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ORIGINAL RESEARCH

Shareholder wealth effects of M&A withdrawals

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Abstract This paper provides evidence on the wealth effect in the event of the withdrawal of a merger or acquisition, and the impact of termination fee provisions on acquirer withdrawal returns. I report a significant negative correlation between acquirer withdrawal returns and announcement returns, consistent with the theory of managerial learning in M&As. Target firms reap net gains in deal withdrawals, showing evidence of a permanent revaluation of targets even if the deals fail. I also find that acquirer termination fee provisions are positively associated with acquirer withdrawal returns, suggesting that such provisions may play a disciplinary role in the withdrawal decision-making and protect acquirer shareholders' interests in deal withdrawals. Furthermore, my results also show that target termination fee provisions are negatively associated with acquirer withdrawal returns, which supports the efficiency hypothesis.

Keywords Mergers and acquisitions · Withdrawal · Abnormal return · Termination fee

JEF Classification G34

1 Introduction

In the mergers and acquisitions (M&A) market, we have observed more and more incomplete (i.e. withdrawn) deals in the last decade. By April 2015, approximately $192 billion worth of deals had been withdrawn, which is the highest level in dollar terms at the same point in the year since 2008 (Denning 2015). Despite the significance and magnitude of M&A withdrawals, withdrawn deals have been much less explored by finance researchers than completed deals. Moreover, the vast majority of the empirical M&A literature focuses on deal announcement returns and the relations between certain deal or

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firm characteristics and those announcement returns. There is limited research on the wealth effects of deal withdrawals and the factors (e.g., inclusion of the termination fee provision) that relate to such effects, even though the withdrawal of a deal is among the most disruptive events and has important value implications for corporations and policy makers.

This study attempts to fill the research gap by making three contributions. First, it provides supporting evidence to the theory of managerial learning proposed by Luo (2005). Luo (2005) suggests that acquirer managers learn from the market in deciding whether to consummate a deal. I further his study by showing that the market values managerial learning and positively reacts to such learning in the event of a deal withdrawal. Second, this study contributes to the research on termination fees by providing direct evidence that both acquirer and target termination fee provisions have a significant impact on acquirer withdrawal returns. In particular, I present supporting evidence for the efficiency hypothesis. To the best of my knowledge, this is the first study that empirically examines the relation between termination fee provisions and deal withdrawal returns. Finally, I empirically test the net wealth effect (if any) when deals are later withdrawn. The results show that target firms experience significant net gains even if deals are withdrawn, which provides new supporting evidence to the permanent revaluation effect of targets following deal failure.

This study is mainly related to two strands of the M&A literature. First, it is related to empirical studies of managerial learning. Luo (2005) shows that managers are more likely to consider withdrawing a deal later on if the deal announcement return is low, as they learn that the market does not favor the deal. This prompts a further question: if managers listen to the market's opinion and act on it, does the market positively respond to such learning? Building upon Luo (2005), this paper further argues that if the managerial learning is true and managers choose to withdraw from a deal as they learn from the negative market reaction to the deal announcement, presumably, the market should react positively to the withdrawal of such a deal because managerial learning helps the firm avoid conducting a value-destroying deal. This study empirically examines this hypothesis.

Second, this paper is related to the literature on termination fee provisions in M&As. Prior studies (e.g. Berkovitch et al. 1989; Jennings and Mazzeo 1993; Officer 2003; Bates and Lemmon 2003) have focused on the reasons for the use of termination fee provisions and the relation between such provisions and deal premium, deal completion rate, or deal announcement returns. There has been surprisingly little research on the relation between such provisions and deal withdrawal returns. After all, a termination fee by its nature is a contingent payment that provides protection/compensation to the counterparty in the event of a deal withdrawal. It is very important to understand how such provisions affect firms' abnormal returns when deal withdrawals actually happen. In this paper, I argue that both acquirer and target termination fee provisions could significantly affect acquirer withdrawals returns.

Regarding acquirer termination fee provisions, I hypothesize that the inclusion of such provisions has a negative impact on acquirer withdrawal returns, since an acquirer termination fee represents a direct cost for acquirer shareholders when the acquirer withdraws the deal. Regarding target termination fee provisions, I hypothesize that the impact of the inclusion of such provisions on acquirer withdrawal returns is also negative, based on the efficiency hypothesis proposed by Berkovitch et al. (1989). The efficiency hypothesis suggests that target termination fee provisions are used to encourage acquirer participation by inducing acquirers to make more deal-related investments before the merger, to commit to more active negotiation, and to reveal more valuable information during the bidding

process. In the event of a deal withdrawal, the costs associated with these activities become sunk costs for acquirers; such sunk costs are very likely to outweigh the target termination fee, since they are usually very large (Jennings and Mazzeo 1993) and the target termination fee is relatively small (Bates and Lemmon 2003). Therefore, acquirers are more likely to suffer from losses in the event of the withdrawal of deals that have target termination fee provisions than deals without such provisions, all other things being equal. Thus, it could be hypothesized that there is a negative correlation between the acquirer withdrawal return and the inclusion of a target termination fee provision. Furthermore, the inclusion of target termination fee provisions may also have an impact on target withdrawal returns. Since such provisions are often used to encourage the revealing of information related to the valuation of a target (Officer 2003; Bates and Lemmon 2003), new information could facilitate the revaluation of the target by the market and leads to a permanent revaluation effect (net wealth effect) for the target even if a deal is later withdrawn (Dodd and Ruback 1977; Dodd 1980; Davidson et al. 1989).

In sum, building upon the literature on the theory of managerial learning, on termination fee provisions, and on revaluation effect in M&As, this paper seeks to address the following questions: (1) How does the market react to M&A withdrawals? (2) What is the net wealth effect for targets in the event of M&A withdrawals? (3) How does the acquirer/target termination fee provision affect acquirer withdrawal returns?

Using a sample of 291 withdrawn deals in the US between 1992 and 2015, I test the hypotheses and report four main findings. First, I show that the acquirer withdrawal return is negatively correlated with the acquirer announcement return, consistent with the theory of managerial learning proposed by Luo (2005). The market seems to value this managerial learning, and such learning could potentially help firms avoid value-destroying deals.

Second, I report an average net gain of 11.47% for targets in deal withdrawals. This result provides new evidence that there could be a permanent wealth effect on target value even if the deal is later canceled. The possible explanations for such net gains include that the likelihood of the target being taken over in the future is increased due to its increased publicity during the bidding process (Bradley et al. 1983); that the takeover attempt, even if it fails, makes target managers realize that they must make significant improvements (Liu 2016); and that the disclosure of new information during the bidding process enables the market to revalue the target (Dodd and Ruback 1977; Dodd 1980; Davidson et al. 1989).

Third, I find that acquirer termination fee provisions are positively associated with acquirer withdrawal returns, which is contrary to the hypothesis regarding acquirer termination fee provisions. One possible explanation is that the acquirer termination fee provision may act as an effective mechanism to ensure that acquirer managers make the decision to withdraw carefully, and their decision maximizes shareholders' value. Given the contingent termination fee the acquirer has to pay in a withdrawal, when making a withdrawal decision, acquirer managers would conduct more vigorous analysis than they would if there was no acquirer termination fee provision. In this sense, besides the contractual role, the acquirer termination fee provision plays an important disciplinary role in the decision-making around deal withdrawals.

Fourth, I report a significant negative association between target termination fee provisions and acquirer withdrawal returns. This finding is consistent with the efficiency hypothesis (Berkovitch et al. 1989). It suggests that the high sunk costs (i.e. costs related to pre-merger integration, active negotiation, and disclosure of information) induced by target termination fee provisions could result in the negative market reaction to the withdrawal of such deals.

The remainder of this paper is organized as follows. Section 2 develops the hypotheses. Section 3 introduces the data and the research method. Section 4 presents the descriptive statistics. Section 5 presents and discusses empirical results. Section 6 presents further analyses. Section 7 concludes.

2 Hypotheses development

The process of a merger or acquisition typically involves a series of discrete events, such as the decision to start an M&A program, the act of making a tender offer, the first public disclosure of a possible merger, the official announcement of a merger, the legal completion of a merger, and the withdrawal of a merger. One of the best-studied events in the process is the deal announcement. There is extensive research literature examining stock returns around the announcements of M&A bids and the motives behind these transactions. The empirical results on the abnormal returns to acquirers around deal announcement are rather mixed.[1] The explanations provided in the literature for the abnormal returns are generally related to various motives behind mergers and certain deal characteristics. Numerous studies in both finance and strategic management literature show that mergers may be driven by a complex variety of motives, such as synergies, managerial competition (Jensen 1986), market valuation (Servaes 1991), agency problems (Black 1989), or managerial overconfidence (Malmendier and Tate 2008; Shu et al. 2013). It is generally believed that positive market reactions to deal announcements are related to good motives, and negative market reactions to bad motives. Another stream of literature (e.g., Travlos 1987; Sicherman and Pettway 1987; Fan and Goyal 2006) focuses more on certain deal characteristics (e.g., cash/non-cash deals and industry relatedness between the acquirer and the target firm) in explaining deal announcement abnormal returns.

In contrast to the merger announcement, the withdrawal of a merger has been much less studied, although a better understanding of this event is very important to both academics and practitioners, given the large number of deal withdrawals and the dramatic economic consequences of such withdrawals. To fill this gap in the research, this study investigates the wealth effect of M&A withdrawals and how termination fee provisions affect abnormal returns in the event of deal withdrawals. Specifically, I propose four hypotheses, mainly based on deal failure literature and termination fee literature.

2.1 The relation between deal announcement returns and withdrawal returns

The first hypothesis addresses the relation between deal announcement returns and withdrawal returns. Luo (2005) claims that the market reaction to M&A announcements could predict whether the deals are later consummated. He proposes that the managers of acquirers extract feedback information from the market reaction to the deal announcement and later draw on such information in deciding whether to complete or withdraw from the deal. For example, if the deal announcement return is significantly negative, managers may learn from this negative signal and, consequently, they could be more likely to cancel the

[1] Some previous studies report significant positive cumulative abnormal returns to acquirers around the deal announcement (e.g., Bradley et al. 1982; Lang et al. 1989; Maquieira et al. 1998; Kohers and Kohers 2000, 2001; Rosen 2003; Bouwman et al. 2003; Bhagat et al. 2005), whereas others find significant negative returns to acquirers (e.g., Morck et al. 1990; Servaes 1991; Walker 2000; Poon et al. 2001; Delong 2001, 2003; Kuipers et al. 2003).

deal than in the event of a positive deal announcement return. "Insiders learn from outsiders" (Luo 2005) is plausible, considering that market participants such as professional analysts and institution investors may be more skilled in analyzing complex issues related to a deal. This is also consistent with the efficient market hypothesis (EMH), which suggests that the market is more efficient than individuals (including managers) in processing public information in the pricing mechanism (Rock 1986; Jegadeesh et al. 1993). In addition, outside market participants may be able to better judge the quality of the deal than managers, since managers could be prone to cognitive biases (e.g., overconfidence) in the decision-making process, as suggested by Malmendier and Tate (2008). Therefore, market reactions could serve as vital feedback for managers to improve their decisions. Some previous studies provide empirical evidence on this feedback effect in the context of IPOs and share repurchases. For example, Bommel (2002) and Guo (2005) suggest that a high/low IPO's initial return leads managers to increase/decrease the capital budget. Chen et al. (2009) also find that the initial market reaction to the share repurchase announcement has a significant impact on managers' later repurchasing behaviors.

