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Do Takeover Targets Underperform? Evidence from Operating and Stock Returns

Anup Agrawal and Jeffrey F. Jaffe*

Abstract

Financial economists seem to believe that takeovers are partly motivated by the desire to improve poorly performing firms. However, prior empirical evidence in support of this inefficient management hypothesis is rather weak. We provide a detailed re-examination of this hypothesis in a large scale empirical study. We find little evidence that target firms were performing poorly before acquisition, using either operating or stock returns. This result holds both for the sample as a whole and for subsamples of takeovers that are more likely to be disciplinary. We conclude that the conventional view that targets perform poorly is not supported by the data.

I. Introduction

Why are firms taken over? Economists and public policy makers have long been interested in this question. The literature on corporate control has examined a number of potential motives for takeover. Some of these motives are taxes, operating synergies, undervalued targets, creation of market power, and wealth transfers to stockholders from bondholders or employees. A prominent motive for takeovers suggested in the literature is the replacement of poorly performing managers. For example, Brealey and Myers (1991), p. 823 state, "There are always firms with unexploited opportunities to cut costs and increase sales and earnings. Such firms are natural candidates for acquisition by other firms with better management. In some cases 'better management' may simply mean the

*Agrawal, aagrawal@cba.ua.edu, Culverhouse College of Business Administration, 4 North Stadium Drive, University of Alabama, Tuscaloosa, AL 35487; Jaffe, jaffe@wharton.upenn.edu, The Wharton School, 3620 Locust Walk, University of Pennsylvania, Philadelphia, PA 19104. We are grateful to Brad Barber, George Bittlingmayer, Jennifer Conrad, Chuck Knoeber, Jay Ritter, and Rob Stambaugh for helpful discussions. We thank seminar participants at UC-Davis, Case Western, Emory, North Carolina, Pittsburgh, Rutgers, Virginia Tech, Wharton, the American Finance Association meetings, and George Benston, Diane Denis, Avi Dor, Sherry Jarrell, Jon Karpoff (the editor), Omesh Kini, Raman Kumar, Paul Laux, Ken Lehn, Paul Malatesta, Gershon Mandelker, Dave Mauer, Oded Palmon, Vijay Singal, Sheridan Titman, David Whitcomb, Eli Ofek (the referee), and Ralph Walkling (associate editor and referee) for useful comments. Part of this research was conducted while Agrawal was visiting at the Wharton School. Financial support from the William A. Powell, Jr. Chair of Finance and Banking (Agrawal) and a Geewax-Terker grant from the Rodney L. White Center for Financial Research (Jaffe) are gratefully acknowledged. Earlier versions of this paper were entitled "The Pre-Acquisition Performance of Target Firms: A Re-examination of the Inefficient Management Hypothesis."

determination to force painful cuts or realignment of the company's operations." While all firms, even those with good management, can theoretically be improved by better management, the potential for improvement is clearly greater in firms that are performing poorly. Therefore, as Brealey and Myers note, "If this motive is important, one would expect that firms that perform poorly tend to be targets for acquisition." Financial economists seem to accept this notion, which is often referred to as the disciplinary motive for takeovers or the inefficient management hypothesis.

The empirical tests of this hypothesis generally have used one of two approaches. The first is to examine stock returns in the years before acquisition. Most of these studies focus on stock returns over short time periods (a few days or a few months) around the announcement of an acquisition. An investigation of long-run stock returns before acquisition is generally a sideline in these papers. Moreover, most of these papers were written before the development of current methodologies for analyzing long-run stock returns. Therefore, existing empirical evidence on long-run prior stock price performance of takeover targets is suspect. A second approach has been to examine either q-ratios or measures of operating performance for targets. The evidence here is ambiguous. While some of the papers find low q-ratios or low operating performance before acquisition, others do not. And perhaps because targets' prior operating performance was not the primary focus of any of these studies, they do not generally use the most current methodologies for measuring it. Thus, a comprehensive empirical examination of the inefficient management hypothesis is in order.

This paper provides a detailed examination of this hypothesis. We investigate both operating and stock return performance before acquisition for targets of over 2,000 takeovers from 1926–1996. When measuring operating returns, our empirical tests adjust for firm size, industry, and past performance as suggested by Barber and Lyon (1996). When measuring stock returns, we adjust for firm size, book-to-market, and past returns, and employ a calendar time abnormal return (CTAR) methodology based on the simulation results in Lyon, Barber, and Tsai (1999). We focus particularly on subsamples where takeovers are likely to have a disciplinary motive.

Overall, we do not find much support for the inefficient management hypothesis. Target firms as a group do not underperform over a decade-long pre-bid period, whether performance is measured by operating returns or stock returns. Some subsamples, where disciplining target managers is more likely to be a motive for takeover (e.g., tender offers, hostile takeovers, and multi-bidder contests), show rather sparse evidence of underperformance. However, even this underperformance generally occurs many (usually five or seven) years before acquisition. This is surprising because efficient operation of the market for corporate control would likely imply a faster response. Because both the evidence of underperformance is so sparse and the time lag between poor performance and acquisition is so long, we conclude that there is little evidence to support the popular notion that takeover targets generally are poor performers.

The structure of the paper is as follows. We briefly summarize the empirical evidence on the inefficient management hypothesis in the next section. The data are described in Section III. Section IV examines the pre-acquisition operating

performance of target firms. Pre-acquisition stock return performance is presented in Section V. Section VI provides a summary of the evidence on subsamples. The final section concludes the paper.

II. Summary and Interpretation of the Literature

A number of empirical studies have examined the inefficient management hypothesis, though generally in passing. We provide a detailed review of this literature in the Appendix at the JFQA Web site, http://www.jfqa.org. Taking the set of studies examined there together, we believe that several conclusions are warranted. First, the literature does not provide strong evidence that targets, as a whole, have underperformed prior to takeover. Table 1 summarizes the results of the 12 studies, discussed in the Appendix at http://www.jfqa.org, that examine abnormal stock returns. Of these, only two studies (Smiley (1976), and Asquith (1983)) find statistically significant underperformance for the average target.

TABLE 1

Prior Studies of the Pre-Acquisition Performance of Target Firms

Study	Merger or Tender Offer	Sample Period	Sample Size	Months around Ann	CAAR(%)	Method
Mandelker (1973)	M	1941–1962	252	(−40, −9)[a]	−3.0	Fama-MacBeth (1973)
Ellert (1976)	M	1950–1970	311	(−100, −8)[a]	−11.7	2-factor market model
Smiley (1976)	T	1956–1970	95	(−120, −1)	−55.6*	3-factor market model
Dodd-Ruback (1977)	T	1958–1976	136	(−60, −4)	+2.0	Market model
Langetieg (1978)	M	1929–1969	149	(−72, −7)[a]	−1.0	3-factor model
Asquith (1983)	M	1962–1976	211	(−24, −2)	−14.8*	CRSP excess returns
Malatesta (1983)	M	1969–1974	85	(−60, −3)	+4.9[b]	Market model
Martin-McConnell (1991)	T	1958–1984	253	(−48, −3)	+4.3	Market model
Agrawal-Walkling (1994)	M, T[c]	1980–1986	182	(−60, −13)	−3.8	Size and β-adjustment
Agrawal-Jaffe (1995)	M	1941–1961	132	(−60, −13)	−1.1	Size and β-adjustment
Kini-Kracaw-Mian (1995)	T	1958–1984	244	(−48, −3)	+2.4[d]	Market model
Franks-Mayer (1996)	T	1985–1986	32[e]	(−60, −1)	−0.3	Size-industry control firm

[a] Around completion
[b] Calculated from their Table 4.
[c] Bids
[d] Our calculation from their Table 3
[e] Hostile takeovers in U.K.
* Stat. significant at 5%.

It is not surprising that targets as a whole do not underperform prior to takeover, since management improvement is but one of many motives for takeover. Therefore, one should look at certain subsamples where management improvement is a more likely motive for takeover. One might expect performance to be worse prior to tender offers, since poor performance is likely to precipitate hostile takeovers, which are more likely to be accomplished through tender offers than mergers. Four papers (Smiley (1976), Dodd and Ruback (1977), Martin and McConnell (1991), and Kini, Kracaw, and Mian (1995)) examine stock returns prior to tender offers. Only Smiley presents strong evidence of underperformance. Furthermore, Franks and Mayer (1996) find no evidence of abnormal performance for targets prior to a sample of hostile takeovers. Thus, our second conclusion is that previous research does not allow one to reject the null hypothesis of zero pre-takeover abnormal returns for targets, even in subsamples that are likely to be disciplinary.

Third, two papers examine q-ratios prior to mergers. While Hasbrouck (1985) finds that the average q-ratio of acquired firms is low, Lang, Stulz, and Walkling (1989) find that the q-ratios of targets are insignificantly different in unopposed vs. opposed offers. Thus, the evidence on underperformance, as measured by q-ratios, is mixed.

