

Measuring Deal Premiums in Takeovers

We investigate whether the merger announcement dates provided in the Securities Data Corporation (SDC) database are handled correctly by researchers performing event studies. We find that in 24.1% of deals, the popular choice of using the SDC's "Date Announced" (DA) field as the event date leads to biased estimates of target firm abnormal returns because of earlier abnormal price movements due to merger-related events such as merger rumors or search-for-buyer types of announcements. We hand collect the merger-related events from news sources and make the complete dataset publicly available at the *Financial Management* website.

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I. Introduction

The wealth effects of mergers on acquirer and target firm shareholders are of interest to a broad body of academics and practitioners from different fields. Academics are typically interested in the mechanics of takeover markets, which includes the division of merger-driven wealth between the merging firms. M&A advisors estimate the wealth effects of past mergers, especially on the target firm shareholders, to assess whether their clients are receiving fair premiums from the proposed transactions.

The traditional method of estimating the wealth effects of mergers is to perform event studies around the merger announcement dates. This sort of event study methodology relies on two assumptions to estimate the wealth effects of mergers: 1) the markets are efficient and 2) the merger announcement about to be released by the merging firm is unknown to outside investors at the time of the announcement. Only when these conditions are met does the change in merging firms' stock prices accurately reflect the wealth effect of the merger in response to the merger announcement. The vast majority of the empirical M&A literature relies on these two assumptions when attempting to identify the factors that shape merger outcomes.

In this paper, we investigate whether the second part of the above-stated premise, merger news is unknown or unanticipated by outside investors at the time of the announcement, holds around the primary announcement dates [the "Date Announced" field (DA)] that are recorded in the SDC database, a popular resource used in empirical research.^{1 2} We find that a significant

¹ The SDC database and its DA field are heavily used by academics working in the M&A field. We downloaded papers published in the major finance journals (*Financial Management*, *Journal of Banking and Finance*, *Journal of Financial Economics*, *Journal of Financial and Quantitative Analysis*, *The Journal of Corporate Finance*, *The Journal of Finance*, *Management Science*, and *The Review of Financial Studies*) from January 2006-May 2011 with JEL code G34 (Mergers and Acquisitions). Some journals do not report JEL codes; in these cases, we used several M&A-related keywords to locate the relevant papers. This search resulted in a total of 145 papers, 107 of which rely entirely or partially on SDC to create the dataset. With the exception of a few papers that carefully identify the first time a target is involved in merger negotiations (Ryngaert and Scholten, 2010), the significant majority of papers that perform event studies directly use the DA field in the SDC database.

number of target firms are involved in merger-related activities, such as public announcements of strategic alternatives, merger agreements with other bidders that subsequently fail, merger rumors, and unsolicited offers in the pre-DA period. In other words, some targets are already “in play” immediately prior to the SDC’s primary announcement dates. As such, estimating their abnormal returns around these dates through event studies may lead to biased estimates of the wealth effect of the announced mergers.

Fortunately, the SDC database captures some of these early events in its “Original Date Announced (ODA)” field, which records the time when “...*the target company is first publicly disclosed as a possible takeover candidate.*” This definition includes the types of early events previously mentioned. We find that target firms experience an average of +18.6% cumulative abnormal returns (CARs) over (-5,+5) around the ODA, followed by +13.8% abnormal returns around the subsequent merger announcement date on the DA. For the sample of deals with no early events (where the ODA is identical to the DA), the CARs accrued to target firms over (-5,+5) average +28.2%. Accordingly, we infer that in some deals, a more heavily publicized takeover process results in more frequent, but smaller market reactions over the deals’ lifecycle. This trend implies that estimating the wealth effects of mergers by simply basing the event study specifically on the final merger announcement date (DA), as most papers in the empirical M&A literature do, is a flawed practice.

We propose three event study-based methods that are likely to correct the bias introduced by the ODA events. The first method uses an event window that accumulates abnormal returns starting 63 trading days before the DA and ending at the deal closing date (as proposed in Schwert, 2000). The second method accumulates target abnormal returns starting five trading

² We do not analyze the effect of merger anticipation on merging firm stock prices. For a recent discussion of these issues, see Edmans, Goldstein, and Jiang (2012) and Betton, Eckbo, Thompson, and Thorburn (2013).

days before the ODA and ending five trading days after the DA, while the third method sums up the individual target CARs (-5,+5) estimated around the ODA and the DA. We find that the three methods yield similar target CAR estimates when an ODA event exists. Thus, researchers could use these event windows for capturing the market reactions at the ODA. We also confirm that the offer premium, which is another popular variable for estimating the wealth effect of mergers, is under-biased when the benchmark price is based on the DA rather than the ODA. Researchers could correct this bias by simply picking a benchmark price prior to the ODA.³

The next step of our investigation focuses on the accuracy of the SDC in recording ODA events. Using news articles in the Lexis-Nexis database, we search for merger-related events that occur within one calendar year of the formal merger announcement dates, the DAs. We find that the actual frequency of ODA events is more than double the frequency of the events that are reported in the SDC database. In particular, for a sample of 2,329 deals, we can identify 563 merger-related events occurring before the DA. We run event studies around the hand-collected ODAs (HODA) and find market reactions similar in magnitude to the ODA events.⁴

Finally, we examine whether the estimation bias introduced by ODA events varies across deal characteristics. Our results indicate that 43.9% of unsolicited deals, 40.2% of deals with transaction values greater than \$10 billion, and 38.1% of deals involving private acquirers have HODA events. For these subsamples, the conventional target CARs that use the SDC's DA field underestimate the target CARs by as much as eight percentage points. Thus, when working with these subsamples, researchers should be particularly careful with early merger-related events.