In the context of M&As, Rappaport (1987) argues that managers can better evaluate their restructuring strategies by carefully reading the market expectation contained in the market reaction to the deal announcement. Luo (2005) provides supportive evidence of such managerial learning and shows a positive relation between the market reaction to the deal announcement and the likelihood of deal completion. That is, a negative/positive deal announcement return is associated with a lower/higher deal completion rate (i.e. a higher/lower deal withdrawal rate). This finding suggests that managers learn from the market's opinion (i.e. the market's reaction to a deal announcement) in later deal-closing decision-making. Chira et al. (2017) also report that the market response affects cancellation decisions in the acquisitions of public targets, which provides confirming evidence of the learning hypothesis. On this basis, it would be interesting to further explore how the market reacts to such managerial learning in the event of a deal withdrawal. According to this learning theory, a negative market reaction to the announcement of a deal could potentially lead managers to withdraw from the deal later on. Therefore, it could be reasonable to presume that the market would positively react to such managerial learning in the event of a deal withdrawal, as managers revise their initial M&A decision based on the market opinion. On the other hand, if the market reaction to the announcement of a deal is positive (i.e. the market favors the deal) and then managers later withdraw from a deal, the market is likely to react to such a withdrawal negatively, to penalize "wrong" or no managerial learning. To summarize, managerial learning implies a negative association between market reaction to a deal announcement and a deal withdrawal. Therefore, the first hypothesis is developed as follows:

H1 Acquirer cumulative abnormal return around the deal withdrawal date is negatively associated with the cumulative abnormal return around the deal announcement date.

2.2 The net wealth effect of deal announcements and withdrawals for target firms

The hypothesis above focuses on the wealth effect of acquirers; there could also be a wealth effect for target firms in the event of a deal withdrawal. Some prior studies suggest that target shareholders could benefit from a deal withdrawal, on net. For example, Bradley et al. (1983) show that target firm returns following the termination of a deal could be above the pre-merger announcement returns, since shareholders anticipate that the target is

more likely to have a subsequent offer after the termination. The increased probability of a target being acquired in the future following a deal withdrawal could be explained by the fact that even if a deal fails, the target generally attracts more attention from potential future bidders due to its publicity during the bidding process. Furthermore, when a target cancels a deal, it is likely to actively pursue other offers in the future.

Bradley et al. (1983) also argue that the takeover attempt could make the target's top management realize that they must make significant improvements. This argument is consistent with the theory of the market for corporate control, as supported by many studies (e.g. Dullard and Hawtrey 2012). Indeed, Liu (2016) provides empirical evidence that failed takeover attempts play an important disciplinary role in target firms. In particular, following failed takeovers, target firms are more likely to initiate corporate restructuring activities, and outside block shareholders are more likely to force CEO turnover when restructuring activities do not occur. That study also shows that CEO turnover in target firms following failed takeover attempts is significantly higher than in matched non-target firms. Thus, the value of the target could be increased due to the improved corporate governance. In addition, new information regarding the value of a target could be revealed during the bidding process, and a bid could also indicate the target firm's general attractiveness, which could help the market to revalue the target. Therefore, there could be a permanent revaluation effect of the target firm even if a deal is later withdrawn (Dodd and Ruback 1977; Dodd 1980; Davidson et al. 1989).

In sum, it could be hypothesized that there is a net gain (i.e. positive wealth effect) for a target following a deal withdrawal because the likelihood of the target being taken over in the future could be increased due to the increased publicity; the corporate governance could be improved due to the disciplinary role of failed takeovers; and the permanent revaluation of the target could occur due to new information revealed during the bidding process. The second hypothesis is as follows:

H2 The net wealth effect of a deal announcement and a later withdrawal is positive for target firms.

2.3 The acquirer withdrawal return and the acquirer termination fee provision

The first two hypotheses center around the general wealth effect for acquirers and target firms around a deal withdrawal, and they are developed based on the managerial learning and deal failure literature. In the M&A literature, there is another strand of research focusing on the impact of termination fee provisions on merger announcement returns. However, there is a lack of research on how termination fee provisions affect merger withdrawal returns. Thus, the next two hypotheses are developed based on the termination fee literature, and aim to examine the effect of termination fee provisions in the event of a deal withdrawal.

A termination fee provision requires that one party pay a fixed cash fee to a counterparty when the former dissolves the agreement. An increasing proportion of merger agreements have bidder and/or target termination fee provisions (Officer 2003; Bates and Lemmon 2003). Therefore, it is important to understand the role and impact of termination fee provision in M&A activities. Bates and Lemmon (2003) propose an insurance hypothesis suggesting that acquirer termination fees are used to guarantee a proportion of the target firm's gain where the costs of negotiation are high. For acquirer shareholders, the withdrawal of a deal with an acquirer termination fee provision implies a contingent payment

by the acquirer to the target firm if the acquirer dissolves the agreement. This is a direct cost borne by the acquirer shareholders; therefore, it could be expected that the withdrawal of a deal with an acquirer termination fee provision experiences a lower abnormal return than a deal without an acquirer termination fee provision, all other things being equal. The third hypothesis is as follows:

H3 The acquirer cumulative abnormal return around the withdrawal date of a deal with an acquirer termination fee provision is lower than in deals without an acquirer termination fee provision in the merger contract.

2.4 The acquirer withdrawal return and the target termination fee provision

In addition to the effect of the acquirer termination fee provision on deal withdrawal returns, this study also examines the effect of target termination fee provision. In an agreement with a target termination fee provision, the target needs to pay a fixed cash fee to the acquirer if the target cancels the deal. From the point of view of acquirer shareholders, target termination fee provision is obviously beneficial as it provides compensation to the acquirer in the event of a target firm terminating the contract. Therefore, a positive relationship between acquirer withdrawal return and target termination fee provision might be expected based on such intuition. However, two main theories on termination fees suggest a negative association.

First, Berkovitch et al. (1989) propose the efficiency hypothesis, which suggests that target termination fees are used to encourage bidder participation (e.g., disclosure of valuable information, active negotiation, and pre-merger integration) by compensating initial bidders for the costs and risks associated with the bidding process, negotiation, and pre-merger integration. They argue that the announcement of a bid by an early bidder could provide later bidders with valuable information about potential synergy gains and merger plans; therefore, the early bidder is exposed to risks that later bidders do not need to manage/address (because they know more information), and later bidders can thus make better offers. Consequently, early bidders could be reluctant to reveal valuable information in the bid or during negotiation. To overcome this problem, targets tend to include target termination fee provisions in agreements to compensate for the information risk that bidders bear. Therefore, it would be reasonable to presume that the acquirer is likely to disclose more information during the process if there is a target termination fee provision in the deal agreement; consequently, high information costs (i.e. disclosure of more information) for the acquirer could have been incurred by the time of the deal withdrawal.

In addition, negotiation and pre-merger integration are very costly (Jennings and Mazzeo 1993). Bidders could be reluctant to commit to active negotiation or to pre-merger integration with a target if the target does not show a tangible commitment. A target termination fee provision could demonstrate the target's commitment to proceeding with the deal, and could compensate the bidder for the negotiation and pre-merger integration costs in the event of a deal withdrawal. Officer (2003) shows evidence that a target termination fee provision can induce a bidder to commit to pre-merger integration and deal-related investments before a merger. Bates and Lemmon (2003) also report supportive evidence for this efficiency hypothesis. Therefore, it could be presumed that high negotiation and pre-integration costs for the acquirer could have been incurred by the time of the deal withdrawal.

As discussed above, the inclusion of a target termination fee provision could encourage acquirer participation; consequently, it could cause high information, negotiation, and pre-

integration costs for the acquirer. These participation costs are sunk costs for acquirer shareholders in the event of a deal withdrawal. Although the acquirer would receive a target termination fee as compensation, these sunk costs are very likely to far outweigh the target termination fee, since this fee is generally very small compared with the deal value and the size of the costs (Bates and Lemmon 2003). Therefore, acquirer shareholders are more likely to suffer from a net loss when there is a target termination fee provision in the agreement. Such net loss could provoke a negative market reaction. Thus, it could be hypothesized that there is a negative correlation between acquirer withdrawal returns and the inclusion of a target termination fee provision, all other things being equal. The last hypothesis is as follows:

H4 The acquirer cumulative abnormal return around the withdrawal date of a deal with a target termination fee provision is lower than that of a deal without a target termination in the merger contract.

3 Data and method

3.1 Data

I collect data on withdrawn merger and acquisition deals from the Securities Data Company (SDC) Mergers and Acquisitions, and then merge the data with stock price data and financial data from the Center for Research in Securities Prices (CRSP) and from Compustat. To identify the reason(s) for withdrawal, I hand-collect withdrawal announcements, executive comments, analysts' reports, and relevant news via Factiva[2] and use the deal synopses extracted from the SDC. In addition, as several studies (Boone and Mulherin 2007; Jeon and Ligon 2011) show that some termination fee information in the SDC database is not very accurate, I manually collect such information from the SEC 14A, S-4, and 14D fillings and compare it with the information provided by the SDC. I find that in my sample, there are only 12 deals for which termination fee provisions are missing in the SDC database.

The sampling procedure is as follows. I first extract from the SDC all withdrawn mergers and acquisitions[3] announced by US firms between January 1, 1992, and December 31, 2015,[4] and labeled as "Withdrawn"[5] in "Deal Status." Then I construct the sample

[2] I run a news search in all available English media sources via Factiva. The Factiva database covers more than 25,000 leading news and business publications from around the world.

[3] I follow the TOB SDC definitions of these two types of transactions, as follows: Merger: "A combination of business takes place or 100% of the stock of a public or private company is acquired"; Acquisition of majority interest: "the acquirer must have held less than 50% and be seeking to acquire 50% or more, but less than 100% of the target company's stock."

[4] The SDC defines the "date announced" as "The date one or more parties involved in the transaction makes the first public disclosure of common or unilateral intent to pursue the transaction (no formal agreement is required). Among other things, Date Announced is determined by the disclosure of discussions between parties, disclosure of a unilateral approach made by a potential bidder, and the disclosure of a signed Memorandum of Understanding (MOU) or other agreement."

[5] The SDC defines the "Status of the Transaction" as "Withdrawn" if the target or the acquirer of the transaction has terminated its agreement, letter of intent, or plans for the acquisition or merger. The SDC defines "Date Withdrawn" as the date when the transaction is terminated, withdrawn, expires, or becomes otherwise unsuccessful. It should be noted that in some cases the SDC does not provide a withdrawn date where the two firms abandon the acquisition but do not make a public announcement of their decision. In

using the following criteria: (1) both the acquirer nation and target nation are the United States; (2) both the acquirer and the target are public firms, for data requirement purposes; (3) deal type is M&A (including disclosed value M&A and undisclosed value M&A), as defined by the SDC; (4) deal value is at least $1 million; (5) sufficient stock price data and financial data are available in CRSP and Compustat; (6) inside ownership data and executive stock option data of acquirers' CEOs are available in Execucomp,[6] as they are the important control variables or are needed in the analysis. When merging deal data from the SDC with stock price data from CRSP, I use the 6-digit CUSIP provided by the SDC. If the SDC CUSIP matches with multiple CRSP CUSIP codes, the CRSP CUSIP code with the lowest seventh digit is chosen, following Malmendier et al. (2016). I truncate the deals with below-zero and above-200% premiums, following Officer (2003). The filtering and data matching processes yield a final sample of 291 deals. The detailed screening procedure and sample criteria are presented in Table 1.

