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# Do Target Shareholders Lose in Unsuccessful Control Contests?

Richard S. Ruback

## 5.1 Introduction

Empirical studies of takeovers agree that the stock prices of targeted firms rise dramatically at the announcement of a takeover bid. But the studies disagree about the costs of any failure of the takeover bid. Two studies of tender offers suggest that the costs of failure are low. For the three years following the initial offer announcement, Dodd and Ruback (1977) reported abnormal returns of about 1 percent for a sample of 36 targets of unsuccessful tender offers. Similarly, Bradley, Desai, and Kim (1983) found abnormal returns of about -2 percent for the 112 targets of unsuccessful tender offers over the same three-year period. These studies indicate that stock prices do not, on average, return to their pre-offer levels. This evidence implies that the costs of resisting a tender offer, even if all of the competing bidders abandon the contest, are small since the shareholders retain most of the offer-induced increase in stock prices.

In contrast, Pound (1986) found abnormal returns of -30 percent in the three years following 56 unsuccessful takeover contests. Similarly, Easterbrook and Jarrell (1984) reported significant negative returns in the year following 31 unsuccessful takeover contests. These negative, abnormal returns following a tender offer suggest that the costs of failure are indeed high for targeted firms.

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A more precise measure of the cost of failure can be obtained from data on the stock price reaction to contest termination announcements. Two studies of mergers, by Dodd (1980) and Asquith (1983), found significant negative abnormal returns to targeted firms at the announcement of a merger termination. These negative abnormal returns completely offset the stock price increases associated with the initial merger announcement. The failure of merger bids, therefore, seems to cost the shareholders of the target firm most, if not all, of the offer-induced increase in stock prices.

This paper attempts to resolve the conflicting evidence on the impact of failed takeover efforts on the value of targeted firms. It examines the stock prices of the targets of unsuccessful contests for control during the contest and in the three-year period following the announcement of its termination. The results indicate that there are large costs to failure for target firms. More specifically, the stock prices of targeted firms fall by about 10 percent at the contest termination announcement. Those losses do not, however, completely reverse the gains made at the initial contest announcement.

The evidence in this paper has potentially important behavioral implications for the managers of targeted firms. The optimal amount of resistance must be related to the costs that would result from the bidder's abandoning the offer; managers should resist less, the greater the cost of failure.

The large stock price declines associated with termination announcements suggest that managerial resistance that results in the abandonment of a takeover bid decreases the wealth of the existing shareholders. Of course, the decision to resist may or may not have been in the target shareholders' interests *ex ante*. For example, the target managers may have been trying to elicit a higher takeover price from the existing bidder or from a potential competing bidder. For the firms in the sample examined here, no such higher offer was forthcoming, and the existing offers were terminated. Although the stockholders lost *ex post*, the managers' resistance may have been more than a fair gamble *ex ante*.<sup>1</sup>

## 5.2 Data

To identify a sample of unsuccessful tender offers over the years 1962-80, I used a tender offer data base compiled at the Managerial Economics Research Center (MERC) of the University of Rochester. I excluded offers for targeted firms that were not listed on the New York or American stock exchanges, as well as offers that would not result in a change in control of the targeted firm. Offers that could result in a shift in control are defined as those in which the bidder owned less than 40 percent of the target before the offer and would own more than 40 percent after purchasing all of the shares sought.

Following Dodd and Ruback (1977), offers are defined as successful if any of the following three conditions are met:

1. The bidder obtains two-thirds or more of the shares sought in the offer.
2. The bidder's holdings exceed 40 percent of the target's outstanding shares.
3. The tender offer changes to a merger that is completed.

For all offers that did not meet this definition of success, I checked the *Wall Street Journal Index* for competing merger bids that were not recorded in the MERC data base. In 18 cases competing merger bids were successfully completed. Since those bids were outstanding at the same time as the tender offers, these observations are classified as successful takeover contests. Thus, the sampling procedure used in this paper identifies unsuccessful control contests that involved at least one tender offer. The years in which the contests began are presented in table 5.1.

The sample contains 33 targets of unsuccessful control contests. It is about the same size as the sample used in Dodd and Ruback (1977), but it is much smaller than the 112 targets of failed tender offers analyzed in Bradley, Desai, and Kim (1983). The reason for this difference

**Table 5.1**                      **Distribution of Initial Takeover Bids for Unsuccessful Takeover Contests, by Calendar Year, 1962-80**

Year	Number of Initial Bids
1962	0
1963	1
1964	1
1965	0
1966	1
1967	4
1968	1
1969	1
1970	0
1971	0
1972	0
1973	4
1974	2
1975	1
1976	4
1977	0
1978	6
1979	7
1980	0
Total	33

is that the latter set of authors treated each bid separately, whereas I treat bids for the same target that occur at the same time or within one month of each other as competing bids in a single contest for control. Since many contests are resolved within three months, a more appropriate comparison of sample sizes is that with Bradley, Desai, and Kim's sample of 26 targets that did not receive subsequent bids and 21 targets that received subsequent bids after three months.