At least seven papers (Palepu (1986), Morck, Shleifer, and Vishny (1988), (1989), Song and Walkling (1993), Barber, Palmer, and Wallace (1995), Karpoff, Malatesta, and Walkling (1996), and Berger and Ofek (1996)) attempt to predict the probability of takeover from either past returns, q-ratios or operating performance. There is mixed evidence of predictive ability here, as discussed in the Appendix at the JFQA Web site, http://www.jfqa.org.

Graham, Lemmon, and Wolf (2001) find that excess values of targets are significantly negative one month prior to acquisition, where excess value is defined as the log of the ratio of a firm's market value to the sum of its divisions' imputed values. The results of this paper imply that target firms underperform prior to acquisition.

Finally, the results of both Mitchell and Lehn (ML) (1990) and Shivdasani (1993) suggest that target firms underperform. However, ML focus on a single corporate decision (mergers), not on overall firm performance. Shivdasani relates the probability of hostile takeover to variables likely to be correlated with firm performance, not to firm performance itself. Therefore, we argue in the Appendix at the JFQA Web site, http://www.jfqa.org, that these papers test the hypothesis in indirect ways.

Thus, the literature reviewed in the Appendix at the JFQA Web site does not provide strong evidence in support of the inefficient management hypothesis. In addition, since an investigation of long-run pre-acquisition operating or stock returns to targets is often a sideline to these papers and because many of these papers are not recent, the methodologies are not current. Thus, a re-examination of the inefficient management hypothesis is merited. We first examine the pre-acquisition operating performance of targets and then move on to pre-acquisition stock return performance. For each measure of performance, this paper first examines whether the average target exhibits long-run underperformance prior to takeover. Next, we investigate a variety of subsamples where disciplinary takeovers are likely.

III. Data

This paper examines both operating and stock price performance of target firms before they are acquired. The sample of acquisitions is obtained by a two-step process. First, we compile a list of all NYSE or AMEX listed firms that were delisted from the CRSP monthly files due to a merger or tender offer from 1926–1996. Second, we determine the announcement date of the merger or tender offer using the Wall Street Journal Index (WSJI) for announcements that occurred in 1956 or later, and the New York Times Index (NYTI) for announcements that occurred prior to 1956.[1] The announcement date is defined as the date of the first public announcement about the acquisition of a target firm by either the target

[1]The WSJI was not published prior to 1956.

or a bidder.[2] We classify an acquisition as a tender offer if the acquiring firm purchased at least 60% of the target firm's shares via a tender offer. The sample consists of 2,083 acquisitions, of which 1,636 are mergers and 447 are tender offers.

Table 2 presents the distribution of acquisitions by the decade of announcement and the form of acquisition. There are approximately 3.66 mergers for every tender offer. Both mergers and tender offers occur more frequently in the later decades than in the earlier decades, a phenomenon explained partly by the increase in the number of firms listed on the NYSE and AMEX. Particularly noticeable is the increase in the frequency of tender offers through the end of 1989.

TABLE 2

Time Distribution of the Sample of Takeover Targets

	No. of		
Years	Mergers	Tender Offers	Total
1926–1929	27	0	27
1930–1934	12	0	12
1935–1939	5	0	5
1940–1944	7	0	7
1945–1949	10	0	10
1950–1954	29	0	29
1955–1959	66	0	66
1960–1964	77	10	87
1965–1969	261	34	295
1970–1974	129	13	142
1975–1979	289	70	359
1980–1984	277	117	394
1985–1989	254	153	407
1990–1994	99	31	130
1995–1996	94	19	113
Total	1636	447	2083

The sample consists of NYSE/AMEX targets in successful acquisitions via a merger or tender offer completed from 1926–1996. The time distribution is based on announcement dates.

Panel A of Table 3 shows the percentage of sample firms that fall within each quintile of all NYSE firms ranked on market capitalization and on prior six-month return, as of month −120, month −60, and month −12 relative to the month of acquisition announcement. Regardless of the time before acquisition announcement, small firms are somewhat more likely than large firms to enter our sample, but the sample is nearly uniformly distributed across each of the five past performance quintiles. The former finding can be explained in two ways. First, takeover targets tend to be small firms. Second, our sample of acquisitions includes AMEX as well as NYSE firms, while the size quintile breakpoints are formed with only the larger NYSE firms, following Fama and French (1992).

Panel B shows the distribution of our sample by firm size, book-to-market (B/M) ratio, and prior six-month return over the 1965–1996 subperiod. We are limited to this smaller time period in panel B, because our source for B/M ratios, Compustat, does not go back to 1926. As with panel A, our sample appears to be somewhat more heavily weighted toward small firms but nearly uniformly distributed with respect to prior six-month performance. In addition, the distribution

[2]The sample of firms acquired in mergers from 1955–1987 was kindly provided by Robert Harris. We collected the sample from 1930–1954 and 1988–1996 using the same procedure.

TABLE 3

Distribution of Sample of Takeover Targets by Size, B/M, and Prior Six-Month Return (R6)

Panel A. Distribution by Size and R6 for Entire 1926–1996 Sample Period

	Month					
	−120		−60		−12	
Quintile	Size	R6	Size	R6	Size	R6
1 (small)	24%	22%	27%	24%	27%	20%
2	21	21	23	18	23	19
3	22	18	21	20	23	18
4	19	19	18	20	18	21
5 (large)	14	20	11	18	9	22
Total	100	100	100	100	100	100
No. of firms	1192		1622		2083	

Panel B. Distribution by Size, B/M, and R6 for 1965–1996 Subperiod

	Month								
	−120			−60			−12		
Quintile	Size	B/M	R6	Size	B/M	R6	Size	B/M	R6
1 (small)	25%	17%	23%	29%	16%	23%	28%	16%	21%
2	20	21	21	21	18	18	22	18	17
3	20	17	17	20	20	21	21	18	18
4	20	23	19	18	20	20	19	22	22
5 (large)	15	22	20	12	26	18	10	26	22
Total	100	100	100	100	100	100	100	100	100
No. of firms		758			1059			1330	

The sample consists of NYSE/AMEX targets in successful acquisitions via a merger or tender offer completed from 1926–1996. Table 3 shows the percentage of the sample firms that fall within each quintile of all NYSE firms ranked on size (market capitalization), B/M, and the prior six-month return (R6). B/M is the book-to-market ratio.

of B/M ratios seems to be nearly uniform for month −120. However, the distributions for months −60 and −12 show that targets are more likely to have high B/M ratios than to have low ones.

IV. Pre-Acquisition Operating Performance

This section examines the long-run operating performance of target firms before they are acquired. Section IV.A explains our methodology, which largely follows the recommendations of Barber and Lyon (1996). Section IV.B investigates the entire sample and Section IV.C analyzes various subsamples. The long-run stock price performance of targets is analyzed in Section V.

A. Measurement of Operating Performance

We measure performance in terms of both operating return on assets (OPA) and operating return on sales (OPS). OPA is defined as operating earnings before depreciation (Compustat data item A13) divided by total assets (item A6). Similarly, OPS equals operating earnings before depreciation divided by net sales (item A12).

For each target firm and for each measure of operating performance, we select a control firm matched on industry, size, and prior performance based on that measure. Thus, for each target, there is a control firm based on OPA and one based on OPS. Specifically, for the OPA measure, we consider all firms that have

the same two-digit primary SIC industry code. Following the recommendation of Kahle and Walkling (1996), we use SIC codes obtained from Compustat. We further restrict our control firm to the set of firms whose asset size (item A6) in year -11 relative to the year of acquisition announcement is between 50% and 200% of the asset size of the target firm. (If the target firm does not have the relevant Compustat data in that year, we begin with the first year of valid data.) From this subset, the firm whose OPA in year -11 is closest to that of the target is selected as the control firm. If no firm satisfies these criteria, we consider all firms, regardless of industry, with asset size within 80% and 120% of the target in year -11.[3] From this set, the firm whose OPA is closest to that of the target is selected as the control firm. This algorithm follows Loughran and Ritter (1997).

If the control firm is delisted from Compustat for any reason during the period from year -11 to year 0, we replace it via a procedure analogous to that outlined above. For example, if a control firm is delisted in year -5, it is replaced with a firm that most closely matches the target in year -6. If that second control firm is delisted in year -2, it is replaced with a firm based on a match in year -3. This matching procedure is repeated for the OPS measure of performance. Our sample period runs from 1967–1996.

B. Results for the Entire Sample

The results on operating performance for the entire sample are presented in Table 4. The first two columns of the first row of panel A of the table show the median values of OPA for the target and control firms, respectively, for year -10 relative to the year of acquisition announcement. The next column provides the p-value from the matched pairs Wilcoxon signed ranks test. The next three columns repeat the procedure for OPS. Subsequent rows of the panel show the above values for different years relative to the year of acquisition announcement.

The p-values for OPA in the panel are all above 0.05, indicating no significant differences between the targets and their controls. The results change for OPS, with nine of the 11 p-values at or below 0.05. However, the median OPS of the targets is *above* that of the controls for each of the 11 years, suggesting that, if anything, the targets outperform their controls. Thus, we find no evidence in panel A that target firms underperform their controls. Since OPS $\times$ (Sales/Assets) = OPA, our results suggest a lower sales turnover ratio for target firms than for their controls.