The distribution of the number of deal withdrawals and the withdrawal rates (i.e. the percentage of withdrawn deals relative to announced deals) over the sample period is presented in Table 2. It shows that deal withdrawal rates fluctuate over time. Over all the years that have withdrawal data available in the SDC (i.e. 1977–2015), the withdrawal rate ranges from 0 to 50%, with an average of 16.55%. During the sample period (i.e. 1992–2015), the withdrawal rate ranges from 7.14 to 26.83%, with an average of 13.89%. The withdrawal rate is highest in 2008, which corresponds to the financial crisis in that year.

3.2 Method

3.2.1 Event study

An event study method is employed to compute the cumulative abnormal returns (CARs) accrued to the acquirer's stock around the announcement of an M&A deal and around the announcement of the withdrawal of an M&A deal, respectively. Following prior studies (e.g., Barclay et al. 2007; Larcker et al. 2011), I use the market model to estimate the normal or benchmark return. In particular, in the computation of CARs around the deal announcement date, I use the daily value-weighted[7] CRSP index returns (excluding dividends) over the (− 30, − 280) period to estimate the market model parameters, following Schultz (2003), Chhaochharia and Grinstein (2007), Barclay et al. (2007), and Larcker et al. (2011). Although some studies (e.g., Ikenberry and Ramnath 2002; Eberhart et al. 2004; Greenwood and Schor 2009) employ the matching firms approach to compute abnormal returns, many others (e.g., Brown and Warner 1985) show that the test statistic is not very sensitive to the benchmark model in a short-run event study, and simple risk-

Footnote 5 continued
this study, only deals withdrawn with a public announcement are included in the sample, as the main focus is on the market's reaction to the public announcement of deal withdrawal.

[6] Standard & Poor's ExecuComp database is one of the most complete and comprehensive databases of executive compensation and other related available data. It includes more than 80 compensation items (salary, bonus, options and stock awards, etc.) and personal information items on over 12,500 executives, and covers the companies included in the S&P 500, S&P 400 Midcap, and S&P Smallcap 600 indexes, as well as companies that were once part of the S&P 1500. The data is annual, collected from each company's annual proxy statement, and dates back to 1992.

[7] I also calculate abnormal returns using the equal-weighted CRSP market returns. My results are not sensitive to this alternative market index.

Table 1 Sample screening (mergers and acquisitions)

Request	Criteria	Number of obs.
*Panel A. Sample screening of withdrawal M&As from SDC (*via *Thomson one)*		
Acquirer nation	United States of America	320,647
Target nation	United States of America	273,136
Acquirer public status	Public	135,206
Target public status	Public	40,282
Deal type	Disclosed or undisclosed value M&A	10,896
Deal status	Withdrawn	1844
Date withdrawn	01/01/1992 to 12/31/2015	1126
Deal value	Higher than $1 million	932

Database	Requirements	No. of obs. after merging/matching
Panel B. Merging/matching SDC data to data from other databases		
CRSP/compustat	Sufficient stock price data/financial data are available in CRSP/Compustat	534
Execucomp	Inside ownership and stock option data of acquirers' CEOs are available	291
Final sample		291

This table shows the sample screening and data matching procedure

adjustment approaches are effective in computing abnormal returns, in sharp contrast to a long-run event study (Eckbo et al. 2000).[8] Therefore, I use the CRSP index returns in the market model as the benchmark. I then compute the abnormal returns by subtracting the normal returns from the realized returns. Finally, CARs are calculated by aggregating the abnormal returns over the event window $(-1, +1)$. I also use $(-2, +2)$ and $(-5, +5)$ event windows to calculate CARs, though all reported results are based on the $(-1, +1)$ event window, as they are similar to those based on other event windows. In the calculation of CARs around the deal withdrawal date, I use $(-115, -365)$ as the estimation window in order to avoid the potential overlapping effect between deal announcements and deal withdrawals. I choose -115 trading days as my period start date, as the average number of days between the deal withdrawal date and the deal announcement date is 85. To avoid the potential confounding effect, I choose 85 trading days before the start date/end date of the estimation window used in the calculation of the deal announcement CARs as the start date/end date of the estimation window in calculating the deal withdrawal CARs. The same approach is applied in calculating target firm withdrawal/announcement CARs. Figure 1 illustrates the timeline for the event study graphically.

3.2.2 Regression model

The following OLS regression model is employed to examine the association between termination fee provision and acquirer withdrawal CARs.

[8] As a robustness check, I also use the Fama–French three-factor model in computing abnormal returns. The (unreported) tables show that my results are robust to the change of benchmark model.

Table 2 Withdrawal rates

Year	Ann.	Withdraw.	Withdraw./Ann. (%)	% of the sample
1977	1	0	0.00	
1978	17	0	0.00	
1979	12	6	50.00	
1980	17	4	23.53	
1981	115	5	4.35	
1982	121	26	21.49	
1983	128	32	25.00	
1984	231	32	13.85	
1985	226	91	40.27	
1986	223	46	20.63	
1987	235	60	25.53	
1988	253	73	28.85	
1989	243	71	29.22	
1990	159	49	30.82	
1991	175	40	22.86	
1992	180	36	20.00	3.86
1993	246	42	17.07	4.51
1994	370	52	14.05	5.58
1995	415	76	18.31	8.15
1996	440	60	13.64	6.44
1997	539	67	12.43	7.19
1998	574	75	13.07	8.05
1999	542	73	13.47	7.83
2000	482	82	17.01	8.80
2001	350	56	16.00	6.01
2002	242	31	12.81	3.33
2003	238	23	9.66	2.47
2004	224	16	7.14	1.72
2005	225	19	8.44	2.04
2006	231	27	11.69	2.90
2007	239	28	11.72	3.00
2008	164	44	26.83	4.72
2009	144	28	19.44	3.00
2010	146	21	14.38	2.25
2011	108	20	18.52	2.15
2012	126	12	9.52	1.29
2013	138	13	9.42	1.39
2014	168	13	7.74	1.39
2015	179	18	10.06	1.93
1977–2015 Total	8866	1467	16.55	
1992–2015 Total	6710	932	13.89	100.00

This table reports the number of announced deals and withdrawn deals by year. It also shows the withdrawal rate by year

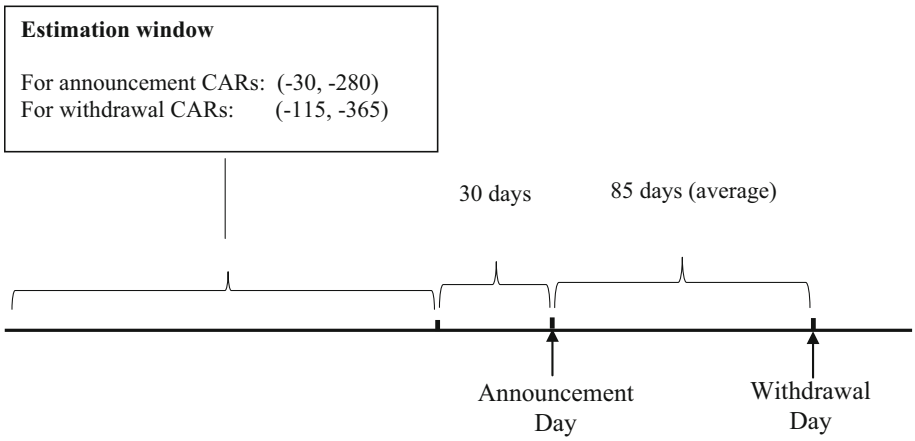

Fig. 1 Estimation windows for deal announcement CARs and deal withdrawal CARs. This figure illustrates the way I define the estimation window for announcement CARs and withdrawal CARs. In the computation of deal announcement CARs, I use (− 30, − 280) as the estimation window, where day 0 is the deal announcement date. In the calculation of deal withdrawal CARs, I use (− 115, − 365) as the estimation window, where day 0 is the deal withdrawal date. I choose − 115 trading days as my period start date, as the average number of days between the deal withdrawal date and the deal announcement date is 85 in my sample. To avoid the potential confounding effect, I choose 85 trading days before the start/end date of the estimation window used in the computation of deal announcement CARs as the start/end date of the estimation window in computing deal withdrawal CARs

$$\begin{aligned} \text{CAR\_withdraw} = {} & \beta_0 + \beta_1 \text{CAR\_ann} + \beta_2 \text{Termination\_A} \\ & + \beta_3 \text{Termination\_T} + \beta_i \textit{Controls} + \varepsilon \end{aligned} \quad (1)$$

All t-statistics are calculated using White's heteroscedasticity-consistent standard errors.

The dependent variable, CAR_withdraw, is the three-day event window (− 1, 1) CAR around the deal withdrawal date for the acquirer. The independent variable, CAR_ann, is the three-day event window (− 1, 1) CAR around the deal announcement date for the acquirer. Some studies suggest that termination fees could help in explaining the wealth effect in M&A deals (Officer 2003; Bates and Lemmon 2003). In order to examine whether the termination fee provisions in merger agreements have any impact on the market's reaction to deal withdrawals, I include in the model two variables related to termination fees, Termination_A and Termination_T. Termination_A is a binary variable taking the value of one if there is a bidder termination fee provision in the agreement, and zero otherwise. Termination_T is a binary variable taking the value of one if there is a target termination fee provision in the agreement, and zero otherwise. It should be noted that in this regression, I only focus on the impact of the inclusion of acquirer termination fee provision or target termination fee provision on withdrawal returns; I do not consider which party (i.e. acquirer or target) actually paid the termination fee.[9] I focus on the

[9] By the definition of termination fee provision, a party needs to pay the termination fee to its counterparty in the event of a deal withdrawal if the party initiates the termination and there is a termination fee provision for itself. In other words, a party (i.e. acquirer or target) needs to pay the termination fee when both of the following conditions hold: (1) there is a termination fee provision for the party in the agreement; and (2) the party initiates the termination. If there is a termination fee provision for a party but the counterparty (not the party itself) initiates the termination, the party does not pay the termination fee; if a party initiates the termination but there is no termination fee provision for the party in the agreement, the party does not pay the termination fee.

inclusion of termination fee provision rather than the actual termination fee paid because prior literature shows that the inclusion of termination fee provision may affect some deal characteristics and pre-merger integration behaviors, and, consequently, could affect withdrawal returns regardless of whether the termination fee is actually paid or not. Even so, in further analysis, I also examine the potential effect of the actual termination fee payment on withdrawal returns. In that further analysis, I manually identify which party initiates the termination by reading the synopsis provided in the SDC database and news articles. The results for this additional analysis are presented in Sect. 6.2.

I also consider in the regression four sets of control variables related to the nature of the deals, the payment and financing of the deals, the bidding process, and the firm characteristics, respectively. These variables are extracted from the literature that suggests that they may have an influence on M&A announcement performance. If the market's reaction to the deal announcement is associated with these characteristics, they could be expected to also influence the market's reaction to the deal withdrawal.

