Wealth Destruction on a Massive Scale?
A Study of Acquiring-Firm Returns
in the Recent Merger Wave

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ABSTRACT

Acquiring-firm shareholders lost 12 cents around acquisition announcements per dollar spent on acquisitions for a total loss of $240 billion from 1998 through 2001, whereas they lost $7 billion in all of the 1980s, or 1.6 cents per dollar spent. The 1998 to 2001 aggregate dollar loss of acquiring-firm shareholders is so large because of a small number of acquisitions with negative synergy gains by firms with extremely high valuations. Without these acquisitions, the wealth of acquiring-firm shareholders would have increased. Firms that make these acquisitions with large dollar losses perform poorly afterward.

IN THIS PAPER, WE EXAMINE THE EXPERIENCE of acquiring-firm shareholders in the recent merger wave and compare it to their experience in the merger wave of the 1980s. Such an investigation is important because the recent merger wave is the largest by far in American history. It is associated with higher stock valuations, greater use of equity as a form of payment for transactions, and more takeover defenses in place than the merger wave of the 1980s.[1] Though these differences suggest poorer returns for acquiring-firm shareholders, there are also several reasons why the acquiring-firm shareholders may have better returns. With the growth of options as a form of managerial compensation in the 1990s, managerial wealth is more closely tied to stock prices, presumably making management more conscious of the impact of acquisitions on the stock

[1] Comment and Schwert (1995) show that 87% of exchange-listed firms are covered by poison pill rights issues, control share laws, and business combination laws in the early 1990s. They conclude that "poison pills and control share laws are reliably associated with higher takeover premiums" (p. 3).

price and more likely to make acquisitions that increase shareholder wealth
(see Datta, Iskandar-Datta, and Raman (2001) for evidence). Further, it is pos-
sible that acquisitions in the recent merger wave were undertaken to exploit
more valuable operating synergies and that some of these greater gains were
captured by acquiring-firm shareholders.

We find that from 1991 to 2001 (the 1990s), acquiring firms' shareholders lost
an aggregate $216 billion, or more than 50 times the $4 billion they lost from
1980 to 1990 (the 1980s), yet firms spent just 6 times as much on acquisitions in
the later period. We measure the dollar loss of acquiring-firm shareholders as
the change in the acquiring firm's capitalization over the 3 days surrounding
economically significant acquisition announcements (defined as transactions
exceeding 1% of the market value of the assets of the acquirer), which we call
the acquisition dollar return, and sum these losses to get the aggregate loss.
Figure 1 shows the yearly aggregate losses to acquiring-firm shareholders for
our sample of acquisitions of public firms, private firms, and subsidiaries from
1980 through 2001. The figure shows that the lion's share of the acquiring-firm
shareholder losses took place from 1998 through 2001. After losing $4 billion in
the 1980s, acquiring-firm shareholders gained $24 billion from 1991 through
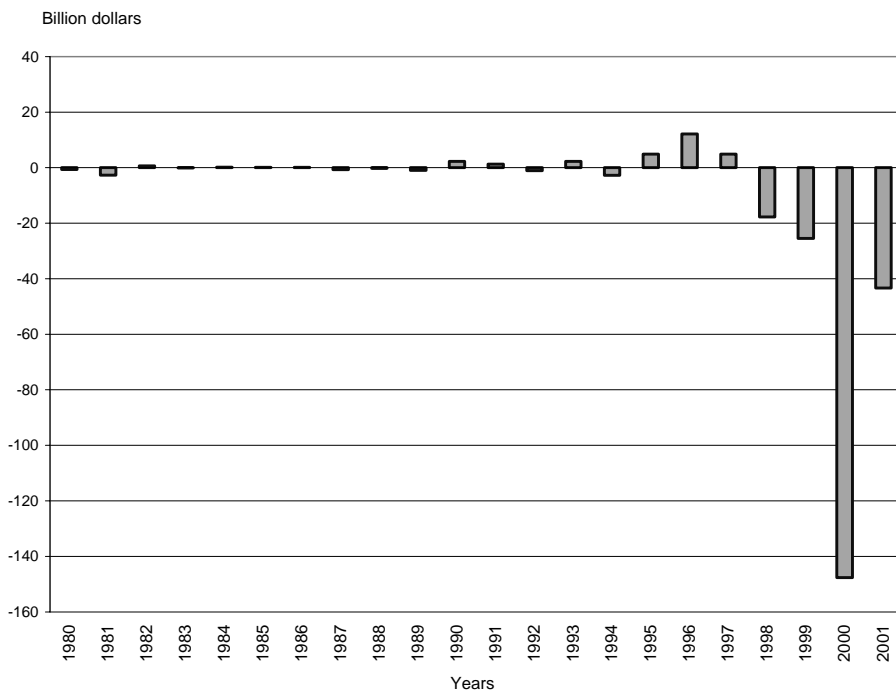
Figure 1. Yearly aggregate dollar return of acquiring-firm shareholders (1980 to 2001).
Data are from the SDC Mergers and Acquisitions Database. The graph shows the aggregate dollar
return associated with acquisition announcements for each sample year. The aggregate dollar
return is defined as the sum of the product of the abnormal return of each announcement multiplied
by the equity capitalization of the acquirer.

1997 before losing $240 billion from 1998 through 2001. The large losses from 1998 through 2001 cannot be explained by a wealth transfer from acquiring-firm shareholders to acquired-firm shareholders. We find that the aggregate combined value of acquiring and acquired firms falls by a total of $134 billion for the sample of public firm acquisition announcements from 1998 through 2001.

To understand why acquiring-firm shareholders lost so much during the recent merger wave, we have to investigate why they lost so much at the end of the 1990s. The large aggregate dollar loss we document cannot be explained by a low mean abnormal return for acquisition announcements because even though the mean abnormal return is lower in the late 1990s, it is still positive, so that the average acquisition creates wealth for acquiring-firm shareholders. Instead, this large loss is caused by an increase in the size of the dollar losses of acquisitions with the worst dollar returns that is not offset by an equivalent increase in the size of the dollar gains of acquisitions with the best dollar returns. Statistically, the distribution of dollar returns in the late 1990s exhibits substantially more skewness compared to earlier years. At the same time, the amount spent on the acquisitions with the worst dollar returns increases much more than the amount spent on other acquisitions, so acquisitions with the worst dollar returns correspond to a larger fraction of the amount spent than before. A good illustration is that the fraction of the total amount spent on acquisitions accounted for by the acquisitions in the first percentile of the distribution of dollar returns increases from 13.68% for 1980 to 1997 to 32.74% for 1998 to 2001.

Since the large loss of acquiring-firm shareholders is the result of a small number of acquisition announcements with extremely large losses, we investigate the bottom tail of the distribution of dollar returns to understand why the 1998 to 2001 acquiring-firm dollar losses differ from those in the 1980s and in the 1990s prior to 1998. Although the definition of the bottom tail of a statistical distribution is somewhat arbitrary, we choose to focus on acquisitions with shareholder wealth losses in excess of $1 billion, which we call the large loss deals. Out of the 4,136 acquisitions from 1998 through 2001, 87 are large loss deals. The aggregate wealth loss associated with these acquisitions is $397 billion, while all other acquisitions made a total gain of $157 billion. The large loss deals represent only 2.1% of the 1998 to 2001 acquisitions, but they account for 43.4% of the money spent on acquisitions.

Why is it then that the period from 1998 through 2001 is associated with this clustering of acquisition announcements with extremely large losses for acquiring-firm shareholders? The dollar return associated with an acquisition announcement reflects both the net present value for the acquiring-firm shareholders of the acquisition itself as well as what the acquisition reveals about the acquiring firm. Firm and deal characteristics found to be important in explaining these two contributions to acquirer announcement returns explain only part of the abnormal return associated with our large loss deals. Large loss deals have a negative average abnormal return of −10.6%. Using regression models estimated over the period 1980 to

1997, on average we can explain at most one-fifth of that negative abnormal return.