Panel B examines changes in performance over different intervals. The first two columns of the first row in this panel show the median change in OPA from year -10 to year 0 for the target and control firms, respectively. The next column provides the p-value from the matched pairs Wilcoxon signed ranks test. The next three columns repeat the procedure for the change in OPS. Subsequent rows show the above changes for different time intervals relative to the year of acquisition announcement.

Consider the first 10 rows in the panel, which all show change in performance for intervals ending in the year of acquisition announcement. For each row, the

[3] We find control firms for 87% of the targets using the earlier algorithm, and for the remaining targets using this algorithm.

TABLE 4

Median Levels and Changes in Operating Performance of Target vs. Control Firms

Year around Ann	Operating Performance to Assets (%) Target	Control	*p*-Value	Sales (%) Target	Control	*p*-Value
Panel A. Levels of Operating Performance						
−10	14 85	14.82	0 19	12 07	12 04	0 05
−9	14.44	14 59	0 63	11 83	11 81	0.22
−8	14.46	14 56	0 20	11.78	11.28	0.20
−7	14 29	14.51	0.26	11 13	11 00	0 03
−6	14 23	14.32	0.83	11.46	11 03	0.00
−5	14.63	14.41	0 81	11 36	11 15	0.01
−4	14.33	14.06	0 77	11 17	11 06	0 02
−3	14 08	13.91	0.97	11.22	11 09	0.00
−2	13 99	14.19	0.54	11 31	11.23	0.01
−1	13 98	13.94	0 32	11 57	11.46	0.04
0	13 86	13 85	0 99	11 52	11 33	0 05
Panel B Changes in Operating Performance						
0 vs −10	−0 61	−1 00	0 99	−0.91	−0 61	0 41
0 vs −9	−0.29	−0.54	0 34	−0 61	−0 59	0 75
0 vs −8	−0 22	−0 26	0 96	−0.50	−0 41	0 96
0 vs −7	0.02	−0 04	0 87	−0 18	−0 06	0.50
0 vs −6	−0 14	−0 32	0 58	−0.31	0 06	0 36
0 vs. −5	0.06	−0.14	0.44	−0.04	−0.02	0 46
0 vs −4	0 07	−0 10	0.56	0 01	−0 13	0.25
0 vs. −3	0 15	−0 05	0 89	0 02	−0 03	0 87
0 vs −2	0 01	−0 22	0.52	0.12	0 04	0 84
0 vs. −1	−0 01	−0 16	0 23	0 01	−0 05	0 18
−8 vs −10	−0 17	−0 16	0.53	−0 30	−0.11	0 52
−6 vs. −8	0.12	0 02	0 41	0 03	−0 29	0.03
−4 vs −6	−0.01	−0.18	0 29	−0 18	−0 04	0.64
−2 vs. −4	0.11	0.02	0 58	0.09	−0 02	0 69
−7 vs −10	−0.36	−0.13	0 35	−0.69	−0 37	0.54
−4 vs −7	0 002	0.03	0 19	−0 27	−0 08	0.98
−1 vs. −4	0 12	0 12	0 53	0 06	0 13	0 73
−6 vs −10	−0.15	−0.44	0 25	−0 59	−0.58	0 27
−2 vs. −6	−0.25	−0.18	0 77	−0 33	−0 12	0 44
−5 vs −10	−0.34	−0.45	0 13	−0 68	−0.58	0 36

Operating performance equals operating earnings before depreciation (Compustat data item A13), and is scaled by total assets (item A6) or net sales (item A12) The sample consists of 1,308 NYSE or AMEX firms that were taken over during 1967–1996 The sample size for OPA varies from 1,308 for year 0 to 958 for year −10, for OPS, it varies from 1,308 for year 0 to 955 for year −10 For each performance measure, a target firm is matched to a control firm by industry, size, and prior performance The *p*-value is for the matched pairs Wilcoxon signed-ranks test

median change in OPA is smaller for the control firms than for the targets, with the results suggesting that control firms underperform their targets. However, one should not make too much of this finding, since the median change in OPS is generally smaller for the targets than for the controls. In addition, all 20 of the *p*-values in the first 10 rows are insignificant.

The rest of the panel shows the change in performance over other intervals relative to the year of acquisition. The findings are consistent with those of the top 10 rows. All but one of the *p*-values is above 0.05, and the significant *p*-value (for change in OPS from −8 to −6) is associated with a greater performance change for the target than for the control.

Panels A and B of Table 4 examine pre-acquisition performance in somewhat different ways. The results in both panels are consistent with the null hypothesis that target firms do not underperform in the years prior to the acquisition. Perhaps this is not surprising because, after all, acquisitions take place for a variety of rea-

sons. Our findings suggest that the disciplining of poorly performing management is not a dominant motive for the average acquisition.

C. Subsamples

In this subsection, we analyze pre-announcement operating performance for various subsamples where takeovers are likely to have a disciplinary motive. Results for the remaining subsamples are also shown for completeness.

1. Mergers vs. Tender Offers

One might expect poor performance prior to tender offers, since subpar performance is likely to precipitate hostile takeovers, which are more likely to be accomplished through tender offers than through mergers. Panel A of Table 5 presents the values of OPA for targets for various years before both mergers and tender offers. This panel corresponds to the left-hand side of Table 4, panel A. (To save space, neither the results for OPS for the years prior to acquisition, corresponding to the right-hand side of Table 4, panel A, nor the results for the change in performance for various pre-acquisition intervals, corresponding to panel B of Table 4, are shown for this and other subsamples. These results are generally quite similar to those presented in Table 5 for all of the subsamples.) In panel A of Table 5, two of the 11 p-values are at or below 0.05, providing some slight evidence of underperformance prior to mergers. However, seven of the 11 p-values for OPS (not shown in the table) are below 0.05 with the performance of the target actually being above that of the target. Taken together, our findings do not imply that targets underperform prior to mergers. All of the 11 p-values for OPA prior to tender offers are above 0.05, results providing no evidence of underperformance. Thus, we can not reject the null hypothesis that targets do not underperform before either mergers or tender offers.

We have examined whether operating performance prior to tender offers is below that of the controls, since our alternative hypothesis is that poor performance is particularly likely to occur prior to tender offers. We do not test whether performance prior to tender offers is significantly worse than the performance prior to mergers, because poor performance may also increase the likelihood of mergers. For the most part, this approach to hypothesis testing will be used throughout the rest of the paper.

2. Friendly vs. Hostile Acquisitions

Morck, Shleifer, and Vishny (MSV) (1988) argue that hostile takeovers (i.e., takeovers that take place despite resistance by target managers) are more likely than friendly takeovers (i.e., takeovers resulting from unresisted bids) to occur for disciplinary reasons. This implies that poor performance is more likely to precede hostile takeovers than friendly takeovers. However, Schwert ((2000), p. 2599) finds that "most deals described as hostile in the press are not distinguishable from friendly deals in economic terms." We classify a takeover as hostile (friendly) if the target management initially opposed (did not oppose) the bid. We have data on managerial resistance for the subperiod from 1970–1996. For this subsample, we are able to classify 296 acquisitions as hostile and 1,228 acquisitions as friendly.

The left-hand side of Table 5, panel B shows the values of OPA prior to unresisted bids and the right-hand side shows corresponding values prior to resisted bids. All p-values in panel B are greater than 0.05, providing no evidence that either unresisting targets or resisting ones underperform their controls.

3. Single vs. Multiple Bidders

Targets where acquirers are able to effect greater improvement are likely to attract more bidders.[4] If improvement of management is an important motive for acquisitions, one would expect more poorly performing targets to attract more bidders. This suggests that prior performance should be worse for targets in multiple bidder contests than for targets in single bidder acquisitions.