³ We also examine whether merger-related events taking place prior to the DA have any impact on acquirer stock prices. As per our detailed analysis, we conclude that such events do not affect acquirer CARs significantly. We believe that the primary reason for the absence of a market reaction is that acquirers are not always identified in these merger-related events. For instance, "strategic alternatives" or "for sale" announcements made by target firms only reveal target firms' intentions to sell themselves, and typically do not the identity the names of the bidders (if any).

⁴ Our HODA sample is publicly available at <http://onlinelibrary.wiley.com/doi/10.1111/fima.12053/supinfo> (authors using our HODA dataset are kindly asked to cite this study in their papers).

II. Data

The SDC records two announcement dates for each deal in its database: the Original Date Announced (ODA) and the Date Announced (DA).⁵ Recording separate announcement dates presumably serves to distinguish between different types of merger-related news released over a deal's lifecycle. The SDC defines the ODA and DA as follows:

Original Date Announced: The date when the target company is first publicly disclosed as a possible takeover candidate. ODA is used for the calculation of stock premiums. When multiple bidders exist, the ODA is recorded in the following cases: (1) If acquirer changes from 'Seeking Buyer' or 'Undisclosed Acquiror' to an actual entity. (2) Competing bids are announced. (3) Competing stakes are announced. (4) A defensive transaction is announced.

Date Announced: 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.

The ODA captures the date when a takeover emerges as a possibility for the target firm, but not necessarily by the eventual acquirer with whom the target ultimately chooses to merge.

⁵ The formal name of the ODA field in SDC is "Date Originally Announced," which is coded as "DAO."

For example, the SDC creates an entry in the ODA field when a target firm publicizes its intention to sell itself or when a target firm receives an unsolicited offer from a bidder. Merger rumors that are not yet confirmed by the merging parties, but, based on reliable sources (e.g., a story published in a major newspaper), also result in ODA entries in the SDC.⁶ In contrast, the DA records the date on which material and solid information regarding a deal is disclosed to the market by one or both of the merging parties. As previously discussed, a significant majority of academic papers rely on the DA field for estimating the wealth effects of mergers.

To investigate the potential bias that would be introduced by ignoring the ODA in event studies, we download, from the SDC, a set of deals that satisfy the following criteria: 1) the announcement date is between January 1, 2000 and December 31, 2010, 2) the transaction value is greater than \$50 million, 3) the targets are public firms located in the U.S., 4) the "Form" of the merger is "Merger," "Acquisition," "Acquisition of Majority Interest," or "Acquisition of Assets," 5) announced deals are eventually completed, 6) the target firms appear in the CRSP database at least once over the sample period, 7) the target firms' stocks trade on the NYSE, NASDAQ, AMEX, or the small-cap market, and 8) the deal is not classified as an "alliance," "bankruptcy acquisition," "failed bank," "joint venture," "spin-off," or "two-step spin-off" (SDC's acquisition technique codes: 46, 6, 31, 35, 24, 44). To confirm the consistency and the accuracy of the SDC's ODA field in identifying merger-related news in the period prior to the DA, we search news articles in the Lexis-Nexis database for merger-related events beginning one calendar year before the DA. Our search keywords include "merger," "takeover," "buyout," "for sale," "business combination," "consolidation," "seeking buyer," "possible sale," "strategic

⁶ The ODA field captures merger-related public announcements taking place prior to the DA. Merger-related events that are not yet publicized by the merging firms may also cause run ups in the target firm's stock price (Heitzman and Klasa, 2013).

alternatives," and "13D." If we can identify such a date, we record it under the "Hand-Collected Original Date Announced" (HODA) field.

The filtering process yields a total of 2,329 deals, with 219 entries with different DA and ODA values and 563 deals with different DA and HODA values. Panel A of Table I reports the distribution of ODA and HODA deals over time. The percentage of ODA deals dips in 2006 (5.1%) and peaks in 2010 (16.1%). The percentage of ODA deals averages 9.4% for the entire period. In contrast, the percentage of HODA deals for the sample period averages 24.1%. Clearly, the SDC fails to record a significant portion of the merger-related events in the pre-DA period in its ODA field.

Insert Table I about here.

Panel B of Table I presents the distribution of days elapsed between the ODA and DA and the HODA and DA. The number of calendar days between the ODA and DA for this sample has a median of 41, with extreme values on the upper side of the distribution pushing the mean to 110.5 days. The 10th and 90th percentiles of the distribution are 3 and 266 days, respectively.⁷ Since we truncate our search for merger-related news at one calendar year prior to the DA, the distribution of days elapsed between the HODA and DA has a more compact domain with a mean of 115.4 days and a median of 92 days. The central message of Panel B is that the conventional event window choices around the DA miss a significant portion of merger-related events taking place at the ODA or at the HODA.

