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A Re-Examination of the Market Reaction to Failed Mergers

WALLACE N. DAVIDSON III, DIPA DUTIA, and LOUIS CHENG*

ABSTRACT

This study examines the revaluation of shares surrounding the cancellation of mergers over the years 1976–1985. The results are first categorized according to the party cancelling the merger and then by subsequent merger activity. The results are as expected: target firms that become involved in merger activity, subsequent to the cancellation, experience positive cumulative prediction errors (CPEs). Targets that do not become involved in subsequent merger activity have CPEs that return to pre-merger announcement levels. These results do not vary when bidders or targets cancel the merger.

DODD (1980) FINDS THAT, WHEN a merger is terminated by the target, target firm cumulative abnormal returns remain positive and above pre-merger announcement levels. When bidder firms cancel, target firm prices revert to pre-offer levels. Dodd concludes that for target-canceled mergers there is “a permanent revaluation of the target shares” (p. 137). Bradley (1980) and Dodd and Ruback (1977) show that the market price of target shares does not return to pre-offer levels for canceled tender offers. Bradley, Desai, and Kim (1983) demonstrate that this is because shareholders anticipate a subsequent tender offer.

We classify market reaction for failed mergers by the terminating party, as in Dodd (1980). We then examine the returns for the effects of subsequent merger activity similar to the way that Bradley, Desai, and Kim (1983) investigated canceled tender offers.

Our results show that the “revaluation” that Dodd (1980) found disappears when target firms are not involved in subsequent mergers but does persist for targets involved in subsequent mergers regardless of who cancels the first merger. When mergers are canceled by parties other than the bidder or target firm, we find that there is no permanent share revaluation because, for these firms, there are no subsequent mergers.

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Methodology

A. Data and Sample

We identified the merger sample by monitoring the "Out the Window" section of *Mergers & Acquisitions* and "Terminated Transactions" in the W.T. Grimm publication, *Mergerstat*. The initial announcement date of the proposed merger and initial announcement date of the merger cancellation come from the *Wall Street Journal Index*. The sample includes mergers originally announced in the ten-year period from 1976 through 1985. Some of the failures were announced in 1986.

To be included in the sample, both the target and the bidding firm had to have been listed on the daily CRSP tape for a period of 291 days before merger announcement until the date of termination announcement. We eliminated any merger if either target or bidder had fewer than thirty days of trading data during the regression period. The final sample includes matched targets and bidders for 163 proposed (but subsequently canceled) mergers. Of the 163 mergers, forty-nine were cancelled by target firms, fifty-seven by the bidder firms, and fifty-seven for other reasons.¹

B. Statistical Procedure

To test the market's reaction to merger announcements and merger termination announcements, we used the single-index market model to predict returns:

$$R_{it} = \alpha_i + \beta_i(R_{mt}) + e_{it}, \quad (1)$$

where

R_{it} = the return on security i at time t ,

α_i = the constant term for security i 's regression equation,

β_i = the slope term for security i 's regression equation,

R_{mt} = the return on the market at time t proxied by the value-weighted market index from the CRSP tapes, and

e_{it} = the error term for company i at time t .

The regression for the estimation period uses 200 daily observations from the period starting 291 days before and running to 91 days before the failure announcement date.

We use the cumulative prediction error (CPE) technique to detect abnormal performance. Hite and Owers (1983) describe the technique in detail, so we describe it only briefly here. For security i , the prediction error (PE_{it}) is computed as

$$PE_{it} = R_{it} - (\hat{\alpha}_i - \hat{\beta}_i R_{mt}) \quad (2)$$

¹ We classified fifty-seven of the firms as canceled for other reasons. In this subsample, there are mergers canceled because of suits and threatened suits by labor unions, a small group of stockholders, or a government agency. Firms also called off mergers to avoid antitrust suits. We were unable to classify some other mergers by party of cancellation, so we included them in this subsample. None of the targets of these mergers became involved in subsequent mergers; we have no explanation for this phenomenon.

for the period from ninety days before the event until 250 days after the event.² The event day, 0, is the day that the *Wall Street Journal* announces the merger failure.