Panel C of Table 5 shows pre-takeover operating performance for both single bidder and multiple bidder acquisitions. All 11 of the p-values for the OPA of single bidder targets are above 0.05, suggesting that the targets of single bidder acquisitions do not underperform their controls. The right-hand side of panel C shows the pre-acquisition performance for multiple bidder targets. While the p-value for the OPA of year 0 is 0.03, this is the only p-value out of 11 that is

TABLE 5

Median Operating Performance to Assets of Subsamples of Targets

Panel A. Mergers vs. Tender Offers

	Mergers			Tender Offers		
	Target	Control	p-Value	Target	Control	p-Value
−10	14 47	14 77	0 04	15 85	15 04	0.50
−9	13 93	14 43	0.21	15 42	15 17	0 30
−8	13 79	14 33	0.05	15.58	15 29	0 53
−7	13.99	14.55	0.11	14.90	14 49	0.68
−6	13.94	14.21	0.27	15 09	14 89	0 19
−5	13 94	14 41	0 42	15.37	14 43	0.39
−4	13 97	13 84	0 65	14 96	14 78	0.21
−3	13 85	13 48	0.79	15.35	15.14	0.67
−2	13 63	13.58	0.74	14 72	15.72	0 08
−1	13 78	13 58	0 50	14 61	14 87	0 48
0	13.82	13 56	0 76	13.92	14 44	0 70

Panel B. Unresisted vs Resisted Bids

	Unresisted Bids			Resisted Bids		
	Target	Control	p-Value	Target	Control	p-Value
−10	15.08	14.94	0.14	14.28	14.17	0.98
−9	14 58	14 54	0 71	14 16	14 90	0 74
−8	14 46	14.54	0 33	14.41	14 67	0.32
−7	14.35	14 61	0 32	14.25	14 08	0.60
−6	14 49	14 26	0.77	13 81	14 69	0 35
−5	14 62	14 40	0.72	14 62	14 45	0 31
−4	14 42	13.77	0.41	14 09	15 27	0.33
−3	13.95	13 54	0 51	14.59	15.45	0 20
−2	13.93	13 78	0 97	14.16	15.51	0 26
−1	13 77	13 66	0.76	14.78	15.00	0 30
0	13 80	13 39	0.48	14 02	15.27	0.31

(continued on next page)

[4]Consistent with this idea, Bradley, Desai, and Kim (1988) find that takeover premia are higher in multi-bidder contests than in takeovers with single bidders. However, Fishman (1988), (1989) shows that, under certain conditions, a rational bidder will use a high bid to signal its high valuation, thereby preempting competition from other potential bidders.

TABLE 5 (continued)

Median Operating Performance to Assets of Subsamples of Targets

Panel C Acquisitions with Single vs Multiple Bidders

Year around Ann	Targets: Single Bidder Target	Single Bidder Control	Single Bidder p-Value	Multiple Bidders Target	Multiple Bidders Control	Multiple Bidders p-Value
−10	15 04	15 00	0 14	14 35	13.69	0 93
−9	14.47	14 82	0 32	14 26	14.28	0.40
−8	14 24	14.86	0.11	14 75	13 52	0 74
−7	14.27	14.88	0 12	14.30	13.40	0 58
−6	14 25	14.43	0 78	14.22	13.58	0 93
−5	14 73	14 60	0 90	14.24	13 67	0.70
−4	14 40	13 95	0 49	13.96	14 78	0.44
−3	14.07	13 84	0 91	14 28	14.26	0 76
−2	13 99	13.97	0 96	14 16	15.10	0 15
−1	13.93	13.68	0 77	14 12	14 98	0 10
0	13.97	13 56	0 30	13 60	14 55	0 03

Panel D. Periods of Lenient vs Tight Antitrust Enforcement

Year around Ann	Antitrust Enforcement Periods: Lenient Target	Lenient Control	Lenient p-Value	Tight Target	Tight Control	Tight p-Value
−10	14.28	14 4	0 32	15 38	15.31	0 37
−9	14.3	14 2	0 56	14.45	15.07	0 28
−8	14.78	14 58	0 98	14.16	14 54	0 09
−7	14.93	14 5	0 12	13.6	14.55	0 01
−6	14.97	13 9	0 02	13.95	14.48	0 01
−5	14 91	13.9	0.02	14 5	14 99	0 02
−4	14.01	13 26	0 03	14 46	14 54	0.15
−3	14 01	13 34	0 06	14.2	14.49	0 11
−2	14 0	13.16	0 12	13 99	14 86	0 04
−1	13 26	12 53	0 42	14 4	15 02	0 06
0	12 13	12 1	0 3	14 87	14 87	0 42

Panel E Merger Waves vs Non-Wave Periods

Year around Ann	Acquisitions during: Merger Waves Target	Merger Waves Control	Merger Waves p-Value	Non-Wave Periods Target	Non-Wave Periods Control	Non-Wave Periods p-Value
−10	14 77	14 18	0 40	14 91	15 37	0 01
−9	14 77	14 2	0 19	14.23	15 20	0 09
−8	14 9	14 70	0 46	14 02	14 48	0.03
−7	14.78	14 44	0 08	13 90	14 56	0 00
−6	14 77	13 57	0 00	13 97	14.67	0 00
−5	14 81	13 37	0 00	14 56	15 25	0 01
−4	13 78	12 62	0.02	14 56	15.00	0.11
−3	13.32	12.49	0 09	14 66	14 93	0 14
−2	12 96	12 22	0 19	14.75	15 26	0 06
−1	12.61	12.30	0 76	14 95	15 08	0.30
0	12 07	12 00	0 83	15.32	14.98	0 89

Operating performance equals operating earnings before depreciation (Compustat data item A13). Performance is scaled by total assets (item A6) and shown as a percentage. The sample consists of 1,308 NYSE or AMEX firms that were taken over during 1967–1996 The sample size varies from 1,308 for year 0 to 958 for year −10. For each performance measure, a target firm is matched to a control firm by industry, size, and prior performance. The *p*-value is for the matched pairs Wilcoxon signed-ranks test. Bids that are initially resisted by target managers are classified as resisted bids, all other bids are called unresisted bids Data on managerial resistance is unavailable before 1970, so panel B covers the period 1970–1996. In panel D, the years 1926–1929, 1942–1945, 1964–1967, 1982–1988, and 1994–1996 are classified as periods of lenient antitrust enforcement; all other years during the 1926–1996 period are classified as tight enforcement periods In panel E, the years 1926–1928, 1967–1969, 1981, 1984–1989, and 1993–1996 are classified as merger wave periods; all other years during the 1926–1996 period are classified as non-wave periods

below 0.05. In addition, all of the 11 p-values for OPS (not reported in a table) are above 0.05. Since it is not surprising that one out of 22 p-values is below 0.05, we believe that one should not reject the null hypothesis that the targets in multiple bidder acquisitions do not underperform their controls.

4. Heavily Regulated vs. Less Regulated Industries

Acquisitions in regulated industries typically require regulatory approval. This extra hurdle raises the cost of a takeover, so that acquirers are likely to pursue only the more profitable acquisitions. Since managerial improvement is one motive for takeover, we might expect greater pre-acquisition underperformance for targets in regulated industries than in other industries. Alternatively, managerial discretion may be lower in regulated industries. This implies lower pre-takeover underperformance for targets in regulated industries.

We classify railroads, public utilities, banking, finance, and insurance (two-digit primary SIC codes 40, 49, 60, 61, and 63) as heavily regulated industries. All other industries are classified as less regulated. We find (but do not report in a table) that, for all comparisons, the median value of the target's OPA is never significantly below that of the control, both for firms in heavily regulated industries and for firms in less regulated ones. Thus, we can not reject the null hypothesis that the degree of regulation has no effect on pre-merger performance.

5. Periods of Lenient vs. Tight Antitrust Enforcement

While antitrust laws have governed acquisitions in the U.S. for our entire sample period, the level of enforcement has not been uniform. Tougher antitrust enforcement increases the cost of a takeover, leading acquirers to pursue only the more profitable acquisitions. This argument suggests that target firms' prior performance would be worse during tighter antitrust enforcement periods.

We identify five periods of lenient antitrust enforcement during our sample period.[5] The Coolidge and Hoover administration years of 1926–1929; the WWII years of 1942–1945 when the Roosevelt administration felt that strong enforcement would hamper military production; the Johnson administration years of 1964–1967, the years 1982–1988 when the Reagan administration's free-market orientation led to a reduction in enforcement; and the Clinton administration years 1994–1996. All other years during the 1926–1996 period are classified as tight enforcement periods.

The left-hand side of Table 5, panel D presents the pre-acquisition performance of targets acquired in periods of lenient antitrust enforcement. While three of the 11 p-values here are below 0.05, the median OPA of the targets is above that of the controls for these three years. Thus, we conclude that there is no evidence that targets underperform during periods of lenient enforcement. The right-hand side of the panel presents the performance of targets acquired in periods of tight antitrust enforcement. Four of the 11 p-values associated with OPA are below 0.05, with the targets underperforming the controls in each of the four cases. The magnitude of the underperformance in these four cases is in the range of ½ to

[5]The choice of these periods is based on discussions with George Bittlingmayer.

1 percentage point. Thus, we conclude that there is mild evidence that targets underperform during periods of tight enforcement.

6. Merger Waves vs. Non-Wave Periods

It is well known that mergers occur in waves. Although there is no generally accepted economic theory explaining merger waves, they presumably occur when the benefits of acquisition are high and/or the costs are low. If the benefits are high, including the benefit from removing inefficient management, one might expect greater pre-merger underperformance during these waves. However, if the costs are low, mergers may occur even when management underperforms only slightly. Thus, the effect of merger waves on pre-merger performance is uncertain.