The first set of control variables (i.e. characteristics related to the nature of a deal) includes Relatedness, Rsize, Attitude, and Tender Offer. Relatedness is a binary variable, taking one if the first two digits of the SIC code of the acquirer and those of the target are the same, and zero otherwise. Previous studies suggest that M&A performance is associated with the relatedness of the acquirer's business and the target firm's business. For example, Sicherman and Pettway (1987) and Fan and Goyal (2006) report that the CARs of mergers or acquisitions of related businesses are significantly higher than those of mergers or acquisitions of unrelated businesses, suggesting that the acquisition of related business units enhances the acquirer's shareholder value, while the acquisition of unrelated businesses may have a negative impact on the acquirer's shareholder value. Rsize represents the relative size of the target firm, and is calculated as the ratio of the target's total assets to the acquirer's total assets at the end of the fiscal year before the deal announcement year. Some studies (Asquith et al. 1983; Bruner 1988; Song and Walkling 1993) show that mergers with relatively large targets generate greater synergies than those with relatively small targets. Attitude is a binary variable, where one signifies that the deal attitude is classified as "hostile," and zero indicates that it is "friendly" or "neutral." Previous studies (Walkling 1985; Schwert 2000; Baker and Savasoglu 2002) report that deal attitude is significantly correlated to merger success and the performance of the acquirers. Tender offer is defined as a binary variable equal to one if a deal is labeled a "tender offer" by the SDC, and zero otherwise. Early research (e.g., Jensen and Ruback 1983) indicates that the wealth effect may differ across tender offers and other offers.

The second set of control variables (i.e. characteristics of payment and financing) includes Cash Deal and Premium. Following Servaes (1991) and Betton et al. (2014), the variable Cash Deal is defined as a binary variable, equal to one if the bid is a pure cash offer, and zero otherwise.[10] There are many studies on the relation between the financing methods of M&A deals and firm M&A performance. Most studies (e.g. Travlos 1987; Franks et al. 1988; Servaes 1991) show that the abnormal returns of acquirers with equity offers are significantly negative, whereas acquirers with cash offers gain positive or zero abnormal returns. Those studies propose that the negative abnormal returns associated with

[10] A deal is classified as a pure cash deal if it is labeled as a "Cash Only" deal in the SDC, and as a non-pure cash deal if it is labeled as "Stock Only" or "Other" in the SDC. In the SDC, "Cash Only" deals are defined as transactions in which the only consideration offered is cash. "Stock Only" deals are defined as transactions in which the only consideration is a form of stock. "Other" deals are defined as transactions in which the consideration offered is any combination excluding "Cash Only" and "Stock Only" deals.

stock offers reflect the signaling effect, where the stock offer conveys the negative signal that the bidding firm's stock is overvalued, and therefore the market reacts negatively. Premium is the ratio of the offer price per target share divided by the target share price 4 weeks prior to the M&A announcement. Some studies (e.g., Roll 1986) argue that acquirers might be too optimistic about their abilities to generate synergies and consequently tend to pay too much to target firms. A high premium (i.e. overpayment problem) could result in poor takeover performance.

The third set of control variables (i.e. characteristics related to the bidding process or the contract) includes Multi-bidders, Lockup, and Toehold. Multi-bidders is a binary variable taking the value of one if the number of bidders recorded in the SDC is greater than one, and zero otherwise. Some previous studies (e.g., Flanagan and O'Shaughnessy 2003; Dimopoulos and Sacchetto 2014) show that the presence of multiple bidders has a significant impact on offer premiums and shareholder wealth in M&A transactions. Lockup is defined as a binary variable equal to one if a target provides lockup options, and zero otherwise, following Jeon and Ligon (2011). Under an agreement with a lockup option, a bidder is offered an option to acquire a certain number of target shares at a specific price or acquire certain assets. As shown in Burch (2001), target firms use lockup options as a protection device for acquirers, albeit with much lower frequency than they use termination fee provisions. Jeon and Ligon (2011) show that lockup options completely disappear after 2004. As the sample period covers some years when lockup options were used, I include a lockup option dummy in the regression to control for the effects of this protection mechanism on withdrawal returns.

Another variable included in the third set of controls is Toehold. Toehold is defined as the fraction of target shares held by the acquirer prior to the bid announcement, following Jeon and Ligon (2011).[11] The toehold status could have a significant impact on bidding strategies, the probability of bid success, the offer premium, and the ultimate returns of a deal (Betton et al. 2008). For example, Walkling (1985), Jennings and Mazzeo (1993), and Betton and Eckbo (2000) show that toeholds increase the probability of winning a bid and reduce offer premium due to their deterrent effect on competition in the bidding process. Betton et al. (2009) report that the cumulative abnormal returns for acquirers in the toehold sample are significantly higher than in the no-toehold sample. They also show that the contest-period cumulative abnormal return for unsuccessful targets is significantly positive only when the bidder has a toehold. If the bidder does not have a toehold, the stock price of the target tends to fall back to the pre-bidding level. Therefore, it is very important to control for toeholds when examining the net gain or net loss and the effect of the termination fee on withdrawal returns in the event of deal withdrawals.

The fourth set of control variables (i.e. firm characteristics) includes M/B, R&D, Bid-Ask Spread, Past Return, Acquirer Inside Ownership, Target Inside Ownership, and Corporate Governance. M/B is the target's market/book (M/B) ratio, which is used to proxy for growth expectations. The detailed definition is shown in the "Appendix". Morck et al. (1990) report that acquirer M&A short-run (announcement) performance is better if the acquisitions involve the purchase of a fast-growing target (high M/B ratio) firm. Following Phillips and Zhdanov (2013), R&D is defined as annual R&D expenditures scaled by sales. This variable is included in the regression, because some studies (e.g., Higgins and Rodriguez 2006; Bena and Li 2014) show that obtaining synergies from increasing

[11] I also use an alternative definition of Toehold, a binary variable equal to one if the fraction of target shares held by the acquirer prior to the bid announcement is higher than 5%, and zero otherwise, following Officer (2003). The results are similar.

innovation is an important driver of acquisitions. I also examine R&D scaled by assets, and the results are robust to this alternative scaling. In addition, prior studies (e.g., Stoll and Whaley 1983; Schultz 1983; Keim 1989; Nam et al. 2006) suggest that stock returns could reverse in a week or a month due to bid-ask bounce. Although this short-run return reversal is unlikely to be the explanation for the observed return reversal in the event of deal withdrawals,[12] I control for the past one-week return (Past Return) and the bid-ask spread to further rule out this possibility. Past Return is defined as the average market-adjusted daily returns of the acquirer over the week prior to the withdrawal date. Bid-Ask Spread is defined as the average relative spread (i.e., the difference between the daily ask price and the daily bid price divided by the average of bid and ask) for the week before the withdrawal date,[13] following Leuz and Verrecchia (2000) and Chung and Zhang (2014). Finally, I also control for inside ownership of the acquirer, inside ownership of the target firm, and the quality of corporate governance of the acquirer. Acquirer Inside Ownership is the fraction of the acquirer's shares owned by the CEO of the acquirer at the end of the fiscal year before the deal announcement year. Target Inside Ownership is the fraction of target shares owned by the target CEO at the end of the fiscal year before the deal announcement year. The corporate governance index, G-index,[14] is used as the proxy for the quality of corporate governance.

Besides the baseline regression model described above, I also run additional regressions by including two interaction terms, CAR_ann*Payment and CAR_ann*Relatedness, to examine the joint effects of these variables, as previous studies show that there is a significant association between M&A announcement returns and payment methods and relatedness (Travlos 1987; Franks et al. 1988; Fan and Goyal 2006).

4 Descriptive statistics

Table 3 provides summary statistics of the variables. The mean of the three-day acquirer cumulative abnormal return around the withdrawal date is 1%; it appears that the market favors deal withdrawal announcements, on average. In contrast, on average, the three-day cumulative abnormal return around the deal announcement date is − 1.5%, which is consistent with previous studies (e.g., Morck et al. 1990; Delong 2001, 2003; Kuipers et al. 2003) that suggest that M&A deals destroy acquirers' value. Interestingly, the mean of target firm cumulative abnormal returns around the withdrawal date is − 7.2%, whereas the announcement return is 18.7%. The negative sign of the target withdrawal return is opposite to the sign of the acquiring firm withdrawal return, which suggests the different impact of deal withdrawals on acquirer and target firm stocks. The average relative size of target firm to acquirer is 0.587, with a minimum of 0.001 and a maximum of 4.542, which

[12] In this study, the average number of days between the deal withdrawal date and the deal announcement date is 85, while the general short-run return reversal usually occurs within a week or a month. Therefore, the observed return reversal in the event of a deal withdrawal tends to occur within a much longer time period (i.e. 85 days on average) than the general short-run return reversal.

[13] I first calculate the daily relative spread using daily ask and bid prices provided by CRSP, and then I compute the mean value of the daily relative spreads over the week before the withdrawal date.

[14] The G-index was first constructed by Gompers et al. (2003) and then issued by the Investor Responsibility Research Center. The G-index is calculated based on 24 different governance provisions in several governance areas and provides a comprehensive measurement of the quality of a firm's governance mechanism. It is constructed in such a way that, the higher the value of the G-index, the poorer the quality of corporate governance.

Table 3 Summary statistics

	Obs.	Mean	Median	Std. Dev.	Min	Max
CAR_withdraw	291	0.010	0.007	0.081	− 0.443	0.456
CAR_ann	291	− 0.015	− 0.010	0.082	− 0.732	0.292
TCAR_withdraw	291	− 0.072	− 0.032	0.166	− 1.228	0.436
TCAR_ann	291	0.187	0.150	0.192	− 0.198	0.938
Termination_A	291	0.078	0	0.269	0	1
Termination_T	291	0.790	1	0.408	0	1
Relatedness	291	0.667	1	0.472	0	1
Rsize	291	0.587	0.337	0.759	0.001	4.542
Attitude	291	0.165	0	0.372	0	1
Tender offer	291	0.201	0.184	0.190	0	1
Cash deal	291	0.340	0	0.475	0	1
Premium	291	35.486	30.065	29.793	− 31.95	179.79
Multi-bidders	291	0.323	0	0.468	0	1
Lockup	291	0.057	0	0.156	0	1
Toehold	291	3.541	3.387	2.099	1.185	6.520
M/B	291	3.670	2.42	1.968	0.315	7.216
R&D	291	0.279	0.064	0.462	0.018	0.826
Bid-ask spread	291	0.029	0.013	0.034	0.002	0.198
Past return	291	− 0.001	− 0.001	0.002	− 0.000	− 0.007
Acquirer inside ownership	291	0.182	0.131	0.165	0.002	0.397
Target inside ownership	291	0.166	0.124	0.146	0.002	0.371
Corporate governance	291	9.642	10.00	2.65	0	24

This table presents the summary statistics of the key variables considered in this study. The definitions of variables are presented in the "Appendix"

shows that my sample covers deals across a wide relative size spectrum. The statistics also show that the premiums paid are quite high, on average, with a mean premium of 35.486. It is also worth noting that both the mean and the median of Termination_T are much higher than those of Termination_A, which suggests that target firms are more likely to have provisions for a termination fee. This is consistent with some prior studies (Officer 2003; Bates and Lemmon 2003) that show that "bidder termination fees are not nearly as common in practice as the target termination fees" (Officer 2003).

I also compute the mean CAR_withdraw and the mean CAR_ann by year. Figure 2a graphs the correlation between their means.[15] It shows that the mean acquirer withdrawal CAR is almost always negatively correlated with the mean acquirer announcement CAR. This negative correlation is consistent with my first hypothesis (H1) and reflects the market's inverse reaction to the reversal of the original M&A decision. In addition, Fig. 2b shows a negative correlation between the mean target withdrawal CAR and the mean target announcement CAR. Interestingly, the figures show that the acquirer withdrawal CAR line

[15] The unreported correlation table shows that the correlation between CAR_withdraw and CAR_ann is negative and reasonably large (− 0.407).