Since Dong et al. (2003) show that firms with high valuation ratios (which they call overvalued) have poor abnormal returns, our result could be an outcome of a period with many highly valued firms. The firms that make the large loss deals have indeed high q's and low book-to-market (BM) ratios among all firms making acquisitions. The acquisition announcement abnormal returns of these firms are positive on average in the years immediately before they make their large loss deal, even though they are also highly valued when they make these previous announcements. However, the acquisitions made by firms after they announce their large loss deals are not associated with increases in shareholder wealth. The evidence is therefore consistent with the hypothesis advanced by Jensen (2003) that high valuations increase managerial discretion, making it possible for managers to make poor acquisitions when they have run out of good ones. The extremely poor returns of firms announcing the large loss deals and the size of the losses in comparison to the consideration paid suggest also, however, that investors learn from the announcements that the stand-alone value of the announcing firms is not as high as they thought.

The paper proceeds as follows. In Section I, we introduce our sample, document aggregate shareholder losses, and demonstrate how the distribution of acquiring-firm shareholder losses evolves through time. In Section II, we show that the shareholder losses between 1998 and 2001 can be explained by the large loss deals, and we establish in Section III that large loss deals are statistically and economically significant. In Section IV, firm and deal characteristics are investigated to see if they can explain the large loss deals. We show in Section V that the firms that make large loss deals perform very poorly afterwards. We conclude in Section VI.

I. A Comparison of Dollar and Percentage Acquisition Returns in the Recent Merger Wave to the 1980s

To evaluate the performance of acquisitions for acquiring-firm shareholders, we focus on acquisitions that are material to the acquirer. We investigate samples of acquisitions constructed from the Securities Data Company's (SDC) U.S. Mergers and Acquisitions Database where the deal value corresponds to 10%, 5%, and 1% of the market value of the assets of the acquirer (defined as the book value of assets minus the book value of equity plus the market value of equity). We report results for the 1% threshold but our conclusions hold for the more restrictive samples. In addition, the sample meets the following criteria:

1. The announcement date is in the 1980 to 2001 period;
2. The acquirer controls less than 50% of the shares of the target at the announcement date and obtains 100% of the target shares if the target is a public or private firm;
3. The deal value is equal to or greater than $1 million;

4. The target is a U.S. public firm, private firm, subsidiary, division, or branch;[2]

5. Data on the acquirer is available from CRSP and COMPUSTAT; and

6. The deal is successfully completed in less than 1,000 days.

Table I shows the number of acquisitions and the total consideration spent on acquisitions for each year in our sample. A comparison of the amount spent on acquisitions in the 1990s to the amount spent in the 1980s shows how extraordinary the volume of acquisitions of the late 1990s is: from 1998 through 2001, $1,992 billion is spent on acquisitions, while less than half of that amount is spent from 1991 through 1997, and roughly a quarter of that amount is spent from 1980 through 1990. Further, there are roughly twice as many acquisitions from 1998 through 2001 than through all the 1980s.[3]

Though the literature has focused on abnormal percentage returns, these returns do not capture the change in wealth of acquiring-firm shareholders as noted by Malatesta (1983). For acquiring-firm shareholders, the same percentage return changes their wealth more if the acquirer is a large firm than if it is a small firm. Dollar returns capture the change in wealth of acquiring-firm shareholders. The sum of the dollar returns divided by the sum of the equity capitalization of the acquiring firms corresponds to a value-weighted return. We add up the dollar returns across all acquisitions each year and report the results in Table I. Throughout the paper, we report dollar returns in 2001 dollars (obtained using the U.S. Gross Domestic Product Deflator). It is immediately clear that the years 1998 through 2001 are dramatically different from the years 1980 through 1997. From 1980 through 1997, acquiring-firm shareholders lose $32 billion when acquisitions are announced, while acquiring-firm shareholders lose almost eight times more from 1998 through 2001. The second worst four-year period for acquiring-firm shareholders is from 1980 to 1983, where acquiring-firm shareholders lost $5.097 billion, or slightly more than 2% of the losses from 1998 to 2001.

Do acquiring-firm shareholders lose so much because there are more acquisitions, because the typical acquisition has a worse return, or because of some other reason? To consider the hypothesis that shareholders lose more because there are more acquisitions or because firms make larger acquisitions, we can compute the average dollar loss per acquisition and the average loss per dollar spent on acquisitions. Both numbers increase dramatically from the 1980s to the 1990s, so the increase in the number or dollars spent on acquisitions cannot explain mechanically why shareholders lose so much in the 1990s. From 1980 through 1990, the average dollar loss per acquisition is $1.945 million. From

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[2] In the following, we use subsidiary acquisition to designate the acquisition of a subsidiary, a division, or a branch.

[3] SDC uses banks, SEC filings, and newswires to get its information. SDC personnel tell us that banks provide more information now than they did early in the existence of the database. This raises the concern that some acquisitions might be missing early on. However, this does not seem to be an important concern given our size requirement and given the fact that SDC has added transactions over time as it was told that transactions were missing.

Table I

Full Sample Distribution of Aggregate Transaction Values, Dollar Returns, and Percentage Returns Sorted by Announcement Year

The Bidder columns represent the sample of successful acquisitions by publicly listed U.S. acquirers from the SDC Merger and Acquisition Database of U.S. targets that are private firms, public firms, or subsidiaries. The Synergy columns only represent acquisitions where target stock price data are available. Bidder N lists the number of observations. Aggregate Transaction Value (in 2001 million dollars) is the total value of consideration paid by the acquirer, excluding fees and expenses. The Aggregate Dollar Return (in 2001 million dollars) is the sum of the acquisition dollar returns (change in market capitalization from day -2 to day $+1$) divided by the sum of the market capitalizations of acquiring firms two days before the acquisition announcements. $CAR_{(-1,+1)}$ denotes the 3-day cumulative abnormal return (in percent) measured using the market model. For synergy, the Abnormal Return Gain (in 2001 million dollars) is the average cumulative abnormal return over the $(-1,+1)$ event window for the value-weighted portfolio of the target and the bidder. The weights for the bidder and the target are based on the market value of equity 2 days prior to the announcement. The target weight adjusts for the percentage of target shares held by the acquirer prior to the announcement of the deal. Abnormal returns are defined as market model residuals, where the parameters are estimated over the $(-205,-6)$ event window relative to the announcement day. The abnormal dollar synergy gain is defined as the abnormal return synergy gain times the sum of the market value of equity for the bidder and the target in million dollars, adjusted for the percentage of target shares held by the acquirer prior to the announcement of the deal. The Aggregate Dollar Gain is the sum of the synergy gains over all acquisitions for which target stock returns are available. N is the number of synergy observations.

	Bidder				Synergy		
Year	N	Aggregate Transaction Value	Aggregate Dollar Return	$CAR_{(-1,+1)}$	Abnormal Return Gain	Aggregate Dollar Gain	N
1980	22	5,461	−1,292	0.0063	0.0099	−662	12
1981	113	33,172	−4,781	−0.0089	0.0025	−153	35
1982	149	29,851	1,128	0.0086	0.0407	1,014	39
1983	214	31,587	−152	0.0036	0.0007	−939	32
1984	281	46,925	324	0.0100	0.0354	4,310	48
1985	157	69,116	221	−0.0043	0.0256	3,947	57
1986	245	62,029	188	0.0124	0.0251	1,864	45
1987	216	52,364	−1,028	0.0108	0.0286	2,977	55
1988	225	66,762	−399	0.0039	0.0276	−492	53
1989	304	52,808	−1,258	0.0063	0.0212	926	39
1990	256	32,530	2,806	0.0095	0.0252	−1,194	33
1991	304	32,875	1,539	0.0279	0.0235	2,329	35
1992	475	41,278	−1,295	0.0186	0.0102	−996	37
1993	633	71,178	2,627	0.0182	0.0167	364	65
1994	804	110,213	−3,189	0.0153	0.0097	4,233	110
1995	896	164,857	5,439	0.0126	0.0140	10,236	151
1996	1,076	214,611	13,305	0.0157	0.0270	18,322	162
1997	1,517	303,720	5,211	0.0136	0.0166	9,021	230
1998	1,508	560,497	−18,829	0.0094	0.0058	−284	223
1999	1,115	632,016	−26,616	0.0086	0.0112	−25,893	214
2000	885	549,011	−151,127	0.0036	−0.0054	−78,652	161
2001	628	250,321	−43,382	0.0026	−0.0055	−28,843	131
1980–1990	2,182	482,604	−4,244	0.0064	0.0241	11,599	448
1991–2001	9,841	2,930,576	−216,316	0.0120	0.0104	−90,163	1,519
1998–2001	4,136	1,991,845	−239,954	0.0069	0.0029	−133,672	729
1980–2001	12,023	3,413,180	−220,560	0.0110	0.0135	−78,564	1,967

1991 through 2001, the average dollar loss is $21.981 million, which is over 10 times more. The dollar loss per $100 spent on acquisitions is $0.88 cents from 1980 through 1990 and $7.38 from 1991 through 2001.