⁷ We should note that in several deals, the ODA succeeds the DA. For those deals, the SDC provides the following explanation: "*In most cases ODA should be dated before Date Announced. However, in cases where the first public announcement of a transaction was made after the transaction has completed, the ODA should be dated after the Date Effective/Unconditional.*"

To explore the different types of merger-related events taking place around the ODA, we study the “history file event” and “history file date” fields in the SDC.⁸ For identifying the events on HODA, we rely on news articles available in the Lexis-Nexis database. As Table II indicates, the most common ODA event, “acquisition rumors,” constitutes 39.7% of the ODA sample. These rumors typically originate from articles published in major newspapers, such as the *Wall Street Journal* or *The New York Times*, that are not immediately confirmed by the merging firms. The second most common ODA event is the public announcement of an unsolicited bid or a signed merger agreement between a target firm and a bidder other than the final acquirer (26.9%). Mergers in this group fail to close following the announcement, and the targets eventually merge with the acquirers that appear in our sample. The third most common ODA event is a “search for buyer” announcement (22.8%). Target firms sometimes publicly declare that they have retained an investment bank to evaluate “strategic alternatives,” which typically indicates that the board of directors has solid intentions to sell the company. The next most frequent type of event is the disclosure of acquisition plans by the merging parties (8.2%). This occurs when merging parties simply state that they are in merger talks, refraining from providing any details about the deal. We should note here that the toehold announcement, which is another type of event that triggers a run up in the target firm’s stock price, does not appear on the list.⁹ Since a significant portion of toehold acquisitions (via 13D filings) do not result in a merger (Choi, 1991), we presume that the SDC does not consider toehold acquisitions as material merger-related events that should be captured by the ODA.

⁸ These fields provide very short descriptions of events occurring from the beginning until the closing of deals. In most cases, the ODA is the first date appearing in the “history file date” field. We record the corresponding event in the “history file event” field as our ODA event. As a precautionary measure, we check the accuracy of the data in the history file fields through Lexis-Nexis searches.

⁹ In a toehold acquisition, the bidder acquires a portion of target firm’s shares in the stock market before bidding for the majority of the shares. See Betton and Eckbo (2000), Choi (1991), Mikkelsen and Ruback (1985) and Akhigbe, Martin, and Whyte (2007) for the dynamics of toehold announcements.

Insert Table II about here.

The types of merger-related events at the HODA closely resemble those around the ODA, though the ranking of the events based on their relative frequencies is rather different. The most common event type at the HODA is “search for buyer” announcements (38.7%), followed by “acquisition rumors” (23.8%) and “failed bid announcements” (21.7%). These rankings imply that even though the SDC fails to record a significant portion of merger-related events of all types, its accuracy is lowest for search for buyer announcements.

III. Target Abnormal Returns and Offer Premiums around ODA, HODA and DA

In this section, we examine abnormal returns and offer premiums accrued to the target firms’ stock around ODA, HODA, and DA. We estimate target abnormal returns using the market model described in Schwert (1996). In particular, we regress the daily security returns on the value-weighted, dividend-free CRSP market returns over the (-315,-63) period, and estimate market model parameters. We do not run regressions if the number of observations for a security (i.e., daily returns) is less than 100. Market model parameters are then used to estimate the abnormal returns around the event dates. Our event window choices consist of (-5,+5), (-2,+2) and (-1,+1), though we report target CARs over (-5,+5) only as the results are very similar for other event window sizes. As estimating offer premiums is another popular method used by researchers to assess the wealth effects of mergers, we define offer premium as (offer price / target’s stock price at trading day -42) – one. Offer price is imported from the SDC, and the target’s stock price is imported from the CRSP. To prevent fractional denominator values from

inflating the offer premiums, we require that firms have stock prices at trading day -42 greater than one.^{10 11}

We begin by analyzing target CARs and offer premiums around ODA and DA in Table III. Panel A in Table III provides these estimates for the sample having different ODA and DA values. For this sample, we estimate target CARs and offer premiums around ODA and DA separately. The target CAR (-5,+5) around ODA has a mean of 18.6%, while the mean value for the target CAR (-5,+5) around DA is 13.8%. Both of these estimates are statistically different than zero at the 1% level. Since ODA events typically cause increases in the target firms' stock prices, offer premiums that are based on the DA significantly underestimate the offer premiums received by the target firms. For instance, the average offer premium around the ODA is 45.2%, while the average offer premium around the DA is 36.4%. The difference between the two estimates is statistically significant at the 1% level.

Insert Table III about here.