We classify 1926–1928, 1967–1969, 1981, 1984–1989, and 1993–1996 as merger wave periods. All other years during 1926–1996 are classified as non-wave periods. As the left-hand side of Table 5, panel E shows for firms acquired during merger waves, there are no pre-acquisition years where the OPA of the targets is significantly below that of the controls. The right-hand side of panel E shows that for firms acquired outside of these waves, the median OPA of the targets is significantly below that of the controls for a number of years prior to acquisition. The magnitude of the underperformance in these cases is in the range of ½ to ¾ of one percentage point. Thus, the evidence may be viewed as mildly consistent with the conjecture that the costs of acquisitions are lower during merger waves than outside of them.

D. Poor Performance and Deal Characteristics

Section IV.C examined average operating performance over various subsamples of targets. It is also interesting to partition the sample based on prior operating performance and examine whether deal characteristics differ between poorly performing vs. other targets. Table 6 presents the results of this analysis. In panel A of the table, we calculate the abnormal operating performance of a target in the five years prior to takeover as,

$$\text{AOPA}_{-5,-1} = \sum_{t=-5}^{-1} (\text{OPA}_{T,t} - \text{OPA}_{C,t}),$$

where $\text{OPA}_{T,t}$ and $\text{OPA}_{C,t}$ are the operating performances scaled by assets in year t relative to the year of the acquisition announcement for the target and the control firm, respectively. We subdivide our sample of targets into two groups. Targets with negative $\text{AOPA}_{-5,-1}$ are labeled poorly performing (shown in column 1), while the remaining are called other targets (column 2). Out of our sample of targets, 654 were performing poorly before their takeover and 629 were not. The rows show six deal characteristics for each of the two groups.

The first two columns of row 1 show that the proportion of acquisitions that were done via tender offer (rather than via merger) was 0.289 among poorly performing targets and 0.251 among other targets. This difference is statistically insignificant. Column 3 shows that the z-statistic for the difference between the

TABLE 6

Deal Characteristics by Prior Operating Performance of Targets

	Prior Abnormal Operating Performance Based on					
	Panel A. Operating Performance to Assets			*Panel B. Operating Performance to Sales*		
	Proportion among			Proportion among		
Deal Characteristic	Poorly Performing Targets ($n = 654$)	Other Targets ($n = 629$)	z-Stat.	Poorly Performing Targets ($n = 606$)	Other Targets ($n = 682$)	z-Stat
Acquisition via tender offer	0 289	0 251	1.52	0.274	0.264	0.40
Resisted bids	0 222	0 172	2 23*	0 201	0 192	0 43
Multiple bidders	0.230	0 193	1 62	0 228	0 197	1 35
Target in heavily regulated industry	0.060	0 065	−0 41	0 081	0 048	2 38*
Acquired during:						
lenient antitrust enforcement period	0 443	0 528	−3 02**	0 472	0 50	−1.01
merger wave	0 468	0 534	−2 37*	0 493	0 510	−0.61

In panel A, abnormal operating performance of target firm T is measured as $AOPA_{-5,-1} = \sum_{t=-5}^{-1}(OPA_{T,t} - OPA_{C,t})$, where, OPA_T = operating performance to assets for target firm T, OPA_C = OPA for the control firm for firm T, matched by industry, size, and prior performance The period of summation is the years during the interval $(-5, -1)$ that firm T has non-missing OPA data on the Compustat database, where 0 is the year of acquisition announcement. In panel B, abnormal operating performance is measured similarly, except that OPA is replaced by operating performance to sales. The sample consists of 1,288 NYSE/AMEX targets acquired during 1967–1996 The sample size varies slightly across the various rows depending upon data availability.

*,** denote statistical significance at the 5% and 1% levels, respectively, in two-tailed tests

two proportions is 1.52. Row 2 shows that the proportion of bids that were resisted by the target management was 0.222 among poorly performing targets and 0.172 among other targets. This difference is statistically significant at the 5% level in a two-tailed test. Rows 5 and 6 show that poorly performing targets are acquired significantly less often (than other targets) during lenient antitrust enforcement periods or during merger waves. There is no significant difference between the two groups in the proportion of multi-bidder takeovers and in the proportion of targets that are in heavily regulated industries.

In panel B, abnormal operating performance is calculated similarly, except that operating performance is now scaled by sales. The differences in deal characteristics between poorly performing and other targets are generally in the same direction as in panel A and are largely insignificant, except for the proportion of targets that are in a heavily regulated industry. Poorly performing targets are more likely than other targets to be in heavily regulated industries.

Overall, Table 6 provides some evidence that poorly performing targets differ in the way that they are acquired. Their managers are more likely to resist takeover. This is consistent with the idea that these takeovers are disciplinary. Poorly performing targets are also more likely than other targets to be in heavily regulated industries and be acquired during tight antitrust enforcement periods or during non-merger wave periods. Our finding that acquisition of poorly performing firms succeeded in the face of greater barriers suggests that these takeovers were anticipated to be more productive.

V. Pre-Acquisition Stock Return Performance

The previous section investigated the operating performance of target firms prior to acquisition. Because poor operating results are likely to translate into poor stock returns, we now consider the stock return performance prior to acquisition. Section V.A explains our methodology, Section V.B analyzes our entire sample, and Section V.C examines various subsamples.

A. Measurement of Stock Return Performance

Lyon, Barber, and Tsai (LBT) (1999) examine the efficacy of a number of procedures for calculating long-run abnormal stock returns. They find that "two approaches yield well-specified test statistics in random samples. The first was a traditional event study framework and buy-and-hold abnormal returns calculated using carefully constructed reference portfolios. The second approach is based on calculation of mean monthly abnormal returns using calendar time portfolios and a time-series *t*-statistic" (p. 165). However, buy-and-hold abnormal returns perform quite poorly in non-random samples, as evidenced by their Tables IV–IX. In addition, monthly abnormal returns in either a Fama and French-type regression framework (see LBT's Table X) or in value-weighted portfolios of monthly abnormal returns (see panel B of LBT's Table XI) perform poorly. By contrast, their approach using equally-weighted monthly abnormal returns performs quite well in non-random samples, as evidenced by panel A of Table XI. Here, of the nine samples, misspecification is apparent only with a sample of industry clustering. Because of LBT's findings, our analysis is based on equally-weighted portfolios of monthly abnormal returns.

Fama and French (1992), (1993), Lakonishok, Shleifer, and Vishny (1994) and others show that stock returns are negatively related to firm size and positively related to the B/M ratio. Jegadeesh and Titman (1993) conclude that a firm's current stock return is positively related to its returns over the previous six months. Therefore, we calculate abnormal returns after adjusting for these three factors.

For each target firm in our sample, we form a control portfolio in month -121 relative to the month of acquisition announcement as follows. In that month, five quintile portfolios are formed based on firm size (market capitalization). Within each size quintile, five quintile portfolios are formed based on the prior six-month return (R6). Finally, within each of these 25 portfolios, five quintile portfolios are formed based on the B/M ratio. Breakpoints for each of these 125 control portfolios are based on NYSE stocks only, while returns for each portfolio are equal weighted across all NYSE and AMEX firms. Since each target firm must fall within the breakpoints of one of the 125 control portfolios, we match that control portfolio with the target. We then compute the returns on this control portfolio over the next 12 months. The control portfolio for each target firm is revised every 12 months. In forming these control portfolios, we avoid the new listing bias discussed by LBT.[6] The abnormal return for each target firm

[6]The control portfolio only includes firms that were listed in month -121 or the month that the target firm was first listed on CRSP, whichever is later. If a firm in the portfolio was delisted over the next 12 months, we rebalance the weights of the portfolio among the remaining firms from that month onward.

is the difference between the firm's stock return and the return on the appropriate control portfolio.

Cumulative average abnormal returns (CAARs) across all firms in our sample are calculated for various intervals in event time. Statistical significance is assessed using a variant of the calendar portfolio method of Jaffe (1974) and Mandelker (1974), recently referred to as the calendar time abnormal return (CTAR) approach by Lyon, Barber, and Tsai (1999) and Mitchell and Stafford (2000). Our variant of the calendar portfolio method is explained in the Appendix.[7]

B. Results for the Entire Sample

Using the above procedure, we present pre-acquisition stock returns for the entire sample from 1965–1996 in Table 7.[8] The number of firms in the sample varies from month to month, depending on when the stocks were first listed on CRSP. The sample sizes in the table are averages of the sample sizes over the time intervals shown. Panel A shows performance over the announcement period. Target firms experience an average abnormal return of almost 32% over months $(-2, 0)$, where 0 is the month of acquisition announcement. This result is broadly consistent with the existing finance literature.

Long-run pre-acquisition performance is presented in panel B of the table. Column 3 shows CAARs over various intervals from month -100 to month -3. Row 1 stops at month -3 rather than month -1, since the large returns over months $(-2, -1)$ in both our panel A and in previous studies are likely due to the leakage of information about the acquisition. Column 6 shows CAARs calculated from various starting points before the announcement to month -3.