To investigate whether shareholders lost so much because of worse abnormal returns, we estimate the abnormal returns associated with acquisitions. Table I reports the average abnormal return ($CAR_{-1,+1}$) for each year. To estimate abnormal returns, we use standard event study methods (see Brown and Warner (1985)) and compute market model abnormal returns using the CRSP equally weighted index returns. We also calculate abnormal returns using the value-weighted CRSP market return in the estimation of the market model and using net-of-market returns. Our results are not sensitive to these alternate definitions of abnormal returns. The parameters for the market model are estimated over the $(-205, -6)$ day interval, and the p-values are obtained using the time-series and cross-sectional variation of abnormal returns. The equally weighted abnormal return for acquiring-firm shareholders is positive every year except for 2 out of 22. This contrasts sharply with the aggregate dollar return, which is negative for 12 years out of 22. Further, the average cumulative abnormal return is higher in the second half of our sample than in the first half. It is true that average cumulative abnormal returns are lower from 1998 through 2001, but their average is still positive and only trivially smaller than the average across all years.[4] Perhaps the most striking evidence that equally weighted average abnormal returns are not helpful in understanding the change in aggregate wealth associated with acquisition announcements is the following. From 1998 through 2001, the average abnormal return across all acquisitions is 0.69% and shareholders lose $240 billion; from 1987 through 1990, which also includes the peak of a merger wave, the average abnormal return across all acquisitions is 0.76% and shareholders gain $121 million.

If an acquisition involves synergy gains, the loss in value for the acquiring firm is more than offset by the gain for the shareholders of the acquired firm. Bradley, Desai, and Kim (1988) show that such an outcome is typical for their sample of takeovers. We measure the impact of the acquisition announcement on the combined value of the acquiring firm and of the acquired firm in percent returns, the abnormal return synergy gain, and in dollars, the abnormal dollar synergy gain, following the method of Bradley, Desai, and Kim.

Table I shows the average return synergy gain and the sum of the abnormal dollar synergy gains for each year.[5] The yearly sum of the abnormal dollar synergy gains exhibits the same pattern as the aggregate dollar return for acquiring-firm shareholders. In the 1980s, the aggregate abnormal dollar synergy gain is $12 billion. However, from 1991 through 2001, the aggregate dollar gain is a loss of $90 billion. All of that loss and more takes place from 1998 through 2001. Simply stated, in the 1980s the target-firm shareholder dollar

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[4] Harford (2003) examines industry merger waves. In his paper, abnormal returns are low at the end of such waves, but his sample has only public firm acquisitions.

[5] Note that the aggregate dollar synergy gain cannot be compared to the aggregate dollar bidder return because the aggregate dollar bidder return includes the dollar returns associated with acquisitions of private firms and subsidiaries.

gains exceed the dollar losses of bidding-firm shareholders, but in the 1990s the target-firm shareholders earn less than the acquiring-firm shareholders lose when gains and losses are measured in dollars.

II. Where Do the Large Aggregate Dollar Losses from 1998 through 2001 Come From?

Since dollar losses are small in the 1980s compared to 1998 to 2001 but the average abnormal returns do not change much, the statistical explanation for the large losses of acquiring-firm shareholders must be that relatively few acquisitions were associated with extremely large dollar losses.

Figure 2 shows a box plot that illustrates how the distribution of dollar returns evolves through time. From 1998 through 2001, there are more acquisition announcements with extremely large dollar losses and gains than any other time. This corresponds to an increase in the volatility of dollar returns. Strikingly, the yearly volatility of dollar returns normalized by the consideration paid
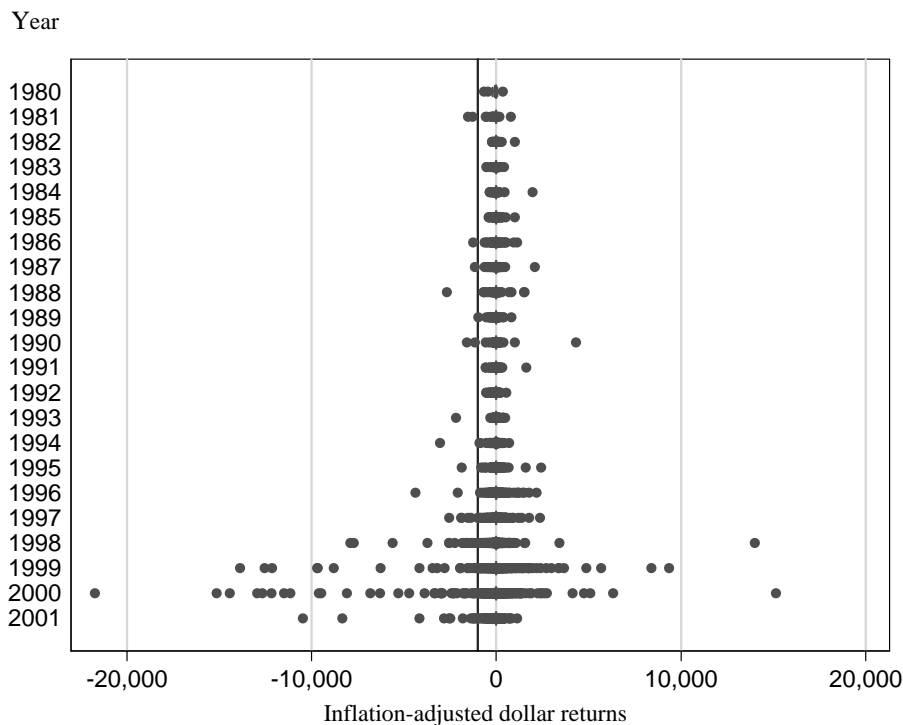
Figure 2. Box plot of the dollar return of acquiring-firm shareholders (1980 to 2001). Data are from the SDC Mergers and Acquisitions Database. The graph shows the box plot of the inflation adjusted dollar returns (in 2001 million dollars) associated with acquisition announcements by year. These returns are calculated by subtracting the market value of publicly traded equity at the close of event day +1 minus the market value on the close of event day −2. The solid line represents a billion dollar returns loss so the large loss deals are to the left of the line.

also increases dramatically. Compared to the 1980s, that volatility more than triples. More importantly, the increase in the frequency and magnitude of large dollar loss acquisitions dwarfs the increase in large dollar gain acquisitions. In statistical terms, the negative skewness in the distribution of dollar returns increases sharply. This can be seen in three ways. First, we simply compute skewness for the two subperiods. The skewness coefficient is -1.76 for 1980 to 1997 and -6.99 for 1998 to 2001, so skewness increases by more than three times. Second, we compute the dollar losses corresponding to the observations with dollar losses in the 5th and 95th percentiles of the distribution of dollar returns and normalize by the aggregate value of all transactions. The aggregate losses for the 5th and 95th percentiles for 1980 to 1997 are, respectively, -6% and 7%, so the tails of the distribution are almost symmetric. In contrast, for the second subperiod, the aggregate losses for the 5th and 95th percentiles are -19% and 13%, respectively, so the tails of the distribution are no longer symmetric. Third, in Figure 3, diagnostic plots show that the distribution of dollar returns in 1998 to 2001 departs from a symmetric distribution more than the distribution of dollar returns in 1980 to 1997.