I also collected control-related announcements made during the contests, which included 56 court filings and decisions, 18 opposition announcements made by the targeted firms, 14 subsequent tender offers or merger bids, 7 bid abandonments, 12 regulation-related announcements, and 15 other announcements.

For each of the 33 unsuccessful control contests in the sample, I examined issues of the *Wall Street Journal* published up to five years after the initial bid to determine if the target was subsequently acquired. Nine targets were so acquired during this time period. I also recorded all control-related announcements made during this five-year period.

### 5.3 Methodology<sup>2</sup>

The event study method pioneered by Fama, Fisher, Jensen, and Roll (1969) serves to measure the price effects of the initial offer, intermediate events, and termination announcements examined in this paper. Since most stocks tend to move up or down with the market, the realized stock returns are adjusted for marketwide movements to isolate the component of the returns due to the announcements. This adjustment is accomplished using linear regression to estimate the following market model:

$$(1) \quad \tilde{R}_{jt} = \alpha_j + \beta_j \tilde{R}_{mt} + \tilde{\epsilon}_{jt}.$$

The parameter  $\beta_j$  measures the sensitivity of the  $j$ th firm's return ( $\tilde{R}_{jt}$ ) to movements in the market index ( $\tilde{R}_{mt}$ ). The term  $\beta_j \tilde{R}_{mt}$  is the portion of the return to security  $j$  that is due to marketwide factors. The parameter  $\alpha_j$  measures that part of the average return of the stock which is not due to market movements. The term  $\tilde{\epsilon}_{jt}$  measures that part of the return to the firm which is not due to movements in the market or the firm's average return.

Two sets of coefficients are estimated for each firm to incorporate potential changes in the market model parameters. Coefficients before the initial contest announcement,  $\alpha^B$  and  $\beta^B$ , are estimated using daily returns beginning 260 trading days before the initial offer announcement and ending 61 days before the announcement. Similarly, coefficients after the termination announcement are estimated over the period be-

ginning 61 days after the announcement (if returns are available) through 260 days after the announcement. In those cases in which 100 days of data were not available to estimate either the before or after coefficients, the returns before the initial offer announcement and after the termination announcement are combined to estimate the coefficients. In all cases the returns for the 60 days before the initial offer announcement through 60 days following the termination announcement are excluded from the estimation period.

Prediction errors are calculated for each firm for 60 days before the initial contest announcement through 60 days after the termination announcement, according to the following expression:

$$(2) \quad PE_{jt} = \begin{cases} R_{jt} - (\hat{\alpha}_j^B + \hat{\beta}_j^B R_{mt}) & \text{for time } t \text{ before the initial} \\ & \text{contest announcement} \\ R_{jt} - (\alpha_j^A + \beta_j^A R_{mt}) & \text{for time } t \text{ at or after the initial} \\ & \text{contest announcement.} \end{cases}$$

The abnormal return over an interval of event days is not computed as the sum of the series of two-day prediction errors. Instead, I first compute the abnormal price change from each day. I then divide these abnormal price changes by the firm's share price 10 days before the initial contest announcement to obtain a measure in return form, which is defined as the adjusted prediction error.<sup>3</sup> The abnormal return of an interval or series of events is calculated by summing the relevant adjusted prediction errors for each firm and then averaging across firms.<sup>4</sup> These adjusted prediction errors measure the cumulative dollar effect relative to the value of shares 10 days before the initial contest announcement.

The following  $t$ -statistic is used to test the statistical significance of the abnormal returns:

$$(3) \quad t = \frac{1}{\sqrt{J}} \sum_{j=1}^J \left[ \sum_{\tau=\tau_1}^{\tau_2} PE_{j\tau} / \sqrt{\text{Var} \left( \sum_{\tau=\tau_1}^{\tau_2} PE_{j\tau} \right)} \right],$$

where  $\tau_1$  and  $\tau_2$  are the first and last days of the interval,  $J$  is the number of observations, and  $\text{Var} \left( \sum_{\tau=\tau_1}^{\tau_2} PE_{j\tau} \right)$  is the variance of the sum of the prediction errors.