Taken as a whole, the results in panel B provide no evidence of underperformance prior to the acquisition. The absolute values of all t-statistics in columns 4 and 7 are well below two. In addition, all but one of the CAARs in column 6 are actually *positive*, though these CAARs are low in magnitude. For example, the CAAR over months $(-100, -3)$ is barely over 4%, or about 0.5% per year over the approximately eight-year period.[9]

As mentioned above, the abnormal returns in Table 7 are adjusted for firm size, past returns, and book-to-market. We also calculate abnormal returns over the same 1965–1996 time period, adjusting only for size and past returns. These results, which we do not report in a table, are quite similar to those in Table 7. In particular, the t-statistics for all intervals ending at month -3 are insignificant and the CAARs are all economically insignificant.

We do not have data on B/M ratios going back to the beginning of our sample period, 1926. However, for two reasons, we believe that it is appropriate to calculate abnormal returns over our entire 1926–1996 sample period by adjusting

[7] We also computed the t-statistics using the Jaffe-Mandelker approach. The results are similar, so we do not include them in the tables.

[8] Before 1965, the B/M ratios necessary for our analysis could not be computed because Compustat does not have data on book values of equity.

[9] As with the Jaffe (1974) and Mandelker (1974) portfolio approach, a CAAR and its corresponding t-value may be of opposite signs. This occurs because the t-value is assessed after the portfolio return in a given month is standardized by its variance, while no standardization occurs in the calculation of CAAR. See the Appendix for details of the statistical test.

TABLE 7

Size, R6, and B/M-Adjusted Abnormal Returns for Acquisitions: 1965–1996 Subperiod

Panel A Performance over Announcement Period

Months around Ann				
t_1	t_2	CAAR (%)	*t*-Stat	*n*
0	0	25 74	93.12**	1294
−1	0	30 30	73 35**	1306
−2	0	31 84	62 76**	1312

Panel B Long-Run Pre-Acquisition Performance

Months around Ann		Over Period Shown			Up to Month −3		
t_1	t_2	CAAR(%)	*t*-Stat	*n*	CAAR(%)	*t*-Stat	*n*
−12	−3	−0 59	−1 01	1319	−0 59	−1 01	1319
−24	−13	1.58	0 57	1259	0 99	−0 64	1286
−36	−25	1 60	−0.32	1172	2 59	−0 73	1246
−48	−37	1 36	1 27	1098	3 95	−0 34	1207
−60	−49	−0 18	−0 23	1023	3 76	−0 06	1169
−72	−61	−1.19	−1 59	961	2 57	−0 26	1133
−84	−73	2 27	1 62	902	4 85	−0.05	1099
−96	−85	−1 35	−1.74	844	3 50	−0 19	1067
−100	−97	0 55	0 78	809	4 05	0 14	1056

Size, prior six-month return (R6), and B/M-adjusted abnormal stock returns of NYSE/AMEX targets in successful acquisitions via a merger or tender offer completed from 1965–1996 The abnormal return on stock i in month t is computed as $e_{it} = r_{it} - r_{i,t}$ where r_{it} is the return on firm i's stock in month t $r_{i,t}$ is the return on the equal-weighted control portfolio of all NYSE/AMEX stocks that are in the same size (market capitalization) quintile as firm i, that are in the same R6 quintile within that size quintile, and that are in the same B/M quintile within that size and R6 quintile. The quintile cutoffs are formed based only on NYSE firms The control portfolio includes only firms listed on NYSE/AMEX in the month of portfolio formation If a firm in the control portfolio gets delisted over the next 12 months, its weight is redistributed over the remaining firms from that month on. Portfolios are initially formed in month −121 and are revised every 12 months over the next 108 months Month 0 is the month of announcement of the acquisition B/M is obtained from Compustat annual files. Table 7 shows the CAAR, the *t*-statistics based on calendar month portfolios, and the average sample sizes (number of firms, *n*) for each time interval **denotes statistical significance at the 1% level in two-tailed tests.

for size and past returns only. First, as mentioned earlier, the distribution of B/M ratios in Table 3 shows only a small increase in the percentage of targets across quintiles one through five. Second, as discussed in the previous paragraph, abnormal returns over the 1965–1996 period are quite similar whether an adjustment is made for size, B/M, and past returns or only for size and past returns. These results for 1926–1996 are presented in Table 8. Panel A shows performance over the announcement period. Target firms experience an abnormal return of almost 26% over months $(-2, 0)$, a figure somewhat lower than that in Table 4 but still roughly in line with the previous literature.

Long-run pre-acquisition stock return performance is presented in panel B. As with Table 7, the results are consistent with the null hypothesis that pre-acquisition abnormal returns are zero for target firms. All of the *t*-statistics in column 7 are insignificant. In addition, the CAARs are quite low in magnitude. For example, the CAAR from month −100 to month −3 is only −1.93%. While three of the *t*-statistics in column 4 are significantly negative, they relate to performance many years before the merger (years −5, −6, and −8).

Pre-acquisition abnormal returns are insignificantly different from zero for both the recent 1965–1996 period and our entire 1926–1996 period. These results for stock price performance are consistent with those presented earlier for operating performance.

TABLE 8

Size and R6-Adjusted Abnormal Returns for Acquisitions: 1926–1996 Period

Panel A. Performance over Announcement Period

Months around Ann t_1	t_2	CAAR (%)	t-Stat	n
0	0	20.40	94 36**	1987
−1	0	24.51	78.75**	2003
−2	0	25.79	67 98**	2009

Panel B Long-Run Pre-Acquisition Performance

Months around Ann.		Over Period Shown			Up to Month −3		
t_1	t_2	CAAR(%)	t-Stat.	n	CAAR(%)	t-Stat.	n
−12	−3	0 11	−0 04	2010	0 11	−0 04	2010
−24	−13	1.41	0.54	1917	1 52	0.40	1959
−36	−25	0 78	1.34	1793	2.30	0 06	1901
−48	−37	0.49	1.05	1677	2 79	0 18	1842
−60	−49	−1.47	−2.12*	1565	1 32	−0 79	1785
−72	−61	−2.13	−2.29*	1465	−0 81	−1 40	1730
−84	−73	1.18	0 63	1375	0 37	−0 76	1678
−96	−85	−2.27	−2 91**	1300	−1.90	−1.29	1630
−100	−97	−0.02	−1.04	1251	−1 93	−1.20	1614

Size and prior six-month return (R6)-adjusted abnormal stock returns of NYSE/AMEX targets in successful acquisitions via a merger or tender offer completed from 1926–1996 The abnormal return on stock i in month t is computed as $e_{it} = r_{it} - r_{ct}$, where r_{it} is the return on firm i's stock in month t, r_{ct} is the return on the equal-weighted portfolio of all NYSE/AMEX stocks that are in the same size (market capitalization) quintile as firm i and that are in the same R6 quintile within that size quintile The quintile cutoffs are formed based only on NYSE firms The control portfolio includes only firms listed on NYSE/AMEX in the month of portfolio formation. If a firm in the control portfolio gets delisted over the next 12 months, its weight is redistributed over the remaining firms from that month on Portfolios are initially formed in month −121 and are revised every 12 months over the next 108 months Month 0 is the month of announcement of the acquisition Table 8 shows the CAAR, the t-statistics based on calendar month portfolios, and the average sample sizes (number of firms, n) for each time interval *,**denote statistical significance at the 5% and 1% levels, respectively, in two-tailed tests.

C. Subsamples

We now analyze pre-announcement performance for various subsamples of our data.

1. Mergers vs. Tender Offers

As mentioned in Section IV.C.1, one might expect poor performance prior to tender offers. Panel A of Table 9 presents the long-run stock return performance of targets before both mergers and tender offers. To save space, only the CAARs up to month −3 are presented. Prior to mergers, the CAARs are actually positive, though generally quite close to zero. For example, the CAAR from month −100 to −3 is only 0.95%. By contrast, the CAARs prior to tender offers are generally larger and negative, with the CAAR from month −96 to −3 being −11.02%. The t-value here is −1.75, which is significant in a one-tailed test at the 5% level. However, one must be skeptical of this result, since significance occurs only over periods of eight years or more. The efficient operation of the market for corporate control would likely imply a faster response.

As with operating performance, we test whether the CAARs prior to tender offers are significantly below zero, since our alternative hypothesis is that poor performance is particularly likely to occur prior to tender offers. We do not test whether the CAARs prior to tender offers are significantly below the CAARs

prior to mergers, because poor performance may also increase the likelihood of mergers.

2. Friendly vs. Hostile Acquisitions

As discussed in Section IV.C.2, MSV (1988) argue that hostile takeovers are more likely than friendly takeovers to occur for disciplinary reasons. Panel B of Table 9 presents pre-acquisition stock return performance prior to both unresisted and resisted bids. All of the CAARs are insignificantly different from zero prior to unresisted bids. For resisted bids, significance occurs only over an eight-year interval, viz. months $(-96, -3)$. As with the results in the previous table on tender offers, we are skeptical that the market for corporate control works at such a slow pace.