The CPE_i is calculated over various intervals from T_{1i} to T_{2i} and is defined as

$$CPE_i = \sum_{t=T_{1i}}^{T_{2i}} PE_{it}. \quad (3)$$

For a sample of N securities, the mean cumulative prediction error (CPE) is

$$CPE = \sum_{i=1}^N CPE_i / N \quad (4)$$

In the absence of abnormal performance, the expected value of the CPE is zero. The test statistic, as described in Dodd and Warner (1983), is the mean standardized cumulative prediction error.

To compute the test statistic, we standardized the PE_{it} by its estimated standard deviation, s_{it} .

$$SPE_{it} = PE_{it} / s_{it}. \quad (5)$$

The s_{it} is computed as the typical regression forecast error. This procedure explicitly adjusts the standard deviation for the distance of the independent variable in the test period from the mean value in the estimation period. Thus, the same size prediction error can have different levels of significance for different firms because of their individual variation. The SPE_{it} is the test statistic for an individual prediction error.

The standardized mean cumulative prediction error ($SCPE_i$) over the interval $t = t_{1i}, \dots, T_{2i}$ is

$$SCPE_i = \sum_{t=T_{1i}}^{T_{2i}} SPE_{it} / \sqrt{T_{2i} - T_{1i} + 1}. \quad (6)$$

The test statistic for a sample of N securities is

$$Z = \sum_{i=1}^N SCPE_i / \sqrt{N}. \quad (7)$$

Each SPE_{it} is assumed to be distributed until normal in the absence of abnormal performance. Under this assumption, Z is also unit normal.

II. Results

We first discuss the results based upon who canceled the merger. We further stratify the results by the presence or lack of subsequent merger activity for the targets.³ Table I shows the CPE results.

² The ninety days before day 0 (the failure announcement) are sufficient to capture both the merger and failure announcements for 88.4 percent of the sample. For the total sample of 163 announcements, the range between merger announcement and failure announcement days is one to 582, with an average of 41.1 days.

³ Results showing merger announcement CPEs are available from the lead author upon request. The merger announcement CPEs do not vary, qualitatively, whether the merger is later canceled by bidders, targets, or others. Generally, the bidder returns are negative at the time of the announcement and the target firm returns are positive. The overall portfolio CPEs are positive. The market does not differentiate between the groups at the time of announcement.

Table I
Cumulative Prediction Error Results for Merger Cancellation
Announcements over the Years 1976–1985

We have shown the results first by party of cancellation. We then divided these results into two groups, the first by the presence of subsequent attempts on the target and the second when there are no such attempts. For example, of the forty-nine target-canceled mergers, eleven of the targets became subsequent targets and thirty-eight did not. We show the results first for the sample of forty-nine firms and then for the two subgroups. Bidder-canceled mergers are treated similarly. When targets cancel and are involved in subsequent mergers, only two target firms are left on the CRSP tape by $t = 250$. When bidders cancel and targets are involved in subsequent mergers, only one target firm is left on the CRSP tape by $t = 250$.

	Cumulative Prediction Errors ^a				
	–90 to 90	–5 to 5	–1	0	–90 to 250
Target Canceled Mergers					
Total ($N = 49$)					
Bidder	–0.03095 (–0.69)	0.00442 (0.34)	0.00396 (1.77)	–0.00337 (–1.41)	–0.05037 (–0.60)
Target	0.18506 (6.63)	0.02465 (3.08)	–0.01123 (–3.62)	0.00353 (0.84)	0.17034 (2.27)
Subsequent Merger ($N = 11$)					
Bidder	0.06496 (1.37)	0.04719 (2.69)	0.01453 (2.20)	0.01595 (2.03)	0.12000 (0.88)
Target	0.49575 (16.88)	0.17263 (9.23)	0.02939 (5.32)	0.01904 (2.90)	0.62650 6.28
No Subsequent Merger ($N = 38$)					
Bidder	–0.05916 (–1.58)	–0.00756 (–1.07)	0.00048 (0.72)	–0.00836 (–2.60)	–0.09970 (–1.48)
Target	0.10291 (2.62)	–0.02434 (–1.97)	–0.02308 (–7.46)	–0.00056 (–0.61)	–0.03830 (–0.31)
Bidder Canceled Mergers					
Total ($N = 57$)					
Bidder	–0.13478 (–3.25)	–0.02561 (–2.51)	0.00567 (2.05)	–0.00016 (–0.06)	–0.20007 (–2.66)
Target	0.02733 (1.78)	–0.01203 (–1.39)	0.00320 (2.64)	–0.02551 (–9.30)	0.03413 (0.25)
Subsequent Merger ($N = 15$)					
Bidder	0.05212 (0.97)	–0.00729 (–0.31)	0.00783 (1.57)	–0.01137 (–1.86)	0.03270 (0.35)
Target	0.37670 (8.58)	0.26209 (12.02)	0.04381 (5.45)	0.01667 (6.39)	0.39850 (5.31)
No Subsequent Merger ($N = 42$)					
Bidder	–0.19175 (–4.17)	–0.03064 (–2.70)	0.00525 (1.52)	0.00289 (0.80)	–0.28320 (–3.74)
Target	–0.08872 (–1.13)	–0.09609 (–8.69)	–0.01094 (–0.39)	–0.03854 (–15.18)	–0.09600 (–1.14)
Other ($N = 57$)					
Bidder	–0.07945 (–1.90)	–0.00153 (0.89)	0.00136 (1.96)	0.00282 (2.47)	–0.16430 (–2.23)
Target	0.01805 (0.43)	–0.05886 (–5.73)	–0.04187 (–15.72)	–0.04032 (–12.84)	–0.01730 (–0.31)