The  $t$ -statistic adjusts for heteroskedasticity in the prediction errors by standardizing the cumulative prediction error for each firm by its standard deviation. This standardization gives less weight to those prediction errors with more volatility.<sup>5</sup>

The variance of the sum of the prediction errors is:

$$(4) \quad \text{Var}\left(\sum_{\tau=\tau_1}^{\tau_2} PE_{j\tau}\right) = S_j^2 \left[ T + \frac{T^2}{N} + \frac{\left( T\bar{R}_m - \sum_{\tau=\tau_1}^{\tau_2} R_{m\tau} \right)^2}{(N-1)\text{Var}(R_m)} \right].$$

Here  $S_j^2$  is the residual variance from the market model regression,  $T$  is the number of days in the cumulation interval,  $\bar{R}_m$  is the average market return over the estimation interval,  $N$  is the number of days used to estimate the market model, and  $\text{Var}(R_m)$  is the variance of the market over the estimation interval. This formula for the variance includes the covariance between the prediction errors and differs from previous formulas for the variance of a sum of prediction errors in that the other formulas ignored this covariance (see, for example, Mikkelsen and Ruback 1985). To derive this formula, let:

$$R_j^* = \sum_{\tau=\tau_1}^{\tau_2} R_{j\tau}$$

and

$$R_m^* = \sum_{\tau=\tau_1}^{\tau_2} R_{m\tau}$$

The forecast error is:

$$R_j^* - \hat{R}_j^* = T(\alpha - \hat{\alpha}) + R_m^*(\beta - \hat{\beta}) - \sum_{\tau=\tau_1}^{\tau_2} \epsilon_{j\tau},$$

where  $\hat{R}_j^*$  is the forecasted value and  $\alpha$  and  $\beta$  are regression estimates. The variance of the forecast error is:

$$E(R_j^* - \hat{R}_j^*)^2 = T^2 \text{Var}(\hat{\alpha}) + R_m^{*2} \text{Var}(\hat{\beta}) + T\sigma^2 + 2TR_m^* \text{Cov}(\hat{\alpha}, \hat{\beta}).$$

Substituting the values for the variance and covariance of the ordinary least squares coefficients provides equation (4).

## 5.4 Results

### 5.4.1 Abnormal Returns before and at the Initial Takeover Bid

Panel A of table 5.2 presents the average adjusted prediction errors for the targets of unsuccessful control contests during selected holding periods before and at the initial contest announcement. The initial bid appears to have increased the stock prices of the target firms. During the two-day announcement period, IB - 1 to IB, the abnormal return

for all targets in the sample was 22.21 percent. This is statistically significant, with a *t*-statistic of 30.05, and 94 percent of the 33 individual two-day prediction errors are positive. The two subsamples, targets *not* subsequently acquired and those that were, also had substantial positive, abnormal returns over the two-day announcement period.

Panel A of table 5.2 also indicates that the targeted firms realized significant positive returns over the period before the initial bid announcement. The abnormal returns were 8.76 percent during the nine

**Table 5.2** Percentage Adjusted Prediction Errors for 60 Days before the Initial Bid Announcement (IB) through 60 Days after the Termination Announcement (TD), 1962-80

Holding Period	All Targets	Targets <i>not</i> subsequently acquired	Targets subsequently acquired
<b>Panel A: Before and at the initial takeover bid</b>			
IB - 60 to IB - 41	-3.36 (-1.99;24;33)	-2.59 (-1.60;21;24)	-5.42 (-1.20;33;9)
IB - 40 to IB - 21	0.97 (1.10;51;33)	1.53 (1.15;50;24)	-0.53 (0.24;56;9)
IB - 20 to IB - 11	0.90 (1.43;55;33)	-0.60 (0.60;42;24)	4.89 (1.76;89;9)
IB - 10 to IB - 2	8.76 (7.55;73;33)	8.52 (6.30;71;24)	9.38 (4.17;78;9)
IB - 1 to IB	22.21 (30.05;94;33)	23.49 (28.82;96;24)	18.78 (10.49;89;9)
<b>Panel B: Between the initial takeover bid and the termination announcement</b>			
IB + 1 to TD - 1, event days only	-5.48 (-2.32;32;28)	-6.26 (-2.79;30;20)	-3.54 (0.06;37;9)
IB + 1 to TD - 1, all days	-7.23 (-1.18;39;33)	-8.59 (-1.50;37;24)	-3.62 (0.18;44;9)
<b>Panel C: At and after the termination announcement</b>			
TD - 1 to TD	-10.69 (-13.37;9;33)	-8.14 (-10.57;8;24)	-17.47 (-8.34;11;9)
TD + 1 to TD + 10	-1.70 (-1.40;45;33)	-0.38 (-0.49;54;24)	-5.22 (-1.88;22;9)
TD + 11 to TD + 20	-0.11 (0.02;45;33)	-0.14 (0.08;50;24)	-0.02 (-0.09;33;9)
TD + 21 to TD + 40	-4.05 (-1.07;36;33)	-3.05 (-0.70;37;24)	-6.71 (-0.91;33;9)
TD + 41 to TD + 60	-0.94 (0.08;52;33)	-0.09 (0.30;58;24)	-3.21 (-0.33;33;9)

Note: *t*-statistics; percent positive; and sample sizes are in parentheses.

days immediately before the announcement (IB - 10 to IB - 2). This finding suggests there is some market anticipation or leakage of information before the actual announcement. Including these nine days and the two-day announcement period in the measure of announcement-related performance yields an abnormal return of about 31 percent, which is similar to the results of previous studies (see Jensen and Ruback 1983 for a review).