Our findings indicate that the significant abnormal returns around the ODA that target firm experience lead to severe downward biases in the conventional target CAR estimates. Thus, we consider alternative ways to correct this bias by estimating the target CARs over different event windows. We evaluate three different measures in estimating the wealth effects of mergers for target firm shareholders in the presence of an ODA event. First, to assess the effectiveness of using longer event windows to reduce the estimation bias due to ODA, we accumulate target

¹⁰ In the literature, offer premium is also referred to as takeover premium or bid premium. For a discussion of the differences between target CARs and offer premiums, see Betton, Eckbo, and Thorburn (2008).

¹¹ The SDC also calculates offer premiums using several benchmark dates (one day, one week, and four weeks). These benchmark dates are relative to the ODA whenever the ODA is different than the DA. Thus, these fields are unlikely to suffer from the bias introduced by the existence of ODA events.

abnormal returns using Schwert's (2000) event window, which starts -63 trading days before the DA and ends at the deal closing date (if the deal does not close within 126 trading days, then the window ends at +126).¹² Our second CAR measure utilizes the entire period between the ODA and DA as the event window. That is, we accumulate target abnormal returns beginning five trading days prior to the ODA and ending five trading days after the DA. The third CAR measure is the summation of the individual target CARs estimated over (-5,+5) around the ODA and DA. We adjust our estimates when the two event windows overlap with each other so that the abnormal returns on the overlapping days are not double counted. The primary advantage of accumulating target abnormal returns between the ODA and the DA is that it captures market reactions to all merger-related events taking place in between the ODA and the DA. The disadvantage of using this extended event window is that it also includes market reactions to other corporate events that are not related to the merger.

As Panel A in Table III indicates, all of the three proposed event windows produce significantly higher target CAR estimates for the sample of deals with differing ODA and DA values. Schwert's (2000) event window produces a mean target CAR of 29.3%, while the event window starting from the ODA and ending after the DA leads to an estimate of 29.8%. The summation of target CARs around the ODA and the DA results in an estimate of around 26%. These figures are statistically different from the conventional CAR estimates that are measured around the DA only, which confirms our earlier conjecture that performing event studies using the DA as the event date significantly underestimates the wealth effects of merger announcements. Another implication of our analysis is that Schwert's (2000) event window

¹² We should note that Schwert (1996) is not the first to use a run up period in abnormal return estimations (Bradley, 1980). We frequently refer to this study as it exclusively investigates the price movements in the run up period. In addition, Schwert (1996) calculates premiums over [-42, min(+126, deal closing date)]. We choose -63 trading days as our period start date as it is more likely to capture market reactions around the ODA and the HODA.

produces target CAR estimates that are comparable with those of the remaining event window sizes. For instance, target CARs based on Schwert's (2000) event window and the summation of CARs around the ODA and the DA are not statistically different from one other. Thus, accumulating target abnormal returns beginning 63 trading days before the DA captures a significant portion of the ODA events and results, at least on average, in accurate CAR estimates.

We should note, however, that the 75th percentile of the distribution of the number of calendar days between the ODA and the DA is 119, which corresponds to roughly 82 trading days. As such, Schwert's (2000) event window fails to capture at least 25% of the market reactions at the ODA.

As a next step, we estimate target CARs and offer premiums for the sample of deals with the same ODA and DA values. The results are reported in Panel B of Table III. Target CARs that are accumulated over (-5,+5) have a mean value of 28.2%, while offer premiums average 43.1%. To examine whether these figures are close to the corrected target CAR and offer premium estimates in Panel A, we perform unpaired t-tests between the respective variables. The results at the bottom two rows of Panel B indicate that the target CAR over (-5,+5) in Panel B and the target CAR (-5,+5) at ODA + target CAR (-5,+5) at DA in Panel A are not statistically different from each other. Similarly, offer premiums based on the ODA (Panel A) are statistically indistinguishable from the offer premiums based on the DA (Panel B). These results provide additional support for the need to modify event windows while running event studies and estimating offer premiums in the presence of ODA events.

Since the SDC fails to record all of the merger-related events prior to the DA and hand-collecting merger-related events from news sources more than doubles the frequency of the ODA events in our sample, we investigate whether our findings in Table III continue to hold in the

larger and more complete ODA sample. As Table IV indicates, our main conclusions from Table III do remain intact: 1) the target firms experience significant abnormal returns around the HODA, 2) longer event windows that capture market reactions at the HODA result in accurate CAR estimates, and 3) offer premiums are more accurately estimated when the benchmark price is based on the HODA rather than the DA.

Insert Table IV about here.

At the final step of our analysis, we examine whether the estimation bias arising due to ODA (or HODA) events is more severe in specific subsamples. That is, for each subsample, we compare the conventional target CAR (-5,+5) estimate (which ignores the (H)ODA completely and uses the DA as the event date) with the corrected CAR estimate, which we indicate with “CAR (-5,+5) with (H)ODA.” The corrected CAR estimate replaces the conventional target CAR (-5,+5) estimate with “CAR (-5,+5) at (H)ODA + CAR (-5,+5) at DA” for the sample of deals with different (H)ODA and DA values. For the remainder of the sample, this estimate equals the conventional target CAR estimate.

Insert Table V about here.