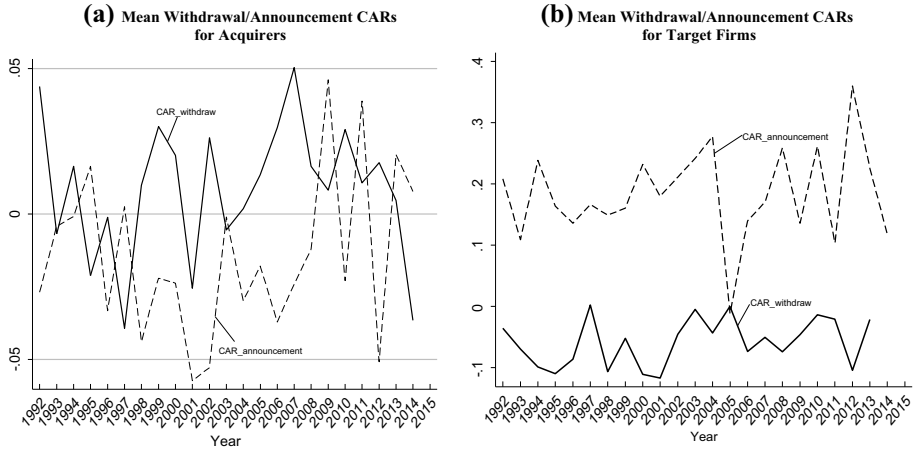

Fig. 2 Correlation between deal withdrawal CARs and deal announcement CARs. **a** The mean withdrawal CARs (the solid line) and the mean announcement CARs (the dotted line) for acquirers by year during the sample period (1992–2014). **b** The mean withdrawal CARs (the solid line) and the mean announcement CARs (the dotted line) for target firms by year during the sample period (1992–2014). Both figures show a negative correlation between mean withdrawal CARs and mean announcement CARs in most year

is above the announcement CAR line in most years, while the target withdrawal CAR line is below the announcement CAR line.

5 Empirical results

5.1 Market reaction to an M&A withdrawal and net wealth effect

I begin my analysis by computing the withdrawal/announcement CARs.

Table 4 Panel A presents the mean withdrawal and announcement CARs for acquirers and target firms, the net gain/loss for acquirers and target firms, the differences between acquirer CARs and target CARs, the difference between withdrawal CARs and announcement CARs, and their significance. The result on the average CAR shows a reversed pattern in the event of a withdrawal. When comparing the magnitude of the return reversal in acquiring and target firms between deal announcement and deal withdrawal, acquirers seem to be the losers in withdrawals. Although the acquirer withdrawal abnormal return is significantly positive, the magnitude of such positive return is insufficient to fully cover the loss (in terms of the abnormal return) the acquirer experienced around the deal announcement date. The result shows a net loss (i.e. − 0.55%) for acquirers. By contrast, target firms seem to be net winners in withdrawals. As the results show, for targets, the magnitude of the negative withdrawal return is much smaller than that of the positive announcement return, and the net gain for targets is 11.47%. Therefore, targets reap gains on average during the announcement-withdrawal process, consistent with H2.[16] One

[16] It should be noted that there is a large fall in CAR_announcement for targets from 2004 to 2005, as shown in Fig. 2b. This fall results from the fact that the target firms in the eight deals that are announced in 2005 experienced significantly low announcement returns, on average. To examine if this fall drives my results, I exclude from my sample deals that are announced in 2005 and then re-calculate the mean

possible explanation is that the likelihood of the target being taken over in the future is increased due to its increased publicity following the deal announcement (Bradley et al. 1983).[17] In addition, Liu (2016) shows that the takeover attempt, even it fails, makes target managers realize that they must make significant improvements; therefore, the takeover attempt could improve corporate governance. Finally, as suggested by some studies (Dodd and Ruback 1977; Dodd 1980; Davidson et al. 1989), the disclosure of new information during the deal process could help the market to revalue the target.

To explore the relation between the acquirer withdrawal return and such factors as announcement returns, acquirer termination fee provision, and target termination fee provision, I conduct univariate tests on three main variables: CAR_ann, Termination_A, and Termination_T. The full sample is split into two sub-samples based on low/high CAR_ann (i.e. below/above the median of CAR_ann), without/with Acquirer Termination Fee Provision, and without/with Target Termination Fee Provision, respectively. The average withdrawal CARs for sub-samples, the differences, and their significances are reported in Table 4 Panel C. The average withdrawal CAR of the deals with low announcement CARs is 1.96%, while that of the deals with high announcement CARs is − 0.08%. The difference is 2.04% and significant at the 5% level. This is consistent with my first hypothesis (H1) that the market's reaction tends to reverse in the event of the withdrawal of an M&A deal. This finding provides supportive evidence for the managerial learning theory proposed by Luo (2005). Managers learn from the negative market reaction to the announcement, and then managers withdraw the deal. It seems the market values such learning and reacts positively to such a withdrawal.

Panel C also reports that the average withdrawal CAR of deals with a bidder termination fee is significantly higher than that of deals without a bidder termination fee. The difference is 7.5% and significant at the 5% level. This result is contrary to the third hypothesis (H3), showing that the market appears to view the withdrawal of deals with a bidder termination fee as good news. I also find that the average withdrawal CAR of deals with a target termination fee is 2.5% lower than that of deals without a target termination fee, and the difference is significant at the 10% level, which is consistent with my fourth hypothesis (H4). This result may suggest that acquirer shareholders view the withdrawal of deals with a target termination fee as bad news, as the target termination fee provision is likely to be associated with a high cost of pre-merger integration, according to the efficiency hypothesis (Bates and Lemmon 2003); such a high cost could result in the negative market reaction.

5.2 Termination fee provisions and acquirer withdrawal returns

To examine how the inclusion of termination fee provisions affects M&A withdrawal returns, I conduct regressions using Eq. (1) as the baseline model. Models (1) and (2) regress acquirer withdrawal returns on termination fee provisions and deal characteristics.

Footnote 16 continued
withdrawal CARs, the mean announcement CARs, and the net gain/loss for acquirers and target firms. The results are presented in Table 4 Panel B. They are very similar to the results in Panel A. I also use this sample to re-run all regressions. The unreported regression tables show that our results are essentially unchanged. These tests suggest that my results are not likely to be driven by this large fall.

[17] I further search the SDC database for deals announced after withdrawals. I find that 75.26% of the targets in my sample become targets for a second time following a deal termination. This finding is consistent with the explanation proposed by Bradley et al. (1983), and it shows that, indeed, a very large proportion of targets are taken over after the termination of prior deals.

Table 4 Withdrawal/announcement CARs and deal/firm characteristics

	Average withdrawal CAR (%)	Average announcement CAR (%)	Net gain/loss	t-stat for difference (between withdrawal and announcement CARs)
Panel A. Net gain/loss for acquirer and target				
Acquirer	0.96***	− 1.51***	− 0.55***	− 3.15
Target	− 7.18***	18.65***	11.47***	6.81
Difference (acquirer-target)	8.14***	− 20.16***		
t-statistics for difference	3.24	− 5.78		

	Average withdrawal CAR (%)	Average announcement CAR (%)	Net gain/loss	t-stat for difference (between withdrawal and announcement CARs)
Panel B. Net gain/loss for acquirer and target				
Acquirer	0.98***	− 1.54***	− 0.56***	− 3.19
Target	− 7.39***	19.09***	11.70***	6.82
Difference (acquirer-target)	8.37***	− 20.63***		
t-statistics for difference	3.42	− 5.69		

	Average withdrawal CAR (%)	Difference	t-stat for difference
Panel C. Withdrawal CARs and deal/firm characteristics			
Deals with low CAR_ann	0.0196		
Deals with high CAR_ann	− 0.0008	.0204**	1.8089
Deals without Acq. termination fee	0.0032		
Deals with Acq. termination fee	0.0782	− 0.0750**	− 2.3151
Deals without Tar. termination Fee	0.0288		

Table 4 continued

	Average withdrawal CAR (%)	Difference	t-stat for difference
Deals with Tar. termination fee	0.0038	0.0250*	1.3635

Panel A presents the mean withdrawal and announcement CARs for acquirers and target firms, the net gain/loss for acquirers and target firms, the differences between acquirer CARs and target firm CARs, and their significance. The net gain/loss for acquirers/target firms is calculated as the sum of the average withdrawal CAR and the average announcement CAR for acquirers/target firms. Panel B presents the parallel results, using the sample that excludes the deals announced in 2005. Panel C presents the result of univariate analysis on the following three deal characteristics of acquirers: CAR_ann, Termination_A, and Termination_T. The full sample is split into two sub-samples of deals with low/high CAR_ann. Deals are categorized as low/high CAR_ann if the CAR-ann of a deal is below/above the median CAR_ann. The full sample is also split into two sub-samples based on the deals without/with Acquirer Termination Fee Provision and the deals without/with Target Termination Fee Provision, respectively. The definitions of variables are presented in the "Appendix". The t-statistics for differences are presented

The symbols ***, **, and * indicate significance at the 1, 5, and 10% levels, respectively

Considering that the correlation between Termination_A and Termination_T is high, I include one of them in each regression in order to avoid the potential multicollinearity problem.[18] Models (3)-(7) include announcement CAR as an independent variable in addition to those used in the first two models. The results are presented in Table 5.

I test hypotheses H3 and H4 in Models (1) and (2), respectively. The result of Model (1) shows that Termination_A is positively associated with CAR_withdraw; the coefficient is 0.084 and significant at 1%. This result is contrary to the prediction of H3 that suggests a negative relation between acquirer termination provision and acquirer withdrawal abnormal return. Bates and Lemmon (2003)'s insurance hypothesis implies that the withdrawal return of a deal with an acquirer termination fee provision is lower than that of a deal without an acquirer termination fee provision, all other things being equal, because an acquirer termination fee provision is a direct cost borne by the acquirer shareholders if the acquirer dissolves the agreement. This result does not support the prediction of the insurance hypothesis. A possible explanation for the reported positive relation between the two variables might be that acquirer shareholders are more likely to believe that the withdrawal decision made by managers is the right one, considering the cost of making a wrong decision is high when there is an acquirer termination fee provision. In this sense, an acquirer termination fee clause actually acts as a mechanism to force acquirer managers to perform careful analysis in order to make the right decision about withdrawals, given the fact that a termination fee has to be paid to the target if they decide to withdraw. The result of Model (2) shows the coefficient on Termination_T is − 0.051 and significant at 5%, providing strong evidence that supports H4. The acquirer withdrawal return of deals with target termination fee provisions is lower than that of deals without such provisions. The finding supports the efficiency hypothesis (Berkovitch et al. 1989; Bates and Lemmon 2003) and may suggest that the high pre-merger integration cost which is more likely to incur when there is a target termination fee clause could result in the negative market reaction to the withdrawal of the deal.