#### 5.4.2 Abnormal Returns between the Initial Bid and the Termination

Panel B of table 5.2 presents the abnormal returns over the period between the initial takeover announcement and the outcome. Two measures of these abnormal returns are shown. The first, labeled "event days only," includes the day before and the day of each control-related announcement that occurred during this interval. These two-day event-adjusted prediction errors are summed over all such intermediate events for each contest, and these are then averaged across the 28 contests in the sample with intermediate events. The event-days-only abnormal return is -5.48 percent, with a *t*-statistic of -2.32. Since the sample includes only control contests that failed, this negative abnormal return is consistent with the release of information that reduced the probability that the contest would be completed.

The second measure of abnormal returns in panel B of table 5.2 sums over all days in the intermediate period, both event days and non-event days. This measure of abnormal returns, though statistically insignificant, is similar in magnitude to the event-days-only measure. This comparison shows that the potential advantage of the event-days-only measure is that it increases the signal-to-noise ratio if most new information is published in the *Wall Street Journal*. Of course, the disadvantage to the event-days-only measure is that it excludes information that is not published in the *Journal*.

Table 5.3 presents the average two-day adjusted prediction errors for each type of intermediate announcement. The abnormal return associated with the 14 takeover bids (including both competing tender offers and mergers) announced between the initial and termination announcements was 4.50 percent, with a *t*-statistic of 6.22. This abnormal return is substantially smaller than the market reaction to takeover bids reported in panel A of table 5.2 and in other studies. A simple explanation for this is that these announcements are all competing bids, which the market might anticipate to a greater degree than initial bids and which may involve lower incremental premiums than initial bids.

The 18 announcements of management opposition to the takeover were associated with positive, but insignificant abnormal returns. This finding should be interpreted with caution, however, because every contest in

**Table 5.3** Percentage Average Two-Day Adjusted Prediction Errors for Control-Related Announcements Made Between the Initial Takeover Bid and the Termination Announcements, 1962-80

Intermediate Event	Targets of Unsuccessful Control Contests
Takeover bid	4.50 (6.22;50;14)
Bid abandonment	- 12.31 (- 5.72;14;7)
Opposition by target managers	1.62 (- 0.28;39;18)
Litigation	- 1.79 (- 3.43;37;56)
Regulation	- 2.90 (- 3.20;25;12)
Miscellaneous	- 1.64 (- 2.84;40;15)

*Note:* The average two-day adjusted prediction errors are the sum of the adjusted prediction errors for each observation on the day before and day of the announcement. Parentheses enclose *t*-statistics; percent positive; and sample sizes.

the sample involved some form of opposition by the target management. The 18 announcements classified as opposition include only those events that were not associated with another announcement. Many of the litigation, regulation, and miscellaneous announcements, for example, also had to do with management opposition, and significant negative, abnormal returns were associated with these announcements.

The significant negative return for litigation announcements differs from Jarrell's (1985) finding of no significant negative abnormal returns for litigation announcements. One obvious explanation for the difference is that I limit my sample to contests that ultimately failed. Thus, my sample is more likely than his to include litigation that blocked the bidding firms. Finally, the 7 announcements of bid abandonments had abnormal returns of - 12.31 percent, with a *t*-statistic of - 5.72.

#### 5.4.3 Abnormal Returns at and after the Termination Announcement

Panel C of table 5.2 presents the abnormal returns at and after the termination announcement. The two-day prediction error associated with the termination, TD - 1 to TD, was - 10.69 percent for all targets in the sample. This is statistically significant, with a *t*-statistic of - 13.37, and 91 percent of the two-day adjusted prediction errors are negative.

The contest termination announcements consist of 27 tender offer failures, 5 merger cancellations, and 1 unsuccessful proxy fight. A direct comparison of the termination announcements in table 5.2 with prior results is difficult because no study of tender offers has explicitly examined the announcement effects of offer terminations. But some information can be gleaned from the abnormal returns following offer announcements that were unsuccessful. The average time between the initial takeover bid announcement and the termination announcement was about 56 trading days, or about three months. Further, 22 contests concluded within 55 days and only two contests lasted for more than 200 trading days. Thus, the appropriate post-offer comparison period begins immediately after the offer and ends somewhere between three and six months after the offer.