Our findings in Table V indicate that 35.4% (43.9%) of unsolicited deals and 33.7% (40.2%) of deals with transaction values above \$10 billion have differing ODA (HODA) and DA values. When compared with all stock deals, all cash deals seem to have a larger proportion of (H)ODA deals. (H)ODA deals are also more frequent when the acquirer is a private rather than a

public firm. The incidence of (H)ODA events leads to significant biases in target CAR (-5,+5) estimates as well. For instance, target CARs are underestimated by 8.3 percentage points (7.9 pp) for unsolicited deals and 2.6 percentage points (4.7 pp) for private acquirer deals when the ODA (HODA) events are not accounted for in abnormal return calculations. Undoubtedly, the magnitude of this bias is not small enough to ignore, as it amounts to a significant percentage of the conventional CAR estimate.

IV. Conclusions

The SDC has become the researchers' M&A database of choice in recent years. The primary service that the SDC provides to researchers is the convenience of accessing a large pool of high quality M&A data. The ease of downloading the data directly from the SDC allows researchers to spend their valuable time addressing interesting research questions rather than manually collecting the necessary data. However, this quick and (almost) cost free method of gathering datasets from the SDC may pose some disadvantages over the conventional, manual data collection method. In this paper, we find that an important SDC field that is frequently used by researchers, the merger announcement date field, does not always lead to unbiased target abnormal returns estimates when they are used as event dates in event studies. Thus, researchers should be aware of the SDC's field definitions, as well as the methodologies and the procedures followed by the SDC in collecting M&A data.

Estimating target CARs around the event dates provided in the SDC (the DA field) yields biased results for deals in which the possibility of a merger is publicized prior to the merger announcement date. On these early dates, which are captured by another field in the SDC (the ODA field), target firms experience an average stock price increase of 18.6% in the period

spanning five trading days prior to five trading days after the ODA. These target firms experience another 13.8% increase during the 11 day period around the ultimate merger agreement date at the DA. Since the targets without any early dates experience an average of a 28.2% increase immediately around the DA, we conclude that the conventional method of estimating abnormal target returns around the DA only leads to biased estimates for deals with ODA values.

We try different methods to incorporate the missing market reaction (around the ODA) in the target abnormal return estimates. Researchers could incorporate Schwert's (2000) run up period in their event windows, which begins 63 trading days before the DA and ends at the deal closing date (please see the discussion in Section III). Alternatively, they could estimate target CARs over the entire period starting at the ODA and ending at the DA or add up the individual market reactions around the ODA and the DA. These three methods of correcting the bias introduced by early dates seem to work well. Finally, we recommend using ODA as the benchmark date while estimating offer premiums, as offer premiums estimated around the DA are significantly under-biased.

We also find that the SDC fails to capture all ODA events in its database. By collecting data manually, we are able to identify additional ODA events, which more than double our original ODA sample. We advise researchers to incorporate these dates into their event studies by downloading the complete dataset at <http://onlinelibrary.wiley.com/doi/10.1111/fima.12053/supinfo>. If their sample period does not overlap with ours or their deal filtering criteria significantly differs from those described in this paper, it may be optimal to rely primarily on the ODA field in SDC, and/or engage in the costly hand-collecting process to verify merger-related events occurring prior to the DA. This search

may be particularly fruitful when researchers work with ODA sensitive samples as shown in Table V.

Our sample consists of U.S. targets acquired through regular mergers. Partial or minority acquisitions, cross-border acquisitions with non-U.S. targets, bankruptcy or liquidation driven deals, joint ventures, spin-offs, and alliances are excluded from our analysis. These subsamples provide additional venues to determine the relevance of ODA events in estimating the wealth effects of these events. Finally, it would be interesting to understand the nature of the merger announcement dates in Standard & Poor's Capital IQ database (another source used by researchers for compiling M&A data) and compare them with the ODA and the DA fields of the SDC database.

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Table I. Data Summary

We download from SDC the group of deals that satisfy the following criteria: 1) the announcement date is between January 1, 2000 and December, 31 2010, 2) the transaction value is greater than \$50M, 3) the targets are public firms located in the U.S., 4) the "form" of the merger is "Merger," "Acquisition," "Acquisition of Majority Interest," or "Acquisition of Assets," 5) announced deals are eventually completed, 6) target firms appear in the CRSP database at least once, 7) target firms' stocks trade on the NYSE, NASDAQ, AMEX or the small-cap market, and 8) the deal is not an "alliance," "bankruptcy acquisition," "failed bank," "joint venture," "spin-off," or "two-step spin-off" (SDC's acquisition technique codes: 46, 6, 31, 35, 24, 44). These restrictions result in 2,329 deals. Then, for each deal in the sample, we search the news articles in the Lexis-Nexis database for merger-related events starting one calendar year before the DA. Our keywords include "merger," "takeover," "buyout," "for sale," "business combination," "consolidation," "seeking buyer," "possible sale," "strategic alternatives," and "13D." If we can identify such a date, we record it under the "Hand-Collected Date Originally Announced" (HODA) field. ODA and DA stand for "Date Originally Announced" and "Date Announced" fields of the SDC, respectively. In Panel A, Announcement Year is based on the DA field.