As Figure 2 shows, the large aggregate loss made by acquiring-firm shareholders is due to an increase in the size of the large dollar losses in the left tail of the distribution of dollar acquisition returns. To understand this aggregate loss, we need to understand why some acquisition announcements have such extremely large dollar shareholder wealth losses from 1998 through 2001. We therefore consider those acquisitions where the dollar loss exceeds $1 billion in 2001 dollars and call them large loss deals. Out of 4,136 acquisition announcements, there are 87 in which acquiring-firm shareholders lose more than $1 billion from 1998 to 2001. The total loss for acquiring-firm shareholders from these announcements is $397 billion. If we exclude these 87 acquisitions, shareholders of acquiring firms gain $157 billion around acquisition announcements from 1998 through 2001. In other words, a very small number of acquisition announcements explain why acquisition announcements are associated with an extremely large loss of acquiring-firm shareholder wealth.

These acquisitions have extremely large dollar losses for the acquiring-firm shareholders compared to the consideration paid. On average, shareholders lose $2.31 per dollar spent on the acquisition in large loss deals from 1998 through 2001. The median loss is $0.73 per dollar spent. Losses this large are unlikely to be explained by the acquisition alone. With a loss of more than $1 per dollar spent on an acquisition due to the acquisition only, acquiring-firm shareholders would have been better off if management had burned the cash or shares used to pay for the acquisition. Therefore, it is highly likely that part of the loss is attributable to a reassessment of the future cash flows of the acquirer as a stand-alone firm. In the literature, such reassessment is often attributed to firms signaling a lack of internal growth opportunities (McCardle and Viswanathan (1994), Jovanovic and Braguinsky (2002)). Another source of reassessment emphasized in the literature is that firms that pay with equity signal that their equity is overpriced (Travlos (1987)). Additional information conveyed by acquisitions could be that

Panel A. Years 1980 to 1997

Panel B. Years 1998 to 2001
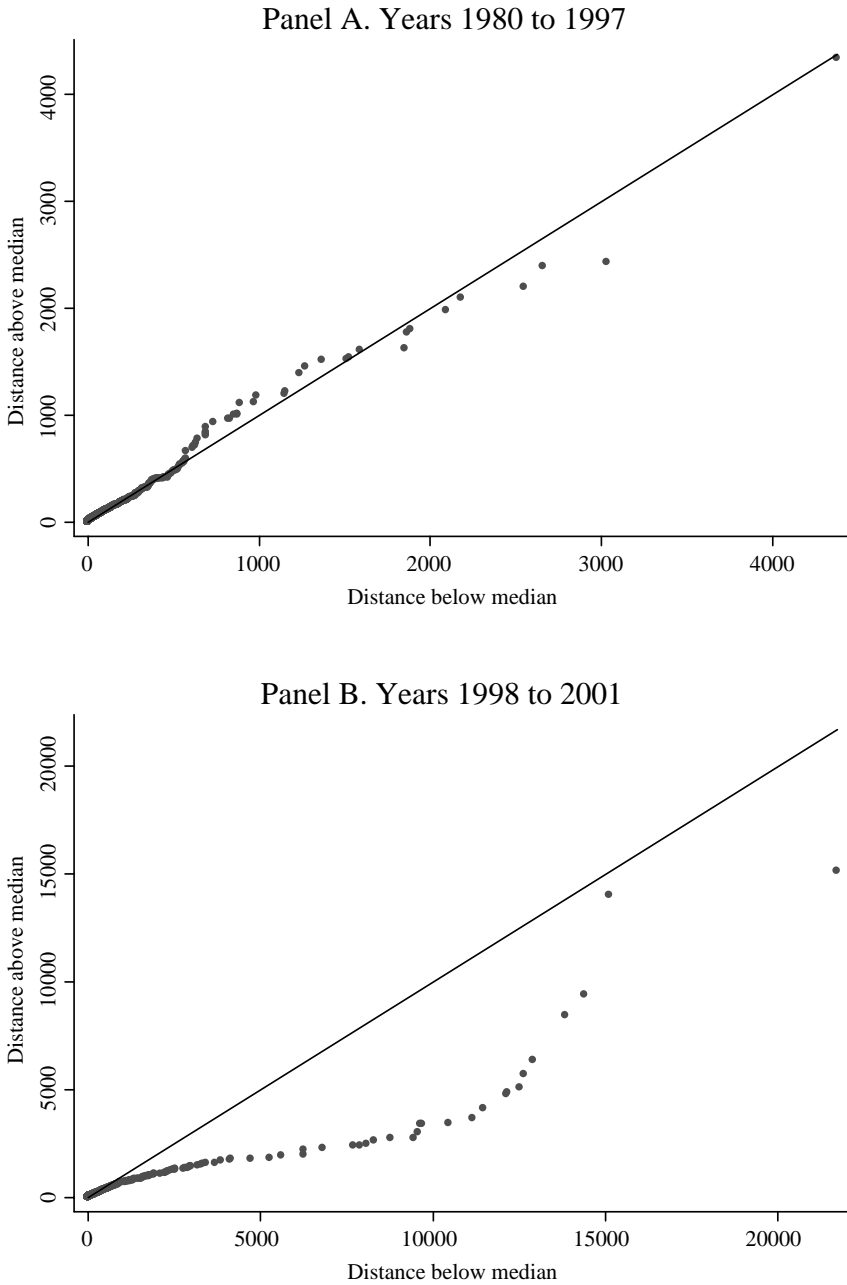
Figure 3. Symmetry plots. Shown here are dollar return symmetry plots showing each value of dollar return for a period plotted against the 45° reference line ($y = x$). Under perfect symmetry, each point would lie along the reference line. The more points above (below) the reference line, the more the distribution is skewed to the right (left).

Table II
Large Loss Deals Sample Distribution Sorted by Announcement Year

Large loss deals are acquisitions with a dollar return in 2001 dollars corresponding to a loss of at least $1 billion selected from the sample of successful acquisitions by publicly listed U.S. acquirers from the SDC Merger and Acquisition Database of U.S. targets that are private firms, public firm, or subsidiaries. N is the number of observations. Aggregate Transaction Value (in 2001 million dollars) is the total value of consideration paid by the acquirer, excluding fees and expenses. The Aggregate Dollar Return (in 2001 million dollars) is the sum of the acquisition dollar returns (change in market capitalization from day −2 to day +1) divided by the sum of the market capitalizations of acquiring firms two days before the acquisition announcements.

Announcement Year	N	Aggregate Transaction Value	Aggregate Dollar Return
1980	0	0	0
1981	2	17,000	−2,782
1982	0	0	0
1983	0	0	0
1984	0	0	0
1985	0	0	0
1986	1	617	−1,237
1987	1	219	−1,152
1988	1	6,957	−2,659
1989	0	0	0
1990	2	9,316	−2,748
1991	0	0	0
1992	0	0	0
1993	1	7,243	−2,180
1994	1	4,559	−3,034
1995	1	3,640	−1,866
1996	2	18,258	−6,468
1997	5	26,202	−9,184
1998	17	216,792	−46,912
1999	19	290,565	−98,765
2000	38	254,361	−211,250
2001	13	102,986	−39,661
All	104	958,715	−429,897

the acquisition surprised the markets by revealing that management is overcome by hubris, the firm's strategy of growth through acquisitions has reached its limits, or the firm's governance is such that management can make large mistakes without being stopped by the board.

Acquisition announcements with shareholder losses in excess of $1 billion are unusual, as seen in Table II, which presents the distribution of these announcements over the sample period. Almost all large loss deals take place in the period from 1998 to 2001. If we define large gain deals to be those with a shareholder gain in excess of $1 billion, such deals are also unusual. There are more large gain deals before 1998 than there are large loss deals (23 vs. 17). However, from 1998 to 2001, the number of large gain deals is only 64% of the number of large loss deals. Conditional on an acquisition having a dollar return

in excess of $1 billion in absolute value, the expected loss is about 50% larger than the expected gain. If we add up all dollar returns from 1998 to 2001 that exceed $1 billion in absolute value, the total is −$236 billion, which is about equal to the total aggregate loss made by acquiring-firm shareholders.