Dodd and Ruback (1977) reported abnormal returns of about  $-4$  percent in the three months immediately following the offer and another  $-3$  percent in the next three months, for a total loss of  $-7$  percent in the six months following the offer. These declines are comparable to, albeit smaller than, the contest termination announcements shown in table 5.2 here. However, 10 of the unsuccessful targets in the Dodd and Ruback study disappeared from the sample in the six months following the offer, suggesting that some takeover announcements and completions also occurred over the interval. Since takeover announcements are generally associated with positive, abnormal returns, the cumulative abnormal return of  $-7$  percent probably underestimates the effect of tender offer terminations for the Dodd and Ruback sample.

The impact of termination announcements on stock prices has been examined in the study of mergers. Dodd (1980) reported a two-day abnormal return of  $-8.7$  percent for the announcements of 80 cancelled merger targets. Asquith (1983) showed abnormal returns of  $-6.4$  percent for 91 unsuccessful merger targets over the same two-day period. These abnormal returns to merger terminations are smaller than the abnormal returns to contest terminations reported in table 5.2. One plausible explanation for the difference is that the expected premiums were higher before the termination announcements in my sample. The higher premiums in hostile tender offers than in mergers, and the higher premiums in offers with competing bidders, are consistent with this explanation.<sup>6</sup>

Panel C of table 5.2 also contains the average adjusted prediction errors for holding periods during the 60 days following the termination announcement. All of the abnormal returns over the holding period were negative and statistically insignificant. The next section examines the post-termination stock price behavior over a longer time period.

### 5.5 The Post-termination Performance of Targets

Table 5.4 presents the percentage average adjusted prediction errors for 50-day holding periods beginning on the day after the termination announcement and ending three years later. The first column of the table indicates the abnormal returns for all unsuccessful contest targets; the second and third columns show the abnormal returns for the 24 targets *not* subsequently acquired and the 9 targets that were subsequently acquired, respectively. Figure 5.1 plots these cumulative abnormal returns. To reduce measurement error, the market model regressions were reestimated for every 200 trading days.

For the sample of all unsuccessful targets, market efficiency predicts zero abnormal returns following the termination announcement. Investors could adopt a strategy of buying shares on the day after a termination announcement and holding the shares for three years. Such an investment strategy should not, according to the efficient market hypothesis, earn above-average returns. But previous studies of the post-offer performance of takeovers do not uniformly support the efficient market hypothesis. For example, Jensen and Ruback (1983) found negative, abnormal returns for acquiring firms following completed mergers. And Asquith (1983) found significant abnormal returns of  $-8.7$  percent in the 240 days following merger termination announcements.<sup>7</sup>

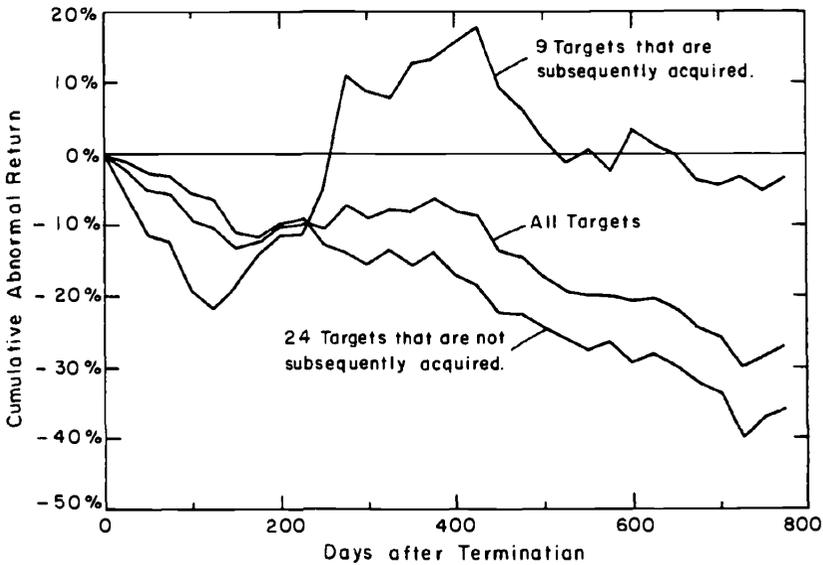
The average cumulative adjusted prediction error for the sample of all targets of unsuccessful control contests over the three years following the termination announcement is  $-27.14$  percent, with a  $t$ -statistic of  $-1.41$ , and only 27 percent of individual cumulative errors are positive. Though statistically insignificant at standard confidence levels, the total abnormal return over this three-year period is somewhat disturbing to proponents of market efficiency. Nonetheless, two factors should mitigate this concern. First, I imposed some selection bias by including all offers that occurred within a month of each other as part of the same contest. Thus, these firms did not receive any offers in the month following the bid, according to my analysis. Since such bids were possible, this selection bias explains some of the negative, abnormal returns, especially in the first holding period. Second, tests that cumulate prediction errors over long time periods are generally sensitive to specification. In this case the three-year average cumulative return is about 14 percent when estimated using market-adjusted returns instead of a market model. Thus, the negative, total abnormal return reported in table 5.4 may be spurious.