<i>Panel A. ODA and HODA Deals Over Time</i>						
Announcement Year	ODA Deals			HODA Deals		
	Number of Deals with ODA	Number of Deals Without ODA	Percent of Deals with ODA in Total	Number of Deals with HODA	Number of Deals Without HODA	Percent of Deals with HODA in Total
2000	33	332	9.0%	116	249	31.8%
2001	21	211	9.1%	56	176	24.1%
2002	9	135	6.3%	31	113	21.5%
2003	13	169	7.1%	35	147	19.2%
2004	15	171	8.1%	28	158	15.1%
2005	29	195	12.9%	50	174	22.3%
2006	14	259	5.1%	53	220	19.4%
2007	26	254	9.3%	80	200	28.6%
2008	18	123	12.8%	44	97	31.2%
2009	10	99	9.2%	19	90	17.4%
2010	31	162	16.1%	51	142	26.4%
Total	219	2,110	9.40%	563	1,766	24.17%

<i>Panel B. The Distribution of Calendar Days Between ODA and DA</i>		
	ODA Deals	HODA Deals
Number of Observations	219	563
Mean	110.5	115.4
Minimum	-26	1
10th percentile	3	3
25th percentile	9	21
Median	41	92
75th percentile	119	197
90th percentile	266	269
Maximum	2,404	366

Table II. The Types of Merger Related Information that Appear in the News Around ODA and HODA

We download from SDC the group of deals that satisfy the following criteria: 1) the announcement date is between January 1, 2000 and December 31, 2010, 2) the transaction value is greater than \$50M, 3) the targets are public firms located in the U.S., 4) the "form" of the merger is "Merger," "Acquisition," "Acquisition of Majority Interest," or "Acquisition of Assets," 5) announced deals are eventually completed, 6) target firms appear in the CRSP database at least once, 7) target firms' stocks trade on the NYSE, NASDAQ, AMEX, or the small-cap market, and 8) the deal is not an "alliance," "bankruptcy acquisition," "failed bank," "joint venture," "spin-off," or "two-step spin-off" (SDC's acquisition technique codes: 46, 6, 31, 35, 24, 44). These restrictions result in 2,329 deals. Then, for each deal in the sample, we search the news articles in the Lexis-Nexis database for merger-related events starting one calendar year before the DA. Our keywords include "merger," "takeover," "buyout," "for sale," "business combination," "consolidation," "seeking buyer," "possible sale," "strategic alternatives," and "13D." If we can identify such a date, we record it under the "Hand-Collected Date Originally Announced" (HODA) field.

Content of Merger Related News at ODA and HODA	ODA		HODA	
	Number of Observations	Percent of Observations	Number of Observations	Percent of Observations
Search for buyer is disclosed	50	22.8%	218	38.7%
Acquisition plans are rumored	87	39.7%	134	23.8%
Target announces acquisition agreement/unsolicited bid from another bidder	59	26.9%	122	21.7%
Acquisition plans with the acquirer are disclosed	18	8.2%	73	13.0%
13-D filing by the acquirer or a third party	0	0.0%	16	2.8%
Other / Unidentified	5	2.3%	0	0.0%
Total	219	100.0%	563	100.0%

Table III. Target Firm Abnormal Returns Around the ODA and the DA

We download from SDC the group of deals that satisfy the following criteria: 1) the announcement date is between January 1, 2000 and December 31, 2010, 2) The transaction value is greater than \$50M, 3) the targets are public firms located in the U.S., 4) the "form" of the merger is "Merger," "Acquisition," "Acquisition of Majority Interest," or "Acquisition of Assets," 5) announced deals are eventually completed, 6) target firms appear in the CRSP database at least once, 7) target firms' stocks trade on the NYSE, NASDAQ, AMEX, or the small-cap market, and 8) the deal is not an "alliance," "bankruptcy acquisition," "failed bank," "joint venture," "spin-off," or "two-step spin-off" (SDC's acquisition technique codes: 46, 6, 31, 35, 24, 44). These restrictions result in 2,329 deals. We report abnormal returns to target firms' stocks around the ODA and the DA in Panel A. In Panel B, we report abnormal returns to target firms for the group of deals for which the ODA and the DA fields match. We estimate abnormal returns using a market model, parameters of which are estimated over (-316,-64). Market returns are proxied by the value-weighted dividend-free CRSP portfolio return. Market model parameters are not estimated if the number of trading days in the estimation window is less than 100. CAR (-5,+5) is the accumulated abnormal returns over the (-5,+5) period. CAR (-63,+126) accumulates target abnormal returns starting 63 trading days before the event date and ending at the deal closing date. If the deal closing date is later than 126 trading days after the event date, we truncate the event window at +126. "CAR from ODA -5 to DA +5" is the accumulated abnormal returns starting five trading days before ODA and ending at five trading days after DA. "CAR (-5,+5) at ODA + CAR (-5,+5) at DA" is the summation of CAR (-5,+5) estimates around ODA and DA. To prevent double counting, we adjust our estimates if the event windows around ODA and DA overlap with each other. The offer premium at the ODA (DA) is (offer price / benchmark price) - 1. The benchmark price is the target firm's stock price 42 trading days before the ODA (DA). We require the benchmark price to be greater than one. The offer price is the per share value received by the target firm shareholders from the acquisition (as reported in the SDC database). *** denotes significance level at the 1% level, ** at the 5% level, and * at the 10% level. t-tests are run using cross-sectional variation only.