Because the large loss deals are clustered in 1998 to 2001, the distribution of large loss deals differs sharply from the distribution of the whole sample of acquisitions. Though approximately 34% of the mergers (4,136 out of 12,023) occur in 1998 to 2001, about 84% of the large loss deals (87 out of 104) occur in the same period. In comparison, 71% of the large gain deals take place in 1998 to 2001. The four-year period from 1998 to 2001 represents 58% of the total amount spent on acquisitions for the entire sample period. However, 90% of the amount spent on large loss deals is spent during that four-year period. In contrast, only 62% of the amount spent on large gain deals is spent during the same four-year period. From 1980 through 1997, consideration spent on large loss deals represents 6.61% of the consideration spent on acquisitions. From 1998 through 2001, 43.41% of the amount spent on acquisitions corresponds to large loss deals. In comparison, the large gain deals are much less important since the aggregate amount spent on large gain deals is about one-sixth of the aggregate amount spent on large loss deals.

III. The Statistical and Economic Significance of the Large Loss Deals

In this section, we establish that the losses associated with the 87 large loss deals from 1998 to 2001 are economically and statistically significant. Taking into account the higher stock market volatility of the late 1990s, these losses are significant and cannot be explained by industry or market returns, a redistribution of wealth from acquiring firms to target firms, or unrelated announcements.

A. Are Large Loss Deals Noise Resulting from More Volatile Stock Prices?

The last 4 years of our sample are years of high volatility, so it could simply be that large firms experience billion dollar changes in value frequently and that the large dollar losses associated with acquisition announcements would not be unusual for large firms during these years. It makes no sense to test whether the cross-sectional mean of raw and abnormal returns of the large loss deals is significantly negative. However, we can investigate whether the return of an announcing firm is significantly different from zero given the firm's time-series of returns. Using the standard deviation of returns for each firm over the period $(-205, -6)$ to evaluate whether the three-day return for each firm is significantly different from zero, we find that the three-day return is insignificant for only four firms. The average t-statistic for the three-day return is −5.399 and the median is −4.486. We find similar results when we repeat the test using market model residuals.

B. Do Benchmarks Matter?

The sample of large loss deals is constructed using the change in the announcing firm's capitalization (dollar return) rather than the market-adjusted change (abnormal dollar return). We proceed this way because we cannot exclude the possibility that some of the large loss deals may affect the market return. The aggregate abnormal dollar return associated with the 87 large loss deals is a loss of $397 billion in 2001 dollars, so it makes little difference whether we use the abnormal dollar return or the dollar return. If we use the abnormal dollar return to construct a sample of large loss deals, the number of large loss deals is similar.

We know that from 1998 through 2001, there are days with dramatic industry returns. The low returns of the bidders in our sample of large loss deals could therefore be due to low returns in their industry on announcement days. A priori, this explanation would do better in explaining the large loss deals in 2000 and 2001 than the earlier ones since stock prices fell on average in these years, but it is still a legitimate concern. Of the 87 large loss deals and using the SDC provided SIC codes, 38 acquirers are in manufacturing. Within the manufacturing sector, 18 of the 38 acquirers are in the electrical and electronic equipment 2-digit SIC code. To investigate industry effects, we construct a matching portfolio for each acquirer in our sample. This portfolio uses the firms in the same 4-digit SIC code as the acquirer when we can find 10 firms or more with that SIC code. If we cannot find at least 10 firms in the acquirer's 4-digit SIC code, we use the firms in the acquirer's 2-digit SIC code. Large loss deal sample firms are excluded from the matching portfolio. We then estimate the market model for the equally weighted portfolio of the matching firms and compute the 3-day abnormal return of the portfolio. Poor contemporaneous industry returns cannot explain the large loss deals. The 3-day abnormal return for the matching firms is -0.55% with a t-statistic of -2.085. This abnormal return is a small fraction of the abnormal return of the acquiring firms. When we subtract the industry portfolio return from the raw return, the mean excess return is -10.37% (the median is -8.07%).

C. Are Large Loss Deals Wealth Redistributions from Bidder Shareholders to Target Shareholders?

The hubris hypothesis of Roll (1986) is that takeovers neither create nor destroy value but redistribute wealth from overbidding acquirers to target shareholders. This could be the case for the large loss deals. The dollar change in the combined value of the bidder and of the target is equal to the sum of the dollar change in the value of the target (net of the toehold if there is one) and the dollar change in the value of the bidder. If the acquisition redistributes wealth but does not destroy wealth in the aggregate, the dollar gain of the target equals the dollar loss of the bidder, and the combined value of the two firms is unaffected by the acquisition announcement. If there are synergy gains,

the acquiring-firm shareholders gain or lose less than the target shareholders gain.

By requiring acquiring firms to have a dollar announcement loss of $1 billion, we do not constrain the percentage change or the dollar change of the combined value of the acquiring and acquired firms. Consequently, we can estimate the significance of the average percentage or dollar change in the combined value of the acquiring and acquired firms using the time-series and cross-sectional distribution for the large loss deals that correspond to acquisitions of public firms as we did in the previous section for the whole sample of public firm acquisitions. The combined value of the acquiring and acquired firms for the period 1998 to 2001 falls by more than 7%, which is significantly different from zero at the 1% level. This evidence is inconsistent with the hubris and synergy hypotheses. It is what we would expect to observe if the acquisitions destroy aggregate wealth. We further investigate the significance of the abnormal return using the time-series volatility of the return of the portfolio of the acquiring firm and of the acquired firm also. The average t-statistic is -3.312. The percentage synergy gain is positive and significant for only five acquisitions. The combined bidder and target dollar losses aggregate to $212 billion.

D. Are the Losses Explained by News Unrelated to the Acquisition Announcement?

Since the aggregate dollar losses are due to few acquisitions, it could be that these acquisitions correspond to abnormal returns that can be explained by unrelated news announcements rather than by the acquisition announcement. Using Dow-Jones News Retrieval, we searched extensively for unrelated announcements during the window $(-2,+2)$ associated with the 87 large loss deals. These large loss deals are made by very large corporations with many news items. For some large loss deals, the bidder has positive announcements during the event window, but for others it has negative announcements. Eliminating all large loss deals with announcements that could be construed as negative, while keeping all large loss deals with positive announcements, results in an aggregate dollar loss exceeding $300 billion dollars. Hence, the period 1998 to 2001 is unusual even when we use this estimate of losses biased towards zero.

IV. Can Firm and Deal Characteristics Explain the Large Loss Deals?

There is now a considerable literature that relates acquiring-firm abnormal returns to firm and deal characteristics. This literature finds that abnormal returns are lower for acquisitions by firms with low leverage (Maloney, McCormick, and Mitchell (1993)), low Tobin's q (Lang, Stulz, and Walkling (1989) and Servaes (1991), but not Dong et al. (2003) or Moeller, Schlingemann, and Stulz (2004)), large holdings of cash (Harford (1999)), low managerial share ownership (Lewellen, Loderer, and Rosenfeld (1985)), overconfident management (Malmendier and Tate (2003)), and large capitalization (Moeller et al. (2004)). Further, it has been shown that acquisitions of public firms (Chang

(1998), Fuller, Netter, and Stegemoller (2002)), acquisitions opposed by target management (Schwert (2000)), conglomerate acquisitions (Morck, Shleifer, and Vishny (1990)), and acquisitions with competition (Bradley et al. (1988)) lead to lower acquiring-firm abnormal returns. Finally, there is evidence that the relative size of the target to the bidder matters (Asquith, Bruner, and Mullins (1983)), and that equity offers are associated with poor bidder returns, but only for acquisitions of public firms (Travlos (1987), Chang (1998), Fuller et al. (2002)). In this section, we investigate whether deal and firm characteristics can explain the large loss deals.

A. Do Large Loss Deals and Acquirers Have Characteristics that Make Low Acquisition Abnormal Returns Likely?

Panel A of Table III compares the large loss deals with other deals from 1998 through 2001, as well as with all deals from 1980 through 1997. Not surprisingly, large loss deals have a large transaction value compared to other deals, but there is nothing noticeable about the size of these deals when they are normalized by firm market value. Equity is used more often with large loss deals than with other deals and cash is used less often.