In Models (3)–(7), I consider the potential impact of the deal announcement return on the deal withdrawal return, by including CAR_ann in regressions. Model (3) shows that CAR_ann is negatively correlated with CAR_withdraw; the coefficient is − 0.249 and significant at 1%. I then include all deal characteristic variables in Model (4) and Model (5). The results show that the magnitude of the negative association is even larger after controlling for other factors, and the coefficients on CAR_ann are still significant at 1%. This finding provides evidence consistent with H1, suggesting that the market reacts inversely to the reversal of the original M&A decision. The announcement CAR seems to be an important determinant of the withdrawal CAR. The withdrawal of a deal originally favored by shareholders (during deal announcement) could lead to a significantly negative market reaction, while that of deals unfavored by shareholders could lead to a significantly positive market reaction. This finding provides further supportive evidence for the managerial learning theory proposed by Luo (2005). Notably, the R-squared values are 27.4% and 26.3% in Models (4) and (5), much higher than in Model (3), which shows that the termination variables and some of the control variables increase the explanatory power of the model significantly. In particular, the results show that the coefficients on Termination_A and Termination_T remain positive and highly significant after adding CAR_ann in the regressions. This evidence further confirms that the termination fee provisions are important factors in explaining the variance in withdrawal CARs.

[18] The unreported correlation table shows that the correlation between Termination_A and Termination_T is − 0.508.

Table 5 OLS regression analysis on acquirer withdrawal CARs

Dependent Var. CAR_withdraw	(1)	(2)	(3)	(4)	(5)	(6)	(7)
CAR_ann			− 0.249***	− 0.372***	− 0.383***	− 0.259**	− 0.267***
			(− 3.925)	(− 5.013)	(− 5.102)	(− 2.725)	(− 2.832)
Termination_A	0.084***			0.080**		0.061**	
	(3.400)			(2.701)		(2.652)	
Termination_T		− 0.051**			− 0.043**		− 0.036*
		(− 2.571)			(− 2.303)		(− 1.908)
Relatedness	0.003	0.005		0.006	0.012	− 0.008	− 0.001
	(0.271)	(0.407)		(0.533)	(0.756)	(− 0.134)	(− 0.020)
Rsize	− 0.019*	− 0.009		− 0.018*	− 0.010	− 0.011	− 0.008
	(− 1.703)	(− 1.071)		(− 1.703)	(− 1.206)	(− 1.393)	(− 0.926)
Attitude	− 0.004	− 0.002		0.001	0.003	0.001	0.003
	(− 0.070)	(− 0.031)		(0.010)	(0.067)	(0.029)	(0.052)
Tender offer	− 0.007*	− 0.006*		− 0.005	− 0.004	− 0.005	− 0.005
	(− 1.820)	(− 1.791)		(− 1.476)	(− 1.439)	(− 1.500)	(− 1.498)
Cash deal	0.006	0.012		0.016	0.020	0.013	0.017
	(0.477)	(0.720)		(1.179)	(1.452)	(0.938)	(1.192)
Premium	0.003	0.002		0.001	0.001	0.002	0.001
	(1.432)	(1.390)		(1.081)	(1.080)	(1.259)	(1.250)
Multi-bidders	0.006	0.002		0.006	0.005	0.003	0.001
	(0.297)	(0.049)		(0.418)	(0.332)	(0.161)	(0.018)
Lockup	− 0.022	− 0.018		− 0.025	− 0.023	− 0.019	− 0.021
	(− 0.405)	(− 0.262)		(− 0.533)	(− 0.506)	(− 0.284)	(− 0.398)
Toehold	− 0.106**	− 0.112**		− 0.104**	− 0.102*	− 0.106**	− 0.105**
	(− 2.216)	(− 2.401)		(− 2.025)	(− 1.931)	(− 2.387)	(− 2.309)

Table 5 continued

Dependent Var. CAR_withdraw	(1)	(2)	(3)	(4)	(5)	(6)	(7)
M/B	− 0.0002	− 0.0002		− 0.003	− 0.0003	− 0.0003	− 0.0003
	(− 1.098)	(− 1. 093)		(− 1.300)	(− 1.299)	(− 1.374)	(− 1.282)
R&D	− 0.004	− 0.003		− 0.006	− 0.004	− 0.005	− 0.003
	(− 0.079)	(− 0.052)		(− 0.010)	(− 0.072)	(− 0.089)	(− 0.059)
Bid-ask spread	− 0.032	− 0.028		− 0.040	− 0.037	− 0.032	− 0.040
	(− 0.504)	(− 0.377)		(− 0.719)	(− 0.652)	(− 0.510)	(− 0.700)
Past return	− 0.502	− 0.497		− 0.533	− 0.526	− 0.518	− 0.510
	(− 0.152)	(− 0.137)		(− 0.174)	(− 0.163)	(− 0.150)	(− 0.148)
Acq. inside ownership	0.006	0.005		0.007	0.005	0.006	0.006
	(0.497)	(0.375)		(0.534)	(0.396)	(0.479)	(0.483)
Tar. inside ownership	0.007*	0.005		0.005	0.007*	0.006	0.006
	(1.829)	(1.398)		(1.427)	(1.820)	(0.475)	(1.498)
Corporate governance	0.000*	0.000*		0.0001**	0.0001**	0.000*	0.0001**
	(1.772)	(1.793)		(2.145)	(2.021)	(1.820)	(2.031)
CAR_ann*Payment						− 0.440*	− 0.459**
						(− 1.847)	(− 1.990)
CAR_ann*Relatedness						− 0.216	− 0.207
						(− 1.475)	(− 1.283)
Constant	0.141***	0.209***	0.144***	0.177***	0.170***	− 0.009	0.180***
	(10.201)	(15.510)	(10.998)	(13.911)	(12.665)	(− 1.610)	(12.870)
Observations	291	291	291	291	291	291	291
R-squared	0.136	0.107	0.072	0.274	0.263	0.311	0.302

This table presents the regression results on the relation between termination fee provisions and acquirer withdrawal returns. The dependent variable is CAR_withdraw. It is the three-day event window (− 1, 1) CAR around the withdrawal date for the acquirer. The definitions of other variables are presented in the "Appendix". The top number provided for each explanatory variable is the parameter estimate, with White's heteroscedasticity-consistent t-statistics provided in parentheses

The symbols ***, **, and * indicate that the coefficient is statistically significant at the 1, 5, and 10% levels, respectively

It is also worth noting that two control variables (Toehold and Corporate Governance) are significant across almost all models. The coefficient on Toehold is significantly negative, suggesting that the toehold has a negative impact on acquirer withdrawal returns in the event of deal withdrawals. A possible explanation is that an acquirer could be more likely to get involved in pre-merger integration if it has a higher level of toehold, because its toehold status increases its probability of winning the bid (Walkling 1985; Jennings and Mazzeo 1993; Betton and Eckbo 2000). As discussed previously, most costs associated with pre-merger integration become sunk costs in the event of a deal withdrawal. Therefore, the acquirer that has a higher level of toehold (i.e. the acquirer with high pre-merger integration costs) suffers more from the sunk costs; consequently, the acquirer withdrawal return is lower. In addition, the coefficient on Corporate Governance is significantly positive. Corporate Governance (i.e. G-index) is defined in such a way that, the higher the value, the lower the quality of corporate governance. Therefore, the reported positive coefficient on this variable suggests that the acquirer withdrawal return is higher if the deal is conducted by an acquirer that has poor corporate governance (i.e. the G-index is higher). As previous studies (e.g., Byrd and Hickman 1992) show that firms with poor corporate governance tend to conduct value-destroying takeovers, the withdrawal of such deals is likely to be viewed as good news and leads to higher acquirer withdrawal returns.

Finally, I add the interaction of CAR_ann and Payment and the interaction of CAR_ann and Relatedness in Models (6) and (7), considering some previous studies find a significant association between announcement CARs and these two deal characteristics. The results show that the association between CAR_ann and CAR_withdraw is more negative when the payment method of the deal is cash. The interaction of CAR_ann and Payment is significant in both models. This finding is consistent with the evidence reported in previous studies that the market favors cash deals and reacts positively to the announcement of such deals; consequently, the withdrawal of such deals is viewed as bad news, and we could expect a larger magnitude of the reversal in the market's reaction to the withdrawal.

I also address the potential self-selection problem. When a sample selected in an event study is non-random, coefficients estimated using OLS can be biased (Heckman 1979). I tackle this self-selection bias issue by estimating a regression model with a Heckman Correction for selection (i.e. Heckman Two Step Correction). Two selection variables are employed in this specification: the size of acquirer termination fee and the size of target termination fee. It is expected that the probability of withdrawal is lower when the termination fee is higher. The unreported results of the regression with self-selection correction are similar to those reported previously.

Overall, in my univariate and multivariate analyses, I find strong evidence that the acquirer CARs around deal withdrawals are negatively correlated with the CARs around deal announcements. The association is highly significant in all specifications. I also report that the acquirer termination fee provision is positively associated with the acquirer withdrawal CAR, while the target termination fee provision is negatively associated with the acquirer withdrawal CAR. Finally, I find the association between announcement CARs and withdrawal CARs is more negative for cash deals.

6 Further analyses

6.1 Reasons for withdrawal

The primary results reported so far are based on the analysis of a full sample of withdrawn deals without considering the reasons for withdrawal. It would be reasonable to argue that the market may react differently to deals withdrawn for different reasons. Therefore, I identify and categorize the reason(s) for each withdrawal by analyzing the hand-collected announcements and/or news on withdrawals based on a detailed news search via Factiva and the synopses extracted from the SDC. Then I calculate the average withdrawal CARs by reason.

Table 6 shows the five main categories of reasons. The first category covers cases in which both parties (i.e. acquirer and target) mutually terminated the deal. It includes five specific reasons: (1) two parties had disputes on price; (2) there was a change of view in the review or reassessment of a deal after the announcement; (3) two parties agreed to change from the current offer to another agreement; (4) the market condition was unfavorable; and (5) there was a failure to obtain an agreement with bank lenders or public debt holders. The second category covers cases in which the acquirer withdrew a deal. It includes eleven specific reasons: (1) the target had operation/financial/accounting problems; (2) the defense from the target was strong; (3) the acquirer withdrew the deal to scuttle the target's other talks; (4) the market condition was unfavorable; (5) the acquirer's financial condition deteriorated; (6) the conditions of the offer were not met by the target; (7) other opportunities for the acquirer emerged; (8) the response/action from the target was too slow; (9) the acquirer planned an alternative offer for the target; (10) the acquirer was acquired by another firm; and (11) the target breached the terms of the agreement. The third category covers cases in which the target rejected/terminated a deal. It includes nine specific reasons: (1) other superior offers or opportunities for the target emerged; (2) the target accepted a White-knight bid; (3) the target was not for sale; (4) there were disputes on the price/term; (5) the target board rejected the offer; (6) there were disputes on a slate of opposition board nominees or on board member selection; (7) the target had concerns about the acquirer's accounting problems; (8) the acquirer was not able to close the deal by the stipulated time; and (9) the offer was withdrawn for general reasons (e.g., no specific explanation). The last two categories cover cases in which competing bidders agreed to buy the target jointly or there was a lack of regulatory approval.