<i>Panel A. Deals with Differing ODA and DA Values</i>							
	N	Mean	Median	Min	Max	Mean = 0 t-value	Median = 0 z-value
<i>Target abnormal returns around ODA</i>							
(1) CAR (-5,+5)	216	0.186***	0.153***	-1.037	2.074	10.66	10.88
(2) offer premium	204	0.452***	0.397***	-0.852	3.252	11.94	10.46
<i>Target abnormal returns around DA</i>							
(3) CAR (-5,+5)	216	0.138***	0.108***	-1.037	1.002	9.33	9.92
(4) offer premium	206	0.364***	0.316***	-0.633	2.126	12.53	10.75
(5) CAR (-63,+126)	216	0.293***	0.259***	-3.718	2.937	7.26	8.51
<i>Target abnormal returns with event windows around ODA & DA</i>							
(6) CAR (-5,+5) at ODA + CAR (-5,+5) at DA	215	0.260***	0.212***	-1.037	2.222	12.27	11.17
(7) CAR from ODA -5 to DA +5	186	0.298***	0.244***	-1.566	2.461	10.34	10.08
<i>Statistical tests (for difference in means)</i>							
	Difference	t-value					
(1)-(6)	-0.073***	-7.30					
(5)-(6)	0.032	0.99					
(4)-(2)	-0.097***	-3.73					

Panel B. Deals with Matching ODA and DA Values

	N	Mean	Median	Min	Max	Mean = 0 t-value	Median = 0 z-value
<i>Target abnormal returns around DA</i>							
(8) CAR (-5,+5)	2,028	0.282***	0.224***	-1.037	3.894	39.67	36.49
(9) offer premium	1,920	0.431***	0.339***	-0.871	9.311	39.05	35.78
(10) CAR (-63,+126)	2,028	0.333***	0.285***	-2.369	4.318	27.96	27.41
<i>Statistical tests (for difference in means)</i>							
	Difference	t-value					
(8)-(6)	0.022	0.95					
(9)-(2)	-0.021	-0.58					

Table IV. Target Firm Abnormal Returns Around the HODA and the DA

We download from SDC the group of deals that satisfy the following criteria: 1) the announcement date is between January 1, 2000 and December 31, 2010, 2) the transaction value is greater than \$50M, 3) the targets are public firms located in the U.S., 4) the "form" of the merger is "Merger," "Acquisition," "Acquisition of Majority Interest," or "Acquisition of Assets," 5) announced deals are eventually completed, 6) target firms appear in the CRSP database at least once, 7) target firms' stocks trade on the NYSE, NASDAQ, AMEX, or the small-cap market, and (viii) the deal is not an "alliance," "bankruptcy acquisition," "failed bank," "joint venture," "spin-off," or "two-step spin-off" (SDC's acquisition technique codes: 46, 6, 31, 35, 24, 44). These restrictions result in 2,329 deals. We report abnormal returns to target firms' stocks around the HODA and the DA in Panel A. In Panel B, we report abnormal returns to target firms for the group of deals for which the HODA and the DA fields match. We estimate abnormal returns using a market model, parameters of which are estimated over (-316,-64). Market returns are proxied by the value-weighted dividend-free CRSP portfolio return. Market model parameters are not estimated if the number of trading days in the estimation window is less than 100. CAR (-5,+5) is the accumulated abnormal returns over the (-5,+5) period. CAR (-63,+126) accumulates target abnormal returns starting 63 trading days before the event date and ending at the deal closing date. If the deal closing date is later than 126 trading days after the event date, we truncate the event window at +126. "CAR from HODA -5 to DA +5" is the accumulated abnormal returns starting five trading days before HODA and ending at five trading days after DA. "CAR (-5,+5) at HODA + CAR (-5,+5) at DA" is the summation of CAR (-5,+5) estimates around HODA and DA. To prevent double-counting, we adjust our estimates when the event windows around HODA and DA overlap with each other. The offer premium at the HODA (DA) is (offer price / benchmark price) - 1. The benchmark price is the target firm's stock price 42 trading days before the HODA (DA). We require the benchmark price to be greater than one. The offer price is the per share value received by target firm shareholders from the acquisition (as reported in the SDC database). *** denotes significance level at the 1% level, ** at the 5% level, and * at the 10% level. t-tests are run using cross-sectional variation only.