3. Single vs. Multiple Bidders

We argued in Section IV.C.3 that prior performance is likely to be worse for targets in multiple bidder contests than in single bidder acquisitions. Panel C of Table 9 shows pre-takeover performance for both single and multiple bidder takeovers. The CAARs are predominately positive for the single bidder case, providing no evidence of pre-merger underperformance. By contrast, the CAARs are negative in the multiple bidder case. In fact, the t-statistics are all under -2.00 in the last four rows. However, as with tender offers and resisted bids, significance occurs only over long intervals prior to takeover (six years or more).

TABLE 9

Size and R6-Adjusted Abnormal Returns for Subsamples of Targets

Panel A Mergers vs. Tender Offers

Months around Ann.		Mergers			Tender Offers		
t_1	t_2	CAAR(%)	t-Stat	n	CAAR(%)	t-Stat	n
−12	−3	0 67	0 35	1569	−1.92	0 03	440
−24	−3	2 16	0 13	1526	−0.82	0.62	432
−36	−3	3.84	0 18	1475	−3 05	−0.77	425
−48	−3	4 60	0.41	1424	−3 41	−0 73	417
−60	−3	3 12	−0 58	1375	−4.87	−0.68	409
−72	−3	0 95	−1 55	1327	−6.90	−0 63	402
−84	−3	2 92	−0 54	1282	−7.99	−1.13	395
−96	−3	0 92	−0 90	1241	−11.02	−1.75	389
−100	−3	0 95	−0.98	1227	−11.20	−1.79	386

Panel B. Resisted vs. Unresisted Bids

Months around Ann		Resisted Bids			Unresisted Bids		
t_1	t_2	CAAR(%)	t-Stat	n	CAAR(%)	t-Stat	n
−12	−3	1.14	1.20	296	−1.60	−1.59	1228
−24	−3	1 20	0 58	293	−0.80	−1.52	1196
−36	−3	0 09	−0 12	289	1.12	−0 58	1161
−48	−3	2 51	0 73	286	1.51	−0.64	1125
−60	−3	0 43	0 28	282	1.14	−0 18	1089
−72	−3	−3.26	−0 72	279	−0 65	−0 79	1055
−84	−3	−5 11	−1 04	274	1 77	−0 62	1022
−96	−3	−8 83	−2 00*	270	−0 20	−0 74	990
−100	−3	−9 19	−1 81	269	0 19	−0.61	980

(continued on next page)

TABLE 9 (continued)

Size and R6-Adjusted Abnormal Returns for Subsamples of Targets

Panel C Acquisitions with Single vs. Multiple Bidders

Months around Ann		No. of Bidders					
		Single			Multiple		
t_1	t_2	CAAR(%)	*t*-Stat	*n*	CAAR(%)	*t*-Stat	*n*
−12	−3	−0.25	−0.10	1555	−0 46	−0 06	378
−24	−3	1 83	0 36	1517	−0 90	0 09	371
−36	−3	3 28	0 37	1473	−1.99	−0 21	362
−48	−3	3 93	0 16	1428	−3 00	−0.27	353
−60	−3	2 58	−0.82	1383	−5 22	−1 10	345
−72	−3	0 92	−1 07	1339	−9 47	−2.04*	338
−84	−3	2 23	−1 00	1297	−10.07	−2 19*	330
−96	−3	−0 08	−1 34	1258	−11 33	−2 38*	322
−100	−3	0 05	−1 29	1245	−11 65	−2 33*	320

Panel D. Heavily Regulated vs. Less Regulated Industries

Months around Ann		Regulated					
		Heavily			Less		
t_1	t_2	CAAR(%)	*t*-Stat	*n*	CAAR(%)	*t*-Stat	*n*
−12	−3	2 07	1.38	165	−0.07	−0.26	1845
−24	−3	5.41	1.61	162	1 16	0 21	1796
−36	−3	2.25	1.22	158	2 31	0 13	1742
−48	−3	−0 47	−0.26	154	3.10	0 05	1688
−60	−3	−1 93	−0.20	149	1 62	−1 05	1635
−72	−3	−5.26	−0 55	144	−0 40	−1 60	1585
−84	−3	−7 23	−0.69	140	1 07	−0 84	1538
−96	−3	−16 43	−1 16	136	−0.55	−1 14	1493
−100	−3	−17 14	−1 14	135	−0 51	−1.04	1479

Size and prior six-month return (R6)-adjusted abnormal stock returns of NYSE/AMEX targets in successful acquisitions via a merger or tender offer completed during 1926–1996. The abnormal return on stock i in month t is computed as $e_{it} = r_{it} - r_{ct}$, where r_{it} is the return on firm i's stock in month t, r_{ct} is the return on the equal-weighted portfolio of all NYSE/AMEX stocks that are in the same size (market capitalization) quintile as firm i and that are in the same R6 quintile within that size quintile. The quintile cutoffs are formed based only on NYSE firms The control portfolio includes only firms listed on NYSE/AMEX in the month of portfolio formation If a firm in the control portfolio gets delisted over the next 12 months, its weight is redistributed over the remaining firms from that month on Portfolios are initially formed in month −121 and are revised every 12 months over the next 108 months. Month 0 is the month of announcement of the acquisition Table 9 shows the CAAR, the *t*-statistics based on calendar month portfolios, and the average sample sizes (number of firms, *n*) for each time interval Data on managerial resistance is unavailable before 1970, so panel B covers 1970–1996 In panel D, railroads, public utilities, banking, finance, and insurance (two-digit SIC codes 40, 49, 60, 61, and 63) are classified as heavily regulated industries, all other industries are classified as less regulated *denotes statistical significance at the 5% level in two-tailed tests

4. Heavily Regulated vs. Less Regulated Industries

We discussed in Section IV.C.4 why one might expect the pre-acquisition underperformance for targets in regulated industries to differ from that in other industries. The results for pre-acquisition stock return performance for targets in both groups are presented in panel D of Table 9. The underperformance appears to be much greater for regulated than for unregulated firms, in accordance with the hypothesis of greater acquisition costs under regulation. For example, the CAAR from month −100 to −3 is −17.14% for heavily regulated targets and only −0.51% for less regulated ones. However, all *t*-statistics in the table are insignificant, so that one can not reject the null hypothesis that there is no underperformance in either type of industry. This lack of statistical power likely follows from the small sample size for heavily regulated firms.

5. Other Subsamples

We suggested in Section IV.C.5 that firms acquired during periods of lenient antitrust enforcement are particularly likely to underperform. We also suggested in Section IV.C.6 that pre-takeover performance is likely to differ among firms taken over during merger waves and those acquired outside of these waves. However, our evidence on pre-acquisition stock returns does not support either of these conjectures. First, we find (but do not report in a table) that pre-acquisition performance is actually worse in periods of lenient rather than tight enforcement, though the t-statistics are uniformly insignificant for both periods. Thus, we can not reject the null hypothesis that antitrust enforcement has no effect on pre-merger performance. Second, we find (but do not include the relevant table) that pre-merger target performance is insignificantly different from zero for both merger wave and non-wave periods. Thus, we conclude that merger waves have no effect on pre-merger stock return performance.

D. Poor Performance and Deal Characteristics

Section V.C examined average abnormal returns over various subsamples of targets. We next partition the sample based on prior abnormal stock returns and examine deal characteristics for the subsamples of poorly performing vs. other targets in Table 10. For each acquired firm, we calculate $CAR_{-60,-3}$, the cumulative abnormal return, adjusted for size and prior six-month return (R6), over all the months in the interval $(-60, -3)$ relative to the acquisition announcement month with non-missing return observations. We subdivide our target sample into two groups. Targets with negative $CAR_{-60,-3}$ are classified as poorly performing (shown in column 1), while the remaining are called other targets (column 2). The rows present six deal characteristics for each of the two groups.

TABLE 10

Deal Characteristics by Prior Stock Return Performance of Targets

	Proportion among		
Deal Characteristic	Poorly Performing Targets ($n = 1{,}046$)	Other Targets ($n = 1{,}217$)	z-Stat
Acquisition via tender offer	0 245	0 162	4 92**
Resisted bids	0 231	0 192	1 92
Multiple bidders	0 208	0.164	2 63**
Target in heavily regulated industry	0 079	0 08	−0 04
Acquired during.			
lenient antitrust enforcement period	0 496	0 438	2 77**
merger wave	0 497	0 468	1 36

Prior stock return performance is measured as the cumulative abnormal size and R6-adjusted return over months $(-60, -3)$ relative to the acquisition announcement month Abnormal returns are summed over all the months in the interval $(-60, -3)$ that have non-missing return observations for a firm The sample consists of 2263 NYSE/AMEX targets acquired during 1926–1996 The sample sizes vary slightly across the various rows depending upon the availability of data. **denotes statistical significance at the 1% level in two-tailed tests

Table 10 shows that poorly performing firms are more likely than other firms to be acquired via tender offer. The proportion of acquisitions done via tender offer is 0.245 for the first group and 0.162 for the second group. The difference is statistically significant at the 1% level in a two-tailed test. Managers of poorly

performing firms are significantly more likely than other firms to resist a takeover bid. Both of these findings suggest that takeovers of poorly performing firms are more likely to be of a disciplinary nature. Poorly performing firms are also more likely than other firms to generate competition among bidders. This is not surprising because the stocks of these firms are depressed, making them attractive takeover targets. Unlike the results in Table 6, poorly performing firms are more likely than other firms to be acquired during lenient antitrust enforcement periods.