Moeller et al. (2004) show that the average abnormal return for a large firm (defined as a firm whose capitalization in the year the acquisition is announced exceeds the 25th percentile of NYSE firms) making a public acquisition financed with equity is -2.45% over the period from 1980 through 2001. A firm with a market capitalization of $50 billion whose stock price falls by 2.45% when it announces an acquisition experiences a $1.225 billion reduction in shareholder wealth. Could our large loss deals be equity-financed acquisitions of public firms by large firms earning average abnormal returns? The answer is no because the abnormal returns associated with our large loss deals are too large. The average abnormal return of the large loss deals over the 3 days surrounding the acquisition announcement is -10.594% and the median loss is -8.081%. Though the abnormal returns for acquisitions of public firms paid for with some equity are lower from 1998 through 2001 than before, the magnitude of the change in average abnormal returns is insufficient to explain the large loss deals. The average abnormal return for public firm acquisitions by large firms financed with at least some equity falls from -1.47% from 1980 through 1997 to -3.82% from 1998 through 2001.

Large loss deals are more likely to be hostile and more likely to be tender offers than other transactions, but the fraction of large loss deals that are tender offers or hostile is small enough that these deal characteristics seem unlikely explanations. The acquisitions in our large loss deal sample are more likely to be within the acquirer's industry than are the other acquisitions, but the difference is not significant. The large loss deals cannot be attributed to diversification attempts.

We find next that large loss deals are overwhelmingly acquisitions of public firms compared to the sample as a whole. While 48.3% of the acquisitions from 1998 through 2001 are acquisitions of private firms, 75.9% of the large loss deals

are acquisitions of public firms, which are acquisitions with lower abnormal returns. Mitchell, Pulvino, and Stafford (2004) show that there is price pressure from the trades of arbitrageurs with acquisitions of public firms for equity. This effect would predict a rebound in the price of the acquirer following the

Table III

Firm and Deal Characteristics: Large Loss Deals versus Other Deals

Column (1) presents large loss deals for the period 1998 to 2001 where the dollar return loss is at least $1 billion, column (2) presents the other deals for the period 1998 to 2001, and column (3) presents all deals for the period 1980 to 1997, including large loss deals for that period. The transaction value ($ million) is the total value of consideration paid by the acquirer, excluding fees and expenses. The number of days to completion is measured as the number of days between the announcement and effective dates. The liquidity index for the target is calculated as the value of corporate control transactions for each year and 2-digit SIC code divided by the total book value of assets of firms in the 2-digit SIC code for that year (e.g., Schlingemann et al. (2002)). Cash and equity in the consideration paid is from SDC. Same industry deals involve targets with a 2-digit SIC code identical to the one of the bidder. Cash includes cash and marketable securities and is normalized by the book value of assets. Tobin's q is defined as the book value of assets minus the book value of equity plus the market value of equity, divided by the book value of assets. Book-to-market (BM) is defined as in Fama and French (1992, 1993). Industry-adjusted q and BM are defined as the raw value minus the yearly 4- or 2-digit SIC code based median value. Operating cash flow (OCF) is defined as sales minus the cost of goods sold, sales and general administration and working capital change. Medians are in brackets and p-values of differences are based on t-tests (means) and Wilcoxon-tests (medians). Respectively, superscripts a, b, and c denote statistical significance between large loss and other deals at the 1%, 5%, and 10% level.

	Panel A: Deal Characteristics					
	1998–2001 Large Loss (1)	1998–2001 Other (2)	1980–1997 All (3)	Differences		
				(1)–(2)	(2)–(3)	(1)–(3)
Transaction value (TV)	9,586	268	149	9,317[a]	119[a]	9,437[a]
	[2,837]	[40]	[26]	[2,797][a]	[14][a]	[2,811][a]
TV/assets (market)	0.198	0.157	0.200	0.042	−0.043[c]	−0.002
	[0.075]	[0.060]	[0.062]	[0.014]	[−0.001]	[0.013]
TV/equity (market)	0.267	0.296	0.355	−0.029	−0.059[a]	−0.088[b]
	[0.102]	[0.108]	[0.124]	[−0.007]	[−0.016][a]	[−0.022]
Days to completion	125.8	67.0	88.4	58.8[a]	−21.4[a]	37.4[a]
	[94.0]	[41.0]	[59.0]	[53.0][a]	[−18.0][a]	[35.0][a]
Cash in payment (%)	22.6	56.9	52.8	−34.3[a]	4.1[a]	−30.3[a]
Equity in payment (%)	71.6	35.2	30.3	36.4[a]	4.9[a]	41.3[a]
Pure cash deal (%)	10.3	41.1	40.4	−30.7[a]	0.6	−30.1[a]
Pure equity deal (%)	51.7	25.8	23.7	25.9[a]	2.1[b]	28.0[a]
Tender-offer (%)	12.6	3.0	4.3	9.7[a]	−1.4[a]	8.3[b]
Hostile deal (%)	1.1	0.1	0.6	1.0[b]	−0.5[a]	0.5
Same industry (%)	41.4	31.6	33.2	9.8[c]	−1.6[c]	8.2
Private target (%)	14.9	51.7	44.1	−36.7[a]	7.6[a]	−29.2[a]
Public target (%)	75.9	20.9	21.9	54.9[a]	−1.0	54.0[a]
Subsidiary target (%)	9.2	27.4	34.0	−18.2	−6.6[a]	−24.8[a]
Competed deal (%)	8.0	0.7	1.4	7.4[b]	−0.7[a]	6.6[b]
Liquidity index	0.117	0.151	0.084	−0.034[b]	0.067[a]	0.033[b]
	[0.102]	[0.080]	[0.036]	[0.022]	[0.044][a]	[0.066][a]

(continued)

Table III—*Continued*

	1998–2001 Large Loss (1)	1998–2001 Other (2)	1980–1997 All (3)	Differences		
				(1)–(2)	(2)–(3)	(1)–(3)
Panel B: Acquirer Characteristics						
Assets (book)	39,308	2,546	2,227	36,762[a]	318	37,080[a]
	[14,631]	[360]	[268]	[14,271][a]	[92][a]	[14,363][a]
Market capitalization	49,307	2,145	959	47,162[a]	1,186[a]	48,347[a]
	[28,368]	[383]	[213]	[27,985][a]	[170][a]	[28,155][a]
Cash/assets (book)	0.176	0.170	0.142	0.006	0.028[a]	0.034[c]
	[0.058]	[0.059]	[0.073]	[−0.001]	[−0.014]	[−0.016]
Debt/assets (book)	0.441	0.473	0.467	−0.031	0.006	−0.025
	[0.468]	[0.462]	[0.452]	[0.006]	[0.010]	[0.016]
Debt/assets (market)	0.176	0.302	0.315	−0.127[a]	−0.012[b]	−0.139[a]
	[0.169]	[0.265]	[0.285]	[−0.096][a]	[−0.021][a]	[−0.117][a]
Tobin's q	6.643	2.698	1.919	3.945[a]	0.778[a]	4.723[a]
	[3.208]	[1.538]	[1.396]	[1.670][a]	[0.142][a]	[1.812][a]
Ind. adjusted Tobin's q	5.032	1.186	0.469	3.845[a]	0.717[a]	4.562[a]
	[1.604]	[0.177]	[0.035]	[1.427][a]	[0.142][a]	[1.570][a]
BM$_{(equity)}$	0.231	0.482	0.591	−0.251[a]	−0.108[a]	−0.360[a]
	[0.178]	[0.409]	[0.520]	[−0.231][a]	[−0.111][a]	[−0.343][a]
Ind. adjusted BM$_{(equity)}$	−0.246	−0.043	0.032	−0.203[a]	−0.076[a]	−0.279[a]
	[−0.270]	[−0.114]	[−0.030]	[−0.156][a]	[−0.084][a]	[−0.240][a]
OCF/assets (book)	0.061	0.072	0.286	−0.012	−0.213[a]	−0.225[b]
	[0.079]	[0.076]	[0.136]	[0.003]	[−0.060][a]	[−0.057][a]

acquisition announcement. The cumulative abnormal return is −10.5% at day +10 and −15.0% at day +60, so there is no indication that there is a significant transitory component to the announcement abnormal return.