<i>Panel A. Deals with Differing HODA and DA Values</i>							
	N	Mean	Median	Min	Max	Mean = 0 t-value	Median = 0 z-value
<i>Target abnormal returns around HODA</i>							
(1) CAR (-5,+5)	548	0.159***	0.128***	-1.043	2.074	15.50	15.79
(2) offer premium	521	0.514***	0.386***	-0.960	8.734	16.38	16.82
<i>Target abnormal returns around DA</i>							
(3) CAR (-5,+5)	550	0.191***	0.141***	-1.037	2.549	16.01	16.64
(4) offer premium	522	0.389***	0.269***	-0.833	9.311	14.79	17.44
(5) CAR (-63,+126)	550	0.311***	0.264***	-3.718	3.584	12.69	13.16
<i>Target abnormal returns with event windows around HODA & DA</i>							
(6) CAR (-5,+5) at HODA + CAR (-5,+5) at DA	548	0.303***	0.239***	-1.043	2.593	20.54	17.90
(7) CAR from HODA -5 to DA +5	507	0.354***	0.286***	-1.740	3.162	16.16	15.71
<i>Statistical tests (for difference in means)</i>							
	Difference	t-value					
(1)-(6)	-0.144***	-13.37					
(5)-(6)	0.008	0.40					
(4)-(2)	-0.135***	-6.37					

Panel B. Deals with Matching HODA and DA Values

	N	Mean	Median	Min	Max	Mean = 0 t-value	Median = 0 z-value
<i>Target abnormal returns around DA</i>							
(8) CAR (-5,+5)	1,694	0.293***	0.233***	-1.037	3.894	37.58	33.83
(9) offer premium	1,604	0.436***	0.348***	-0.871	5.232	40.64	32.99
(10) CAR (-63,+126)	1,694	0.335***	0.288***	-2.157	4.318	25.96	25.50
<i>Statistical tests (for difference in means)</i>							
	Difference	t-value					
(8)-(6)	-0.010	.63					
(9)-(2)	-0.078***	.02					

Table V. The Effect of ODA and HODA Correction on Target CARs for Specific Subsamples

We download from SDC the group of deals that satisfy the following criteria: 1) the announcement date is between January 1, 2000 and December 31, 2010, 2) the transaction value is greater than \$50M, 3) the targets are public firms located in the U.S., 4) the "form" of the merger is "Merger," "Acquisition," "Acquisition of Majority Interest," or "Acquisition of Assets," 5) announced deals are eventually completed, 6) the target firms appear in the CRSP database at least once, 7) the target firms' stocks trade on the NYSE, NASDAQ, AMEX, or the small-cap market, and 8) the deal is not an "alliance," "bankruptcy acquisition," "failed bank," "joint venture," "spin-off," or "two-step spin-off" (SDC's acquisition technique codes: 46, 6, 31, 35, 24, 44). These restrictions result in 2,329 deals. "CAR (-5,+5)" [Column (1)] is estimated around the DA without taking into account the market reactions around ODA or HODA. "CAR (-5,+5) with ODA" [Column (2)] is the summation of target CAR (-5,+5) around DA and target CAR (-5,+5) around ODA. "CAR (-5,+5) with HODA" [Column (3)] is defined similarly except that ODA is replaced with HODA. To prevent double counting, we adjust our estimates when the event windows around HODA and DA overlap with each other. The entries in these cells are the average CAR values in the respective subsample. *** denotes significance level at the 1% level, ** at the 5% level, and * at the 10% level. t-tests are run using cross-sectional variation only.

	ODA					HODA				
	N	CAR (-5,+5) (1)	% with ODA	CAR (-5,+5) with ODA (2)	Difference (1)-(2)	t-value	% with HODA	CAR (-5,+5) with HODA (3)	Difference (1)-(3)	t-value
Entire sample	2,329	0.268	9.4%	0.280	-0.011***	-6.52	24.2%	0.296	-0.027***	-11.28
Tender offer deals	456	0.432	11.8%	0.450	-0.018***	-3.30	28.3%	0.477	-0.045***	-6.20
Unsolicited deals	82	0.222	35.4%	0.305	-0.083***	-2.83	43.9%	0.301	-0.079***	-2.65
Form of the deal										
Merger	2,256	0.273	9.3%	0.285	-0.012***	-6.56	24.3%	0.301	-0.028***	-11.31
Acquisition of Majority Interest	70	0.112	12.9%	0.111	0.0009	0.33	21.4%	0.120	-0.008	-0.65
Large deals (Value of transaction > \$500 million)	1,069	0.212	14.0%	0.226	-0.013***	-6.33	26.4%	0.238	-0.025***	-8.98
Mega deals (Value of transaction > \$10 billion)	92	0.156	33.7%	0.172	-0.016**	-2.26	40.2%	0.174	-0.018**	-2.29
All cash deals	1,115	0.329	10.3%	0.345	-0.016***	-4.98	28.2%	0.365	-0.036***	-8.68
All stock deals	449	0.192	5.6%	0.197	-0.004*	-1.74	14.7%	0.203	-0.011***	-2.89
Public acquirer only	1,645	0.271	8.2%	0.280	-0.009***	-5.03	20.2%	0.293	-0.022***	-9.00
Private acquirer only	357	0.222	13.7%	0.248	-0.026***	-3.41	38.1%	0.269	-0.047***	-4.98
Subsidiary acquirer only	299	0.320	9.4%	0.328	-0.008**	-2.26	28.8%	0.350	-0.030***	-4.75