^a We show each cumulative prediction error (as defined by Dodd and Warner (1983)) in the table, with the test statistic in parentheses underneath.

A. Cancellation of Mergers

In our sample, there are forty-nine mergers canceled by targets.⁴ When a target cancels a merger, the CPEs for our sample of forty-nine bidders have insignificant results (at the 0.05 level of significance) for all reported intervals. For the forty-nine target firms, when targets cancel a merger, the CPE on day -1 is -0.01123, with a Z-score of -3.62. However, over the intervals -5 to 5, -90 to 90, and -90 to 250, the CPEs are positive and statistically significant. These CPEs are 0.02465, 0.18506, and 0.17034. While there is a negative reaction to the cancellation announcement on day -1, during a longer interval targets appear to gain over seventeen percent in target-canceled mergers.

In our sample, there are fifty-seven mergers canceled by bidders. When bidders cancel a merger, both the bidder and target CPEs are significantly positive on day -1, but the target CPEs on day 0 are negative. The cancellation is negative information to target firms. Over the interval -5 to 5, the bidder CPEs are -0.02561 and significant while the target CPEs are negative but insignificant. During the interval -90 to 90, the bidder CPEs are negative and statistically significant while the target CPEs are positive but only marginally significant. Over the longer interval -90 to 250, the bidder CPEs are -0.20007 ($Z = -2.66$) while the target CPEs have returned to pre-merger levels. Bidders appear to lose when they initiate and then later cancel a merger. Target firms do not appear to be revalued by bidder-canceled mergers.

For the failed mergers in the other category, target firm CPEs are negative over the intervals -1, 0, and -5 to 5. The CPEs for targets over the entire interval -90 to 90 are insignificantly different from zero. Permanent revaluation of targets is not apparent when mergers are canceled by others. Target firm CPEs are more negative when canceled for other reasons than when canceled by bidders or targets. As we show below, however, the reason for this difference appears to be the presence of subsequent acquisitions of targets in the target- and bidder-canceled groups. The "other" category of targets are not targets of later merger attempts, so their stock prices revert to pre-merger levels. Bidder CPEs are negative over the intervals -90 to 90 and -90 to 250 for this group. Bidders lose when mergers are canceled by the intervention of others.

So far our results generally confirm Dodd's findings. Target firms appear to be revalued when targets cancel the merger. When bidders or others cancel the mergers, target CPEs return to near zero. In contrast, over the intervals -90 to 90 and -90 to 250 bidder CPEs are negative when mergers fail, but these CPEs are significant only when bidders and others cancel the merger.