More competition could help explain the large loss deals. We use two variables to measure competition. The first variable is the percentage of deals with actual competition. The large loss deals have a higher fraction of such deals, but this fraction is small and unlikely to explain the large loss deal sample. The second measure is the liquidity index used by Schlingemann, Stulz, and Walkling (2002). This index measures the intensity of mergers and acquisitions activity within an industry. Using that measure, the large loss deals seem to take place in industries with slightly less activity than the other deals.

In Panel B of Table III, we report characteristics for the firms in our sample of large loss deals and the firms that make other acquisitions. Not surprisingly, firms that make large loss deals are big. The large loss deal firms do not have more cash than other firms, but they have lower leverage, when leverage is measured using the market value of the firm's assets. We find that the Tobin's q of acquiring firms in our large loss deal sample is significantly higher than the Tobin's q of the other acquiring firms. Note that only 18 firms making a large loss deal have a q lower than the median q of all acquirers in the same year. Large loss deal firms have a significantly higher industry-adjusted q (the firm's q minus the median industry q when the industry is defined using the

4-digit SIC code) than other acquirers. Dong et al. (2003) use the BM ratio as one of two proxies of overvaluation. In our sample, the median BM ratio of firms when they announce a large loss deal is less than half of what it is for the other firms in our sample, and only 14 firms announcing large loss deals have a BM ratio higher than the median BM ratio of acquirers in the same year. Finally, the operating cash flow (OCF) of large loss deal firms is significantly different from the operating cash flow of other acquirers in 1998 to 2001, but the operating cash flow of all acquirers is significantly lower in 1998 to 2001 compared to 1980 to 1998.

These comparisons between large loss deals and other acquisitions show that some of the empirical regularities in the 1980s make the large loss deals even more puzzling: The firms have higher q's, lower cash holdings, and lower OCF than other firms. Competition and hostility seem to affect few large loss deals. However, most large loss deals are public firm acquisitions with a large equity component in the consideration.

B. Can Regression Models for Bidder Returns Explain the Large Loss Deals and the Large Shareholder Losses from 1998 through 2001?

We investigate whether regression models of the type used in the literature to analyze bidder abnormal returns help predict the losses associated with the large loss deals. We estimate these regression models over the period from 1980 through 1997 and use the estimates to obtain fitted abnormal returns for the large loss deals from 1998 through 2001. The first four regressions in Table IV use the whole sample. Neither the coefficient on Tobin's q nor the coefficient on BM are significant. In models (1) and (2), the coefficient on the market value of leverage is positive and significant, indicating that firms with higher leverage have higher announcement returns. The liquidity index in models (3) and (4) is negative and significant, showing that acquisitions of firms that are in more liquid industries have worse abnormal returns. Finally, the coefficient on small, the size dummy (takes the value of one if a firm's equity market capitalization is below the 25th percentile of the NYSE for the year), is positive and significant. The fitted values of the large loss deals are close to zero, so that the unexplained abnormal return using these regressions is large.

The regressions estimated so far do not include the bidder premium as an independent variable since premium data are only available for public firm acquisitions. It could be that the large loss deals are due to overpayment. To examine this, we compute a percentage premium using the stock price 50 days before the offer similar to the work of Moeller et al. (2004). We estimate regressions predicting the premium offered (not reported). The regressions offer little evidence that the premium is higher in large loss deals. In regressions predicting the premium, similar to those used by Officer (2003) and Schwert (2000), we find that a dummy variable for large loss deals is typically insignificant. The problem may be that the premium data are too noisy. In most regressions, the coefficient on the large loss deal dummy is economically significant, typically indicating a higher premium of 8% to 10%.

Table IV

Predicted Change in Acquiring-Firm Shareholder Wealth from Multiple Regressions of Bidder 3-day Announcement Returns Estimated over the 1980 to 1997 Period

Large loss deals are transactions that have a dollar return corresponding to a loss of over $1 billion dollars. Premium is defined as the aggregate consideration divided by the market value of target equity 50 days prior to the announcement. Premium values less than zero or larger than two are eliminated. Premium data are available only for public targets. Large loss $\varepsilon_{1998-2001}$ and large loss $\hat{y}_{1998-2001}$ denote the average residual and average predicted value of each model for the large loss deals in the 1998 to 2001 period. For each variable we list the coefficient and the heteroskedasticity-consistent p-value (in italics). Small is a dummy variable that takes value 1 for firms with market capitalization lower than the 25th percentile of NYSE firms. The last rows report the adjusted-R^2 and the number of observations. Year and one-digit main industry classification dummies are included but not reported in all models. N is the number of observations. Respectively, superscripts a, b, and c denote statistical significance at the 1%, 5%, and 10% level.

	(1)	(2)	(3)	(4)	(5)	(6)
Constant	−0.0077	−0.0064	0.0056	0.0048	0.0154	0.0129
	0.670	*0.729*	*0.733*	*0.772*	*0.531*	*0.597*
Debt/assets$_{(market)}$	0.018[b]	0.0168[b]	0.0085	0.0057	0.0025	−0.0139
	0.021	*0.036*	*0.238*	*0.434*	*0.872*	*0.423*
BM$_{(equity)}$	0.0004		−0.0033		−0.0125	
	0.934		*0.466*		*0.131*	
Tobin's q		−0.0004		−0.0003		−0.002
		0.616		*0.757*		*0.361*
Private target			−0.0065[a]	−0.0065[a]		
			0.010	*0.010*		
Public target			−0.0224[a]	−0.0224[a]		
			0.001	*0.001*		
Same industry			0.0033	0.0034	0.014[b]	0.0133[b]
			0.151	*0.137*	*0.024*	*0.033*
Tender-offer			0.0053	0.005	−0.0052	−0.0063
			0.306	*0.335*	*0.451*	*0.353*
Hostile deal			−0.0039	−0.0036	−0.002	−0.0007
			0.690	*0.712*	*0.866*	*0.952*
Competed deal			−0.0061	−0.0059	−0.0183[c]	−0.0182[c]
			0.362	*0.374*	*0.062*	*0.061*
Equity in payment			−0.0026	−0.0021	−0.0339[a]	−0.033[a]
			0.419	*0.505*	*0.001*	*0.001*
TV/equity$_{(market)}$			0.0106[a]	0.0106[a]	0.0062	0.0063
			0.001	*0.001*	*0.155*	*0.146*
Liquidity index			−0.008[c]	−0.0081[c]	0.0045	0.005
			0.068	*0.064*	*0.604*	*0.565*
OCF/assets$_{(book)}$	−0.0006	−0.0006	−0.0005	−0.0005	−0.0058	−0.0045
	0.622	*0.633*	*0.683*	*0.718*	*0.545*	*0.648*
Small	0.0227[a]	0.0226[a]	0.0176[a]	0.0172[a]	0.0199[b]	0.0179[b]
	0.001	*0.001*	*0.001*	*0.001*	*0.013*	*0.024*
Premium					−0.0067	−0.0060
					0.251	*0.307*
Large loss $\varepsilon_{1998-2001}$	−0.1017	−0.1007	−0.0942	−0.0925	−0.0892	−0.0807
Large loss $\hat{y}_{1998-2001}$	−0.0059	−0.0069	−0.0134	−0.0150	−0.0130	−0.0215
N	6,596	6,596	6,584	6,584	770	770
Adjusted-R^2	0.024	0.025	0.056	0.056	0.050	0.049

Regressions (5) and (6) in Table IV are estimated only for the acquisitions for which we have premium information. In the reported regressions, we use the SDC information for the value of the components of the offer. Using the initial offer price reported by SDC instead yields similar results. The coefficient on the premium is insignificant in both regressions. These regressions also produce fitted abnormal returns close to zero for the large loss deals.