For the 24 targets that were not subsequently acquired, the average cumulative adjusted prediction errors were negative in all but two of the 50-day holding periods. None of the abnormal returns for the holding

**Table 5.4** Percentage Average Adjusted Prediction Errors for Three Years after an Unsuccessful Control Contest, 1962-80

Holding Period (TD = termination date)	Targets <i>not</i> Subsequently Acquired		Targets Subsequently Acquired
	All Targets		
TD + 1 to TD + 50	-5.23 (-1.71;27;33)	-2.83 (-1.02;37;24)	-11.62 (-1.61;0;9)
TD + 51 to TD + 100	-4.17 (-1.15;36;33)	-2.80 (-0.61;42;24)	-7.80 (-1.21;22;9)
TD + 101 to TD + 150	-3.93 (-1.54;27;33)	-5.76 (-1.76;25;24)	0.94 (-0.07;33;9)
TD + 151 to TD + 200	3.14 (0.36;41;32)	1.53 (0.17;42;24)	7.97 (0.45;37;8)
TD + 201 to TD + 250	-0.41 (-0.16;41;32)	-3.04 (-0.44;37;24)	7.49 (0.45;50;8)
TD + 251 to TD + 300	1.70 (0.33;47;30)	-2.85 (-0.25;42;24)	19.91 (1.24;67;6)
TD + 301 to TD + 350	1.13 (0.36;60;30)	-0.13 (0.07;54;24)	6.08 (0.67;83;6)
TD + 351 to TD + 400	-0.08 (0.05;31;29)	-1.23 (-0.58;29;24)	5.44 (1.40;40;5)
TD + 401 to TD + 450	-6.37 (-0.58;38;29)	-5.29 (-0.37;37;24)	-11.61 (-0.58;40;5)
TD + 451 to TD + 500	-4.09 (-0.25;50;28)	-2.06 (-0.27;50;24)	-16.31 (-0.01;50;4)
TD + 501 to TD + 550	-3.14 (-0.11;41;27)	-2.97 (-0.30;37;24)	-4.48 (0.54;67;3)
TD + 551 to TD + 600	-0.80 (0.43;44;27)	-1.98 (0.09;42;24)	8.60 (1.03;67;3)
TD + 601 to TD + 650	-1.64 (-0.57;33;27)	-0.48 (-0.33;37;24)	-10.89 (-0.79;0;3)
TD + 651 to TD + 700	-4.88 (-0.93;50;26)	-3.78 (-0.65;54;24)	-18.09 (-1.09;0;2)
TD + 701 to TD + 750	-3.74 (-0.84;42;26)	-3.70 (-0.87;42;24)	-4.26 (-0.00;50;2)
TD + 751 to TD + 800	2.21 (0.43;59;22)	1.49 (0.08;60;20)	9.39 (1.18;50;2)
Total	-27.14 (-1.41;27;33)	-36.10 (-1.79;21;24)	-3.23 (0.21;44;9)

Note: *t*-statistics; percent positive; and sample sizes in parentheses



**Fig. 5.1**

Post-termination performance of 33 targets of unsuccessful control contests. The sample period for the initial contest announcements is 1962–80. The cumulative adjusted prediction errors for the terminations begin on the day following the announcements. The cumulations end on the day of a control change for the 9 observations with control changes and three years after the termination announcement for the 24 targets without subsequent control changes

periods was statistically significant. Overall, the total abnormal return was -36 percent, with a  $t$ -statistic of -1.79. Though not significant at standard confidence levels, this negative return would be predicted because these firms did not, *ex post*, receive a takeover bid during this period.

For the 9 targets that were subsequently acquired, the total abnormal return was -3.23 percent, which is not significantly different from zero. This insignificant return is surprising because positive, abnormal returns would be predicted as the market reacted to the takeover bids these firms received. One explanation is that the favorable impact of the takeover bid announcements are being masked by the noise in the data. To test this, I computed the average cumulative adjusted prediction error by using only the day before and the day of *Wall Street Journal* announcements. In other words, I excluded non-event days from the calculations. The event-day-only total abnormal return was 35.16 percent, with a  $t$ -statistic of 9.19, and all of the cumulative returns were positive.

