recorded by SDC as "Cross Border Deal Flag" and it is zero otherwise.

Appendix B

This table presents the expected signs of the control variables used in our regression models. "+/-" indicates that the sign has been inconsistent in previous studies, and "/" indicates that the variable is excluded in the model. (1)Logistic Regression for Predicting Target Candidacy (2)Logistic Regression for Predicting Takeover Completion (3)Logistic Regression for Predicting Cash Payment (4)OLS Regression for Predicting Takeover Premiums

Control Variables	(1)	(2)	(3)	(4)
Previous Mergers (Target)	+	+	+	-
Log of Assets (Target)	-	-	-	-
Market to Book Ratio (Target)	+/-	-	-	-
Market to Book Ratio (Acquirer)	+/-	+	+	+
Leverage (Target)	-	-	-	+/-
Leverage (Acquirer)	-	-	-	+/-
Cash Ratio (Target)	/	+/-	+/-	-
Sales Growth (Target)	+/-	+/-	+/-	+
PE Ratio (Target)	+	+	+/-	-
ROE (Target)	+	+	+	+
Financial Situation (Target)	+	+	-	+/-
Share Turnover (Target)	+/-	+/-	+/-	+/-
Return One Year Prior	-	/	/	/
Price Change (Target)	/	+	+/-	+/-
Run Up (Target)	/	+	+/-	-
Relative Size	/	-	+/-	+/-
Number of Bidders	/	+	+	+
Industry Surprise (Target)	+	+/-	+/-	+
Horizontal	/	+/-	+/-	+/-
Hostile	/	+/-	-	+
All Cash	/	+/-	/	+/-
All Stock	/	+/-	/	+/-
Cross Border	/	/	+	/