B. Subsequent Merger Activity

Following the work of Bradley, Desai, and Kim (1983), we note that eleven of the forty-nine target cancellation firms became acquisition targets in the year

⁴ In deciding who canceled the merger, we took the *WSJ* announcement at face value. It is possible, for example, that a bidder canceled an offer when a target may have effectively canceled the offer through an outrageous counteroffer or in some other manner. However, this caveat is relatively unimportant because the party of cancellation becomes irrelevant when subsequent merger activity is examined. A number of the mergers were subjected to a vote by the board of directors, but we found no cases of rejection by shareholder vote.

following cancellation. Targets in fifteen of the fifty-seven mergers canceled by bidders became acquisition targets in the following year. The average time for a subsequent merger to be announced is twelve trading days; the range is zero to 110. None of the targets of mergers cancelling for other reasons became targets in later mergers or acquisitions. In Table I, we divide the target-canceled sample into two groups depending upon subsequent merger attempts on the target. We similarly divide the bidder-canceled sample.

When targets cancel a merger, bidder firm returns are insignificant over the intervals -90 to 90 and -90 to 250 regardless of whether targets are involved in subsequent mergers.⁵ Target firm returns, on the other hand, vary between the groups. For the group with subsequent merger activity, the eleven target firm CPEs are significantly positive on days -1 , 0 , and 1 relative to cancellation. For the group without subsequent merger activity, the thirty-eight target firm CPEs are negative on days -1 , 0 , and 1 (but only significant on day -1).

Over the interval -90 to 90 , both target groups are statistically positive. When we examine the longer interval, -90 to 250 , for the no-subsequent-merger subsample, target CPEs are insignificant and have returned to pre-merger levels. The CPEs are positive (more than sixty-two percent) for this same interval when there is subsequent merger activity. The revaluation of targets in target-canceled mergers is caused by subsequent takeover attempts on the targets.

We find similar results when bidders cancel the merger. The fifteen target firm CPEs are positive on days -1 and 0 when they become subsequent targets but are negative when they do not. The cancellation is only negative information when there are no subsequent attempts on the target. Over the interval -90 to 250 , target CPEs are positive for the subsequent merger group but have returned to pre-merger announcement levels for the forty-two firms in the other group. The presence of subsequent merger activity seems to override the effect of who cancels the merger.⁶

III. Conclusions

Previous research has found that the shareholders of target firms benefit when mergers are announced (see Jensen and Ruback (1983)); their share prices rise. There have been conflicting results for bidder firms, but Jensen and Ruback conclude that generally bidder firm shareholders are not hurt.

⁵ When targets cancel the merger and are involved in subsequent mergers, bidder returns are significant and positive on days -1 and 0 . They are not positive when bidders cancel and targets are involved in subsequent mergers. We could find no documented reason for this, but it may be the result of the initial bidder selling shares to a subsequent bidder.

⁶ We compared the CPEs between the various groups and conducted a t -test to determine whether there are statistical differences between them. The target firm CPEs for target-canceled mergers with subsequent attempts are statistically different at the 0.05 level from the CPEs for the targets without subsequent attempts over all intervals. Similarly, the target firm CPEs for the bidder-canceled mergers with subsequent attempts on the target are statistically different at the 0.05 level from the CPEs for the targets without subsequent attempts over all intervals but day -1 . It, however, is significant at 0.10. The results of these tests are presented in Appendix B, which is available from the lead author upon request.

We found results similar to those reached by Dodd (1980), who shows that target firm cancellations appear to have different valuation effects from bidder firm cancellations. We also examine the impact of subsequent acquisition attempts on targets on the original cancellation announcements.

When targets cancel the merger and become involved in subsequent merger activity, there are positive CPEs, even on the cancellation announcement date. These firms gain value over the entire period. When targets cancel but do not become involved in another merger, the cancellation announcement causes negative CPEs and then a return to pre-merger announcement levels.

When bidders cancel the merger, target firms still gain if they are targets in subsequent mergers; otherwise, their CPEs return to pre-merger announcement levels. A bidder's rejection of a target does not cause permanent target revaluation.

Bidders generally do not gain from mergers that fail. We find no evidence of permanent revaluation of bidder firm returns. Several problems, however, complicate accurate measurement of bidder returns. According to the rational expectations hypothesis, investors adjust their valuation of bidder firm share prices whenever the market recognizes an acquisition plan either by corporate announcement or through the financial press. (See Schipper and Thompson (1983).) If a bidder is involved in an extensive acquisition plan, the price performance observed around the even date of any single merger (except perhaps the first one) may not be a good measure of the market's reaction.

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