The post-termination results in table 5.4 and figure 5.1 indicate that the losses that occur at the termination announcement are not reversed on average. The subsample results are broadly consistent with the findings of Bradley, Desai, and Kim (1983). Failed targets are often the subject of subsequent takeover bids. Firms that are subsequently acquired realize additional abnormal returns. The stock prices of firms that do not receive subsequent bids incur further declines in their stock prices. Thus, the stock price response to the termination announcement may be determined, in part, by the anticipation of future bids. Nevertheless, the significant stock price decline at the termination announcement suggests that the expected value of the failure is negative and therefore not in the interests of the existing stockholders.

## 5.6 Summary and Conclusions

The empirical results in this paper are based on a sample of 33 unsuccessful target firms. Significant abnormal returns of about 31 percent were associated with the initial announcement of the control contest. There were negative, but statistically insignificant, returns during the period between the initial offer announcement and the termination announcement. At the time of the termination announcement, these firms realized statistically significant negative abnormal returns of about -10 percent. The negative returns at the termination announcement did not completely offset the gains from the initial announcement. In addition, no significant abnormal returns occurred in the three years following the termination of the offer.

The negative returns for termination announcements indicate that the failure of a control contest is costly to the stockholders of targeted firms. Opposition to takeover bids can therefore be harmful: Potential acquirers may choose to abandon the takeover attempt when the target's managers resist. Of course, the potential acquirers may instead choose to raise the offer price, and this response would benefit the target's shareholders. Opposition to tender offers, therefore, is a gamble. The evidence presented in this paper does not indicate whether the gamble is a value-maximizing strategy for the stockholders of targeted firms. Instead, it simply shows that losing the gamble imposes costs on the shareholders.

## Notes

1. See Ruback (1986) for an overview of takeover defenses.
2. This section draws heavily on Mikkelsen and Ruback (1986).
3. Instead of using the actual stock prices, I used a price index that equals one dollar eleven days before the initial contest announcement. On each suc-

ceeding day the index equals the compound value of the one dollar investment, such that:

$$P_{\tau-1} = \prod_{t=0}^{\tau-1} (1 + R_{jt}),$$

where  $P_{\tau-1}$  is the price index on day  $\tau$ , and  $R_{jt}$  is the stock return to firm  $j$  on day  $t$ . The adjusted prediction error,  $APE_{jt}$ , each day is calculated as:  $APE_{jt} = (PE_{jt})P_{\tau-1}$ , where  $PE_{jt}$  is the prediction error on day  $\tau$ . Thus, if the share price is higher after the takeover announcement, the adjusted prediction error after the announcement is greater in absolute value than an unadjusted prediction error.

4. When there are missing stock returns within a holding period, the normal return is cumulated over the days in which there are missing stock returns. This cumulative normal return is subtracted from the next observed stock return to calculate the abnormal return.

5. The average abnormal return and the  $t$ -statistic can differ in sign because the former assigns uniform weights to each observation whereas the latter assigns non-uniform weights (equal to the inverse standard deviation) to each observation.

6. See Bradley, Desai, and Kim (1986) for evidence on premiums for offers with and without multiple bidders.

7. Asquith's sample excluded any target that received a subsequent bid in the year after the termination announcement. Asquith argued that the post-outcome negative abnormal return in his data was caused by this selection bias.

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## Comment      Andrei Shleifer

In his interesting and careful paper Ruback finds that termination of a takeover contest reduces the wealth of the shareholders of the targeted firm. The author takes this finding as evidence that target managers' actions to end the contest are probably not in the interest of target shareholders, although he is careful to note that resistance might have been value maximizing *ex ante*. This would be the case if, for example, target managers resisted in order to raise the offer price, and in some cases, contrary to their intention, drove the acquirer away. In this scenario, it is unclear why, once the bidder retreats, the target managers do not in fact try to lure him back. If they are acting in the interest of shareholders, this is what they should try to do, given Ruback's evidence.

There are other scenarios in which managers acting in the interest of shareholders will resist takeovers, although none is completely compelling. It might be the case that targeted firms are undervalued and managers are reluctant to sell their firms for less than they are worth to shareholders who will hold the stock until this undervaluation is corrected. Ruback's work suggests, however, that over three to five years, the targeted firms lose all of the premium offered in the original takeover bid. For the undervaluation theory to explain this finding, mispricing must persist for periods longer than three to five years, without being altered by the bid. Furthermore, it needs to be explained how long the horizon of shareholders must be for managers to impose on them the cost of waiting until mispricing disappears.

The more natural, though not necessarily correct, explanation of Ruback's results is, of course, that managers do not act in the interest of shareholders. They may be acting in their own interest or, alternatively, to protect other constituents of the firm. To understand mana-

gerial motives, one has to know more about the takeover scene before 1980, which is Ruback's sample. In particular, one must ask what menu of defenses was available then, and how they were used. Only by examining the characteristics of various episodes can we hope to come up with clear-cut answers to the questions posed by Ruback.