Table 6 shows that 43.3% of the sample deals were rejected by the target, and the remaining 56.7% failed for other reasons, including 19.24% of deals withdrawn by acquirers, 13.4% mutually withdrawn, 0.69% withdrawn for joint purchase agreement, 12.37% withdrawn for antitrust reasons, and 11% withdrawn with no reason given in public announcements or news. Regarding acquirer withdrawal return, the table shows that the average return of the deals withdrawn mutually is 6.53%; that of the deals withdrawn by acquirers is 6.99%; that of the deals withdrawn by targets is 3.97%; and that of the deals withdrawn for antitrust or regulatory reasons is 3.90%. The average withdrawal return is much higher for deals withdrawn mutually or by acquirers than for those withdrawn by targets or for antitrust or regulatory reasons, although the withdrawal returns are positive across all different categories of reasons. It seems acquirer shareholders, in general, read target rejection and antitrust issues as relatively less positive news in comparison to acquirer-initiated or mutually initiated withdrawals for reasons such as reassessment of

Table 6 Reasons for withdrawals and withdrawal CARs

General reason	Specific reason	No. of deals	% of sample	Acquirer withdrawal CAR (%)
Mutually withdrew/ terminated		39	13.4	6.53
	Disputes on price/term unresolved	27	9.28	5.62
	Change of view in the review/ reassessment	6	2.06	11.36
	Change from current offer to another agreement or alliance	3	1.03	4.36
	Unfavorable market conditions	2	0.69	7.31
	Failure to obtain an agreement with bank lenders or public debt holders	1	0.34	6.49
Acquirer withdrew		56	19.24	6.99
	Target's operation/financial/accounting problem	13	4.47	3.87
	Target defense in hostile takeovers	11	3.78	5.38
	Scuttled target's other talks	1	0.34	3.12
	Unfavorable market conditions	8	2.75	14.20
	Acquirer's deteriorating financial condition	6	2.06	11.07
	Conditions of the offer not met by the target	5	1.72	7.55
	Other opportunities for the acquirer	4	1.37	6.59
	Slow/no response/action from the target	3	1.03	3.10
	Acquirer planned an alternative offer	2	0.69	1.69
	Acquirer was acquired by another firm	2	0.69	8.9
	Target's breaches of terms in the agreement	1	0.34	2.96
Target rejected		126	43.3	3.97
	Other superior offers/opportunities for the target	77	26.46	3.86
	White-knight bid	2	0.69	1.17
	Not for sale	18	6.19	1.02
	Disputes on price/term	14	4.81	5.41
	Board rejection	2	0.69	4.07
	Disputes on a slate of opposition board nominees or on board member selection	2	0.69	3.70
	Target's concern over acquirer's accounting problems	1	0.34	4.70
	Acquirer's inability to close the deal by stipulated time	1	0.34	9.69
	Rejected with general reasons/no explanations	9	3.09	4.25
Competing bidders agreed to buy the target jointly		2	0.69	4.35
Antitrust or other regulatory reasons		36	12.37	3.90

Table 6 continued

General reason	Specific reason	No. of deals	% of sample	Acquirer withdrawal CAR (%)
No reason given		32	11.00	5.21
Total		291	100.00	

This table presents the average acquirer withdrawal CARs by reason for withdrawal

targets' value of conditions, unfavorable market conditions, other opportunities for the acquirer, etc.

To further explore the potential relation between reasons for withdrawals and acquirer withdrawal returns, I include the following four binary variables in the withdrawal return regression: Mutually Withdrawn, Acquirer Withdrawn, Target Withdrawn and Antitrust Reason. Specifically, Mutually Withdrawn is defined as a binary variable equal to one if both parties (i.e. acquirer and target) mutually withdrew a deal, and zero otherwise. Acquirer Withdrawn is defined as a binary variable equal to one if the acquirer withdrew a deal, and zero otherwise. Target Withdrawn is defined as a binary variable equal to one if the target withdrew a deal, and zero otherwise. Antitrust Reason is defined as a binary variable equal to one if a deal is withdrawn due to antitrust or other regulatory reasons. The results are presented in Table 7.

The results show that the coefficients for Mutually Withdrawn and Acquirer Withdrawn are significantly positive; those for Target Withdrawn and Antitrust Reason are significantly negative. These coefficients are significant even after controlling for other variables. It is worth noting that even after including reasons for withdrawals in the regression, the coefficients for CAR_ann, Termination_A, and Termination_T are still significant and have the same signs as shown in Table 5. This shows that the result in the main regression is robust. In the future, it would be interesting to further investigate why investors react to deals withdrawn for certain reasons more positively than others.

6.2 Does the withdrawal return depend on who initiates the termination?

Previous sections have examined the relation between the inclusion of a termination fee provision and withdrawal returns. However, it could be argued that not only the inclusion of a termination fee provision but also the party who has paid the termination fee (i.e. who initiates the termination) could affect the wealth effect around merger withdrawals. To explore this issue, I conduct further analysis by regressing the acquirer withdrawal returns (CAR_withdraw) on TerminationPaid_A, TerminationPaid_T, and other control variables. TerminationPaid_A is a binary variable equal to one if the bidder initiates the termination and there is an acquirer termination fee provision (i.e. the termination fee is paid by the bidder), and zero otherwise. TerminationPaid_T is a binary variable equal to one if the target initiates the termination and there is an acquirer termination fee provision (i.e. the termination fee is paid by the target), and zero otherwise. More detailed explanation is provided in the "Appendix". The results are presented in Table 8.

Interestingly, I find that the acquirer withdrawal abnormal return is higher when the contingent termination fee is paid by the acquirer. The coefficient between CAR_withdraw and TerminationPaid_A is significantly positive (significant at the 1% level in Model (1) and the 5% level in Model (3)), while the coefficient between CAR_withdraw and

Table 7 OLS regression analysis on acquirer withdrawal CARs with reasons

Dependent Var. CAR_withdraw	(1)	(2)	(3)	(4)	(5)	(6)
CAR_ann					− 0.307***	− 0.359***
					(− 4.212)	(− 4.844)
Termination_A					0.073**	
					(2.379)	
Termination_T						− 0.038**
						(− 2.260)
Mutually withdrawn	0.015*				0.010*	0.012*
	(1.819)				(1.719)	(1.803)
Acquirer withdrawn		0.023**			0.021**	0.019**
		(2.180)			(2.026)	(2.004)
Target withdrawn			− 0.016*		− 0.014*	− 0.012*
			(− 1.834)		(− 1.821)	(− 1.722)
Antitrust reason				− 0.019**	− 0.022**	− 0.018**
				(− 2.298)	(− 2.498)	(− 2.017)
Constant	0.146***	0.159***	0.166***	0.172***	0.124***	0.138***
	(13.191)	(16.422)	(17.081)	(19.052)	(11.565)	(12.323)
Control variables	No	No	No	No	Yes	Yes
Observations	291	291	291	291	291	291
R-squared	0.012	0.020	0.018	0.021	0.330	0.321

This table presents the regression results on the relation between reasons for withdrawal and acquirer withdrawal returns. The dependent variable is CAR_withdraw. It is the three-day event window (− 1, 1) CAR around the withdrawal date for the acquirer. The definitions of other variables are presented in the "Appendix". The top number provided for each explanatory variable is the parameter estimate, with White's heteroscedasticity-consistent t-statistics provided in parentheses

The symbols ***, **, and * indicate that the coefficient is statistically significant at the 1, 5, and 10% levels, respectively

TerminationPaid_T is insignificant in all models. It seems that acquirers' shareholders may view the termination fee provision as a useful mechanism to ensure managers make the right decision. In other words, managers would only withdraw from a deal if they are very confident that withdrawal is the right decision, considering that the termination fee would be paid to the target, and therefore the cost of making a poor decision is high. Acquirers' shareholders might view the termination fee paid by acquirers as a credible signal of a correct decision.

6.3 CEO overconfidence and termination fee

Prior studies suggest that CEO overconfidence plays an important role in explaining M&A decision-making. Drawing on Roll's (1986) hubris hypothesis, Malmendier and Tate (2008) provide empirical evidence showing that overconfident CEOs are more likely to engage in M&A transactions than rational CEOs, due to their distorted perception of reality and an unrealistic assessment of their ability to extract value from the deals. Shu et al. (2013) also find that overconfident CEOs are prone to conduct value-destroying takeovers.

Table 8 Does the withdrawal CAR depend on who initiates the termination?

Dependent Var. CAR_withdraw	(1)	(2)	(3)	(4)
CAR_ann			− 0.327***	− 0.358***
			(− 4.903)	(− 5.210)
TerminationPaid_A	0.082***		0.055**	
	(3.340)		(2.446)	
TerminationPaid_T		0.037		0.030
		(1.108)		(1.477)
Constant	0.133***	0.128***	0.142***	0.124***
	(13.011)	(12.577)	(14.925)	(11.928)
Control Variables	Yes	Yes	Yes	Yes
Observations	291	291	291	291
R-squared	0.129	0.102	0.269	0.258

This table examines if acquirer withdrawal returns depend on who initiates the termination. The dependent variable is CAR_withdraw. It is the three-day event window (− 1, 1) CAR around the withdrawal date for the acquirer. The definitions of other variables are presented in the "Appendix". The top number provided for each explanatory variable is the parameter estimate, with White's heteroscedasticity-consistent t-statistics provided in parentheses

The symbols ***, **, and * indicate that the coefficient is statistically significant at the 1, 5, and 10% levels, respectively

In line with the literature on the association between CEO overconfidence and M&A likelihood, I argue that an overconfident CEO of the acquiring firm could be more likely to force the target firm to include a target termination fee provision in the merger contract in order to secure the deal, since he/she is overconfident about his/her ability to realize the synergies and has high hopes for deal completion. On the other hand, CEO overconfidence might increase the risk of failure in the pre-merger integration process and therefore lead the target firm to withdraw from the merger even if it has to pay a termination fee.

To examine the relation between CEO overconfidence and termination fee, I calculate the differences in the means of the variables related to termination fee, between mergers conducted by overconfident CEOs and those by non-overconfident CEOs. I construct the CEO overconfidence measure Holder67, following the approach proposed by Malmendier and Tate (2005, 2008). The rationale of this measure is that overconfident CEOs often believe that the value of their firms' stock will continue to increase under their leadership more than is objectively justified, and therefore they tend to postpone option exercise, even if the amount in-the-money is beyond an economically rational benchmark. To construct Holder67, I first calculate the average exercise price of each CEO's option package in a particular firm year using the available CEO option information in the ExecuComp database. The percentage in-the-money of each CEO's option portfolio in a particular firm year is then computed. Finally, a CEO is classified as overconfident if he/she fails to exercise his/her vested options of more than 67% in-the-money at least twice during the sample period. Otherwise, a CEO is deemed a non-overconfident CEO. The results are presented in Table 9.

The results show that the mean of Termination_T in the mergers conducted by overconfident CEOs is significantly higher (significant at the 5% level) than in those conducted by non-overconfident CEOs, which may suggest that overconfident CEOs in acquirers might use target termination fee provision as the means to secure the deal. I also report that

Table 9 CEO overconfidence and termination fee

	OC	Non-OC	Difference	t-statistics for difference
Termination_A	0.092	0.090	0.002	0.0561
Termination_T	0.374	0.255	0.119**	2.1392
TerminationPaid_A	0.062	0.076	− 0.014	− 0.4661
TerminationPaid_T	0.099	0.048	0.051**	2.1401

To examine if CEO overconfidence has an impact on the inclusion of a termination fee provision in an agreement or the initiation of termination, I calculate the differences in the means of the four variables related to termination fees between mergers conducted by overconfident CEOs and those conducted by non-overconfident CEOs. OC is a binary variable proxying for acquirer CEO overconfidence, taking the value of 1 for overconfident CEOs, and 0 otherwise. This variable is derived using the Holder67 option exercise measure. Termination_A is a binary variable where 1 signifies there is a bidder termination fee provision in the agreement and the deal was terminated by the bidder. Termination_T is a binary variable where 1 signifies there is a target termination fee provision in the agreement and the deal was terminated by the target. TerminationPaid_A is a binary variable where 1 signifies that the bidder initiates the termination and the termination fee is paid by the bidder. TerminationPaid_T is a binary variable where 1 signifies that the target initiates the termination and the termination fee is paid by the target

The symbols ***, **, and * indicate that the coefficient is statistically significant at the 1, 5, and 10% levels, respectively

the mean of TerminationPaid_T in mergers conducted by overconfident CEOs is also significantly higher (significant at the 5% level) than in mergers conducted by non-overconfident CEOs. One possible explanation is that mergers conducted by overconfident CEOs are likely to experience failure in the pre-merger integration process, as overconfident CEOs tend to underestimate the challenge of integration and overestimate their control over the process. Consequently, target firms might choose to terminate contracts even if they have to pay termination fees.