However, as discussed in Section IV.C.1, all of our tests in Tables 4, 5, 7, 8, and 9 compare the abnormal performance of particular subsamples to zero, because our alternative hypothesis is that abnormal performance is particularly likely to occur in certain subsamples. Those tables do not test whether the abnormal performance in one subsample is significantly worse than that of another subsample. The tests in Table 10, as well as those in Table 6, compare deal characteristics in the subsamples of poorly performing vs. other targets, a comparison that does not directly test this alternative hypothesis.

VI. Summary of Subsample Results

We have argued that target underperformance is more likely in subsamples of disciplinary takeovers. Morck, Shleifer, and Vishny (1988) argue that hostile takeovers are more likely than friendly takeovers to occur for disciplinary reasons. We first looked at tender offers because hostile takeovers are frequently made in the form of tender offers. In addition, we examined targets that initially resist a takeover bid. We find no evidence of pre-acquisition operating underperformance either for firms acquired by tender offer or for firms resisting takeover. Stock returns exhibit marginally significant underperformance in both of these samples, but statistical significance for stock returns occurs only for long lead times (five years or more) between the onset of poor performance and disciplinary takeover. This finding is difficult to accept, since efficient operation of the market for corporate control would likely imply a faster response.

We argue that when gains from acquisition (including gains from management improvement) are expected to be bigger, the target is more likely to be pursued by multiple bidders. We find significant underperformance for stock returns, but not for operating performance, prior to multiple bidder acquisitions. As with tender offers and resisting firms, this significance for stock returns occurs primarily for long lead times.

Large gains are also more likely to occur in heavily regulated industries, since acquisitions will only be pursued if the gains exceed the extra costs of receiving regulatory approval. While there is no evidence of pre-acquisition operating underperformance, we find large pre-acquisition stock return underperformance for firms in heavily regulated industries. However, the sample sizes here are quite low and all t-values are insignificant. Similar reasoning suggests that underperformance should be greater during periods of tight antitrust enforcement than during periods of lenient enforcement. While there is some evidence that targets have lower OPA than the controls during periods of tight enforcement, these results are not corroborated for stock returns. While we find some evidence of

pre-acquisition operating underperformance outside of merger waves, this result is not corroborated with stock returns.

The evidence in Tables 6 and 10 does suggest that takeovers of poorly performing firms are more likely to be of a disciplinary nature. However, the approach in these tables does not directly test the alternative hypothesis of our paper that the average abnormal performance in such takeovers is negative.

We conclude that target firms as a group do not underperform prior to takeovers. While there is some evidence of underperformance in selected subsamples, we believe that the null hypothesis of no underperformance should not be rejected for two reasons. First, underperformance using one measure is generally not corroborated using alternate measures. Second, statistical significance generally occurs over implausibly long lead times.

VII. Conclusions

Financial economists seem to believe that takeovers are motivated, at least in part, by the desire to improve poorly performing firms. Nevertheless, previous empirical evidence on this inefficient management hypothesis is mixed. In addition, perhaps because tests of this hypothesis were not the primary focus of prior studies, the most current methodologies were often not used. Thus, a comprehensive empirical examination of the inefficient management hypothesis is in order.

Our paper thoroughly examines this issue in a large scale empirical study and with a number of methodological improvements. First, we examine both operating and stock return performance prior to acquisition. Second, we measure operating performance after adjusting for size, industry, and past performance, as suggested by Barber and Lyon (1996). Third, we calculate long-run abnormal stock returns for the 1965–1996 period, after adjusting for firm size, book-to-market, and momentum. In addition, based on the findings of Lyon, Barber, and Tsai ((1999), Table XI), our analysis uses equally-weighted portfolios of monthly abnormal returns and avoids the new listing bias in forming control portfolios. We compute t-statistics using the calendar time abnormal returns (CTAR) methodology. Fourth, we propose an improvement on the calendar portfolio method of Jaffe (1974) and Mandelker (1974). Fifth, we use a large sample of acquisitions spanning a 71-year time period and examine performance over 100 months before the acquisition announcement. Sixth, we perform a rigorous examination of subsamples where takeovers are more likely to be disciplinary.

Whether analyzing operating or stock returns, we find no evidence of pre-acquisition underperformance for our target sample as a whole. The test statistics are insignificant over virtually all the intervals we examine prior to the acquisition announcement. In addition, pre-acquisition performance is economically small. The median values of OPA and OPS are actually greater for targets than for controls in most of the pre-acquisition years that we examine. For stock returns, the CAAR from month -100 to month -3 for the entire 1926–1996 period is only -1.93%. Our results here are consistent with the previous literature where there is little evidence of pre-acquisition underperformance for the entire sample of targets.

Some subsamples where disciplining target managers is likely a motive for acquisition (e.g., tender offers, hostile takeovers, and multi-bidder contests) show some rather sparse evidence of pre-acquisition stock return underperformance. However, the underperformance in these subsamples generally occurs many years prior to the acquisition event. This is surprising because efficient operation of the market for corporate control would likely imply a faster response. In addition, the results for these subsamples are not corroborated for operating performance. While we find mild evidence of operating underperformance during periods of tight antitrust enforcement and periods outside of merger waves, we do not find similar results for stock returns. Because both the evidence of underperformance is so sparse and the lag time between poor performance and acquisition is generally so long, we conclude that the conventional view that targets perform poorly is not supported by the data.

How can one reconcile this finding with the idea (supported, e.g., by the evidence in Karpoff and Malatesta (1989) and Karpoff and Rice (1989)) that the takeover market helps in disciplining managers? There are at least three possibilities. First, takeovers are obviously done for a variety of reasons. Our results suggest that correction of poor firm performance is not a predominant motive for takeovers. Nevertheless, our results are not inconsistent with the idea that *some* takeovers are carried out to remove poorly performing managers. These acquisitions may make up a small fraction of all takeovers, as well as of the specific subsamples that we examine.

Second, our findings relate only to takeovers that actually take place, not to the much larger set of takeover threats or attempted takeovers. It is possible that the threat of a takeover helps in disciplining managers, but a takeover is actually carried out only when there are also other compelling reasons to do so. Third, external control mechanisms (such as the threat of a takeover) may facilitate internal mechanisms (such as boards) in disciplining bad managers. This notion is consistent with the evidence in Denis and Denis (1995) and Agrawal and Knoeber (1996). The evidence in our paper does not contradict this idea. We leave a complete resolution of this issue to future research.

Appendix: Test for Statistical Significance

Our method for assessing statistical significance is a slight variation on the portfolio approach of Jaffe (1974) and Mandelker (1974). Our goal is to determine the significance of abnormal returns across target firms over the period from t_1 to t_2 in event time. Month 0 is the month of acquisition completion. Both t_1 and t_2 are negative numbers, since we are examining pre-acquisition performance.

A strategy of buying every target security at month t_1 and selling it at month t_2 in event time yields a portfolio where the specific securities in the portfolio vary as one moves through calendar time. We define $\bar{R}_\tau$ to be the average (equally-weighted) return across all securities in this portfolio over calendar month τ. We measure the standard deviation of the return on this portfolio for month τ, σ_τ, using data from the 20 months immediately prior to month τ. We next calculate a weighted average of the $\bar{R}_\tau$s, which represents a sort of average return across the entire calendar time period of our sample, 1926–1996.

The solution to the following Lagrangian yields the most efficient weighted average,[10]

$$L = \text{Min} \sum_{\tau=1}^{T} X_\tau^2 \sigma_\tau^2 - 2\lambda \left(\sum_{\tau=1}^{T} X_\tau - 1 \right),$$

where X_τ represents the weight applied to the average return over calendar month τ. The first term is the variance of our weighted average under the assumption that returns are serially uncorrelated.

The first-order condition is

$$\frac{\partial L}{\partial X_\tau} = X_\tau \sigma_\tau^2 - \lambda = 0,$$

which is achieved when

$$X_\tau = \frac{\lambda}{\sigma_\tau^2}. \tag{1}$$

Thus, we weight (or standardize) each $\bar{R}_\tau$ by dividing it by the estimated variance of that average return, σ_τ^2. This approach is identical to the portfolio approach of Jaffe (1974) and Mandelker (1974) except that these authors divided by the standard deviation of $\bar{R}_\tau, \sigma_\tau$.

The appropriate t-value under our approach is

$$\frac{\sum_{\tau=1}^{T} \bar{R}_\tau \cdot \frac{1}{\sigma_\tau^2}}{\left(\sum_{\tau=1}^{T} \frac{1}{\sigma_\tau^2} \right)^{1/2}}.$$

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[10] T will be less than 852, the number of calendar months from January 1926–December 1996, if there are some calendar months where no securities enter the portfolio.

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