## Comment Robert W. Vishny

Ruback's paper carefully documents the loss to target shareholders upon termination of a control contest. The methodology of the paper represents a significant improvement over previous attempts to gauge the costs of a failed control contest. I see three main improvements in the author's work. First, Ruback obtains a more precise measure of the cost of failure by focusing on the termination announcement rather than on stock price behavior over a long period following the bid. Second, he adheres to a strict definition of a contest and does not double-count failed bids for the same target that were made around the same time. Finally, Ruback omits unsuccessful tender offers in which the contest failed because of a successful merger bid that was outstanding at the same time as the tender offer.

For his sample of 33 unsuccessful contests for control over the years 1962-80, Ruback finds that the average abnormal return at the time of the initial announcement of the contest is about 31 percent, with abnormal returns of -10.69 percent at the termination announcement and negative but insignificant abnormal returns of about -7 percent between these two events. I want to spend the rest of this discussion making some suggestions about how to use these numbers in conjunction with other information about control contests in order to better understand the effects of management resistance and the sources of gains in takeovers.

There are several issues that immediately arise in interpreting Ruback's results. First, any estimate of the cost of contest failure must include the stock price reactions associated with the gradual learning that the contest would be unsuccessful and not just the reaction at the time of the termination announcement. Ruback finds a -7 percent effect between the time of the initial bid and the termination announcement, with a standard error of about 6 percent. The noisiness of this estimate suggests that the event-date-only estimate may be preferable

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even though it will probably underestimate the information leakage effect. This more precise but possibly biased estimate is  $-5.48$  percent, with a standard error of about  $2.4$  percent. Including an estimate of the total effect of the contest termination and gauging its reliability will be important if we are to know how much of the initial rise in market value is lost when the initial opportunity vanishes. Even though this involves looking at a noisy number, it is not as serious a problem as following an unsuccessful target for three years.

A second issue arises because a nontrivial fraction (9 out of 33) of the unsuccessful targets were subsequently acquired. This means that if we are interested in knowing whether there is some permanent revaluation of targeted firms even when they are not subsequently acquired, we must remove the value contribution of expected future bids from the post-termination stock price. We can at least get a handle on this calculation by looking at the distribution of subsequent acquisitions and premia for the initially unsuccessful targets. Although Ruback does not look specifically at this distribution, he does find that 27 percent of the unsuccessful targets were subsequently acquired and that the event-day-only estimate of abnormal returns for these firms over the three years following the termination date is 35.16 percent. An interesting question is whether these results are consistent with the hypothesis that there is no permanent revaluation of the targets of unsuccessful bids and that any elevation of the post-termination share price above the pre-bid share price can be attributed to the prospect of future bids. If we combine a 31 percent initial rise with a  $-7$  percent termination leakage effect, a  $-10.7$  percent termination announcement effect, and a 27 percent chance of a future acquisition (which on average leads to a 35 percent abnormal return sometime within three years after termination), I think we can probably conclude that the "no permanent revaluation" hypothesis is a viable possibility.

Apart from worrying about what portion of the initial share price rise remaining after termination is due to future bids, we should think about whether our interpretation of Ruback's results would be different depending on the reason the initial contest was terminated. For example, if most of the initial contests are terminated because the target comes up with a foolproof defense against all takeover bids, any revaluation of the target might be attributed to the market's inference that the bidder considered the target to be undervalued even under the existing management. The same interpretation would be much less valid if the initial bid was just dropped even when there was only weak resistance. For in the latter case the market seems more likely to infer that the bidder simply had second thoughts, and consequently the market would be less likely to suspect gross underpricing of the target's shares. To the extent that the resistance techniques used differ across

firms or over the time period of Ruback's sample, we might want to make different inferences about the undervaluation hypothesis for different subsamples.

Another interpretation of a permanent upward revaluation of the target following an unsuccessful contest is that management took positive steps to increase the value of the firm in order to thwart the takeover. Since these defensive restructurings seem to have become much more prevalent in recent years, we may not want to extrapolate the finding of "no permanent revaluation beyond expectation of future bids" for Ruback's 1962-80 sample to conclude anything about the valuation effects of defensive restructurings in recent years.

In sum, Ruback's results on the effects of contest termination, supplemented by evidence on the value of future bids implicit in post-termination share prices, can be very useful in helping us determine both the effects of managerial resistance and the extent to which the targets of unsuccessful takeovers are permanently revalued by the market. Finding out whether these targets experienced permanent increases in their market values would shed light on the hypothesis that stock market underpricing is an important source of gains in takeovers. This information could also help in determining the extent to which managers doing defensive restructurings end up replicating the value-increasing changes raiders sought to make.

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