6.4 Withdrawal return and termination fee size

Prior studies show that the size of the termination fee is important in examining the wealth effect of M&As. For example, Jeon and Ligon (2011) find that large fees significantly affect deal completion rates. They also report that announcement returns are significantly lower for deals which have very large termination fees (i.e. larger than 5% of deal value). The explanation could be that a termination fee provision with a low fee might not be sufficient to play an effective role in protecting the counterparty's interests in the event of a deal withdrawal. That is, the size of the termination fee determines whether the payment could compensate for most costs (e.g., pre-integration costs) incurred during the bidding process. In this sense, it is also interesting to test the impact of fee size on acquirer withdrawal returns. Therefore, I include the acquirer termination fee size (Acq. Fee Size) and the target termination fee size (Tar Fee Size) in the acquirer withdrawal return regression. Specifically, Acq. Fee Size is defined as the acquirer termination fee as a percentage of deal value; Tar. Fee Size is defined as the target termination fee as a percentage of deal value. To consider the high termination fee, following Jeon and Ligon (2011), I also categorize the fee as a High-fee group if it is higher than the 66th percentile. High Acq. Fee and High Tar. Fee are binary variables that represent deals falling into the High-fee group. The results are presented in Table 10.

Table 10 Termination fee size

Dependent Var. CAR_withdraw	(1)	(2)	(3)	(4)
CAR_ann			− 0.262***	− 0.279***
			(− 4.716)	(− 4.902)
Acq. fee size	0.068		0.057	
	(0.704)		(0.663)	
Tar. fee size	− 0.079		− 0.062	
	(− 0.782)		(− 701)	
High Acq. fee		0.094**		0.087**
		(2.342)		(2.522)
High Tar. fee		− 0.064*		− 0.050
		(− 1.82)		(− 1.497)
Constant	0.122***	0.190***	0.156***	0.152***
	(9.517)	(13.627)	(11.975)	(10.763)
Control variables	No	No	Yes	Yes
Observations	291	291	291	291
R-squared	0.119	0.134	0.263	0.251

This table examines the relation (if any) between termination fee size and acquirer withdrawal returns. The dependent variable is CAR_withdraw. It is the three-day event window (− 1, 1) CAR around the withdrawal date for the acquirer. Acq. Fee Size is defined as the acquirer termination fee as a percentage of deal value. Tar. Fee Size is defined as the target termination fee as a percentage of deal value. To consider the high termination fee, following Jeon and Ligon (2011), I also categorize the fee as a High-fee group if it is higher than the 66th percentile. High Acq. Fee is a binary variable that represents the deals falling into the acquirer High-fee group. High Tar. Fee is a binary variable that represents the deals falling into the target High-fee group. The definitions of other variables are presented in the "Appendix". The top number provided for each explanatory variable is the parameter estimate, with White's heteroscedasticity-consistent t-statistics provided in parentheses

The symbols ***, **, and * indicate that the coefficient is statistically significant at the 1, 5, and 10% levels, respectively

The results show that although the general fee size variables (i.e. Acq. Fee Size and Tar. Fee Size) are not significant, High Acq. Fee and High Tar. Fee are significant in most specifications. In particular, the coefficient on High Acq. Fee is 0.094, with a significance level of 5% in Model (2), and that on High Tar. Fee is − 0.064, with a significance level of 10%. The result on the size of acquirer termination fee suggests that acquirer withdrawal returns are higher if the acquirer termination fee is higher, which seems counter-intuitive. A possible explanation is that the high acquirer fee may serve as an effective monitoring mechanism to ensure that acquirer managers carefully consider/research before making a withdrawal decision. In other words, facing a large contingent fee, managers are more likely to analyze a deal with greater vigor in order to make an optimal withdrawal decision and maximize acquirer shareholders' value. The result on the size of the target termination fee is consistent with the prediction of the efficiency theory of termination fee, as discussed in previous sections. A large target termination fee could induce an acquirer to conduct pre-merger integration (i.e. make deal-related investments at an early stage); consequently, the acquirer could suffer from more pre-integration costs in the event of a withdrawal. It is worth noting that there is no significant correlation between the fee size variables (i.e. Acq. Fee Size and Tar. Fee Size) and withdrawal return. It seems the effect of fee size on

withdrawal return only exists in High-fee deals. This is consistent with Jeon and Ligon (2011), who also report that the general fee size (i.e. low-fee or moderate-fee) is unrelated to announcement returns.

7 Conclusion

This paper investigates the wealth effects around the withdrawal of a merger or acquisition and examines the relation between termination fee provisions and acquirer cumulative abnormal returns around the withdrawal date. I report a significant negative correlation between the acquirer withdrawal return and the acquirer announcement return. This finding provides supporting evidence for the theory of managerial learning proposed by Luo (2005). Managers seem to learn from the negative market reaction to a deal announcement and withdraw the deal later on. The market values such learning and reacts to the withdrawal positively. In testing the net wealth effect, I find that, interestingly, the reversal in abnormal returns at withdrawal is significantly less than the value created at announcement for targets, on average. That is, targets reap net gains even if deals are withdrawn. In testing the relation between termination fee provisions and acquirer withdrawal returns, I find that acquirer termination fee provisions have a significant positive impact on acquirer withdrawal abnormal returns. The market seems to view the acquirer termination fee as a mechanism that ensures managers make the right withdrawal decision. I also report that target termination fee provisions have a significant negative impact on acquirer withdrawal returns, which provides supporting evidence for the efficiency hypothesis (Berkovitch et al. 1989; Officer 2003; Bates and Lemmon 2003).

The contributions of this paper are threefold. First, building upon Luo (2005), this study provides new evidence on the market reaction to managerial learning in the event of a deal withdrawal. Second, it complements the existing literature on termination fee provisions by exploring how the provisions affect acquirer withdrawal returns. To the best of my knowledge, this is the first study that empirically examines the link between termination fee provisions and withdrawal returns. My results suggest that acquirer termination fee provisions play a disciplinary or monitoring role in the decision-making around M&A withdrawals. In this sense, this study could have implications for the construction of corporate governance mechanisms and for contracting practices in M&As. This study also provides supporting evidence for the efficiency hypothesis on termination fee provisions. Finally, it contributes to the literature on the revaluation of targets in M&As (Dodd and Ruback 1977; Dodd 1980; Davidson et al. 1989) by providing new evidence of the permanent revaluation effect of targets in the event of deal withdrawal.

Despite these findings, there is still room for further research in relevant areas. For example, in testing the theory of managerial learning, this study only considers deal withdrawals, while it is also possible that managers choose to revise their offer rather than withdraw the deal as a result of learning from the market. Thus, it would be interesting to test this theory in the context of offer revisions. Furthermore, although this study briefly examines the reasons for deal withdrawals in the additional analysis, a better understanding of why certain reasons affect withdrawal returns more than others do remains an interesting topic for future research.

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Appendix: Variable descriptions

This table summarizes the definitions of variables.

Variable	Definition
CAR_withdraw	The 3-day event window (− 1, 1) CAR around the deal withdrawal date for the acquirer
CAR_ann	The 3-day event window (− 1, 1) CAR around the deal announcement date for the acquirer
Termination_A	A binary variable, taking the value of 1 if there is a bidder termination fee provision in the agreement, and 0 otherwise
Termination_T	A binary variable, taking the value of 1 if there is a target termination fee provision in the agreement, and 0 otherwise
Relatedness	A binary variable, taking the value of 1 if the first two digits of the SIC code of the acquirer and the target are the same, and 0 otherwise
Rsize	The relative size of the target firm, defined as the ratio of the target's total assets to the acquirer's total assets at the end of the fiscal year before the deal announcement year
Attitude	A binary variable, where 1 signifies that the deal attitude is classified as "hostile," and 0 signifies it is "friendly" or "neutral"
Tender offer	A binary variable, taking the value of 1 if the deal is labeled as a "tender offer" by the SDC, and 0 otherwise
Cash deal	A binary variable, taking the value of 1 if the bid is a pure cash offer, and 0 otherwise
Premium	Premium is defined as the ratio of the offer price per target share divided by the target share price four weeks prior to the M&A announcement
Multi-bidders	A binary variable, taking the value of 1 if the number of bidders recorded in the SDC is greater than 1, and 0 otherwise
Lockup	A binary variable equal to 1 if a target provides lockup options, and 0 otherwise
Toehold	Toehold is defined as the fraction of target shares held by the acquirer prior to the bid announcement, following Jeon and Ligon (2011)
M/B	M/B represents the target's market to book ratio. It is defined as (total assets − book value of equity + market value of equity)/total assets. Book value of equity is calculated as total assets − total liabilities − preferred stock + deferred taxes + convertible debt
R&D	R&D is defined as annual R&D expenditure scaled by sales, following Phillips and Zhdanov (2013)
Past return	Past Return is defined as the average market-adjusted daily returns of the acquirer over the week prior to the withdrawal date
Bid-ask spread	Bid-Ask Spread is defined as the average relative spread (i.e., the difference between the daily ask price and the daily bid price divided by the average of bid and ask) for the week before the withdrawal date, following Leuz and Verrecchia (2000) and Chung and Zhang (2014)

Variable	Definition
Acquirer inside ownership	The fraction of the acquirer's shares owned by the managers of the acquirer at the end of the fiscal year before the deal announcement year
Target inside ownership	The fraction of target shares owned by target managers at the end of the fiscal year before the deal announcement year
Corporate governance	The corporate governance index (G-index) of the acquirer. It is constructed by Gompers et al. (2003) and calculated based on 24 different governance provisions in several governance areas. It is constructed in such a way that, the higher the value of the G-index, the poorer the quality of corporate governance
TerminationPaid_A	TerminationPaid_A is a binary variable equal to one if the bidder initiates the termination and there is an acquirer termination fee provision (i.e. the termination fee is paid by the bidder), and zero otherwise
TerminationPaid_T	TerminationPaid_T is a binary variable equal to one if the target initiates the termination and there is an acquirer termination fee provision (i.e. the termination fee is paid by the target), and zero otherwise
Acq. Fee Size	Acq. Fee Size is defined as the acquirer termination fee as a percentage of deal value
Tar. Fee Size	Tar. Fee Size is defined as the target termination fee as a percentage of deal value
High Acq. Fee	Following Jeon and Ligon (2011), I also categorize the fee as a High-fee group if it is higher than the 66th percentile. High Acq. Fee is a binary variable that represents the deals falling into the acquirer High-fee group
High Tar. Fee	Following Jeon and Ligon (2011), I also categorize the fee as a High-fee group if it is higher than the 66th percentile. High Tar. Fee is a binary variable that represents the deals falling into the target High-fee group

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