A possible explanation for why our regressions are not useful in explaining the abnormal returns around the large loss deals is that firm characteristics might be related differently to abnormal returns for the period from 1998 through 2001. The late 1990s is a period with unusually high equity valuations. A number of recent papers theoretically and empirically analyze the relation between equity valuations, the propensity to undertake mergers, and the returns to bidders. In particular, Dong et al. (2003) show that high valuation firms are more likely to make acquisitions and exhibit worse abnormal returns than firms with lower valuations (see also Rhodes-Kropf, Robinson, and Viswanathan (2003)). Shleifer and Vishny (2003) build a model where it can be advantageous for an overvalued bidder to make acquisitions to lock in real assets, and Jensen (2003) argues that overvaluation leads to high costs of managerial discretion, enabling managers to make poor acquisitions.[6] If high valuations are more likely to correspond to overvaluation in the late 1990s than at other times, it would not be surprising if the relation between valuation and abnormal returns for that period is different from what it is earlier in our sample period.

The multivariate regressions in Table IV are inconsistent with the hypothesis that there is an economically important negative relation between valuation and abnormal returns from 1980 through 1997. When we reestimate these regressions from 1980 through 2001, we find that Tobin's q has a significant negative coefficient of -0.0046 (p-value of 0.044) in contrast to the earlier literature showing a positive relation between q and abnormal returns, and the coefficient on BM increases also substantially (though it is still not significant). The regression predicts that the acquisition abnormal return for an acquirer with a Tobin's q equal to the mean Tobin's q of the acquirers making large loss deals is 2.5% lower than the acquisition for an acquirer with a Tobin's q equal to the sample average. As a result, the residual of the large loss deals is smaller in these regressions. When we estimate regression (6) over the period from 1980 through 2001, the average residual of the large loss deals becomes -5.35% instead of -8.07%.

Not surprisingly, given these regression results, the large loss deal firms make a large loss deal when their valuation is high. To show this, we compute Tobin's q and the BM ratio for each year that the large loss deal firms announce an acquisition. We then compute the mean and median of the ratio of the Tobin's q in the year of the large loss deal and of the Tobin's q average across all acquisition years. We call this q ratio minus one the normalized q ratio. We

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[6] Ang and Chen (2003) provide empirical evidence supportive of the model in Shleifer and Vishny (2003).

would expect the normalized q ratio to be zero if there is no relation between valuation and large loss deals. The mean ratio is 2.71 (0.46 for the median). If we use the BM ratio instead to construct a normalized BM ratio, we get -0.10 (-0.08 for the median). Out of 76 firms, 19 firms have their highest Tobin's q in the year of the large loss deal and 29 have it the year before. Similar results are obtained with the BM ratio. Strikingly, among large loss deals, the magnitude of the loss is positively correlated with the valuation of the acquirer. We estimate a logistic regression (not reported) using all acquisitions made by the firms in our large loss deal sample. The dependent variable takes the value of 1 for the large loss deals, while the independent variables are a constant and a dummy variable that takes a value of 1 if a firm is at its valuation peak in the year of the acquisition. The coefficient estimate on the dummy variable is significant and positive at the 1% level when we use Tobin's q and negative and significant when we use BM.

C. Valuation and the Acquisition Performance of Large Loss Deal Firms

The firms that make the large loss deals are serial acquirers. If the large loss deals are somehow caused by the fact that these firms are highly valued or overvalued, it should be that the acquisitions a firm makes around the time of its large loss deal also have poor market reactions. In Panel A of Table V, we show the abnormal returns associated with the other acquisitions by the firms making the large loss deals for the 24 months before their (first) large loss deal from 1998 through 2001 and for the 24 months afterwards for subsamples based on the organizational form of the assets acquired and the mode of financing of the acquisition. We find that for the 2 years before the large loss deal, the firms create value through acquisitions for a total of $20 billion, which seems inconsistent with the view that high valuation firms make poor acquisitions. In the year before the large loss deal announcement, 26 firms make an economically significant acquisition and the mean abnormal return is 2%. Many of these acquisitions are paid for with equity. Even more striking, the firms making large loss deals make 17 acquisitions of public firms paid for with equity in our sample in the 2 years before they make their large loss deal. With these acquisitions, they create wealth for their shareholders of $2.696 billion. The large loss deal, however, is a watershed event. In the 2 years after the large loss deal, announcements of acquisitions are associated with a reduction in shareholder wealth of $110 billion. The year after the large loss deal, 18 firms make an economically significant acquisition and the mean abnormal return, -3.27%, is significantly lower than the mean abnormal return for acquisitions made in the 2 years before the large loss deal.

The fact that the large loss deal firms create value through acquisitions in the 2 years before they make the large loss deal is hard to reconcile with the view that highly valued firms make bad acquisitions. The evidence is consistent with the view of Jensen (2003) that high valuations give management more discretion, so that management can make poor acquisitions if it values growth

Table V

Merger Activity of Firms with at Least One Large Loss Deal

The windows are formed on the first large loss deal a firm has in 1998–2001, where year 0 includes the year before (after) the announcement for the pre- (post-) announcement windows. In Panel A, information on acquisitions in 2-year windows immediately before and immediately after the first large loss deal a firm makes are provided by consideration and target organizational form. Panel B shows yearly windows around the first large loss deal a firm has in the 1998 to 2001 period. The abnormal returns over the $(-1,+1)$ event window, $CAR_{(-1,+1)}$, are market model residuals. The inflation adjusted abnormal dollar return, $Return_{(\$2001)}$, is calculated as the $CAR_{(-1,+1)}$ times the market value of acquire equity at day -2 in 2001 million dollars.

Years	Consideration	Target Organizational Form	Number of Firms	Mean # Transactions per Firm	$CAR_{(-1,+1)}$ Abnormal Return (%)	Aggregate Abnormal $Return_{(\$2001)}$
Panel A: Acquisitions in the 2 Years before and after the Large Loss Deal Sorted by Consideration						
[−2,0]	No equity	Private	4	1.0	12.22	$2,586.2
[−2,0]	No equity	Public	5	1.0	0.02	460.9
[−2,0]	No equity	Subs	7	1.0	0.91	1,587.1
[−2,0]	Some equity	Private	4	1.0	8.66	2,095.7
[−2,0]	Some equity	Public	8	1.1	−1.74	365.9
[−2,0]	Some equity	Subs	1	1.0	5.08	1,383.8
[−2,0]	All equity	Private	13	1.7	3.44	7,817.5
[−2,0]	All equity	Public	17	1.3	−0.65	2,696.3
[−2,0]	All equity	Subs	3	1.0	4.27	1,531.2
[0,+2]	No equity	Private	1	1.0	−4.11	−1,149.9
[0,+2]	No equity	Public	3	1.0	−1.53	−9,188.7
[0,+2]	No equity	Subs	6	1.2	3.63	1,9011.6
[0,+2]	Some equity	Private	2	1.0	−2.54	−3,337.8
[0,+2]	Some equity	Public	4	1.5	−4.14	−12,321.4
[0,+2]	Some equity	Subs	1	1.0	−6.14	−547.6
[0,+2]	All equity	Private	3	1.0	−3.24	−16,668.1
[0,+2]	All equity	Public	8	1.4	−5.74	−86,401.7
Panel B: Acquisitions before and after the Large Loss Deal						
[−6,−3]			27	2.1	0.70	$5,049.3
[−3,−2]			20	1.4	−2.39	1,075.3
[−2,−1]			26	1.4	1.99	8,054.5
[−1,0]			26	1.5	2.03	12,470.0
[0,+1]			18	1.2	−3.27	−45,041.0
[+1,+2]			10	1.2	−2.66	−65,562.5
[+2,+3]			5	1.2	−0.45	−4,907.6
[+3,+6]			2	1.0	−0.10	−273.5

more than shareholder wealth. More generally, however, it is possible that the acquisition that leads to large shareholder wealth losses shows the market that the firm's strategy of growth through acquisitions is no longer sustainable or is not going to be as profitable as expected. Though earlier papers suggest that acquisition announcements could have negative abnormal returns because they signal that a firm has run out of internal growth opportunities (McCardle and

Viswanathan (1994), Jovanovic and Braguinsky (2002)), this explanation is not plausible for the large loss deal firms because the large loss deals are typically preceded by many acquisitions.

V. The Long-Run Performance of Firms Announcing a Large Loss Deal

The extremely high Tobin's q and low BM of the firms that announce large loss deals seem to explain part of the abnormal return associated with the large loss deals, yet at the same time firms with equally lofty valuations—including the large loss deal firms before they make these deals—do not have poor abnormal returns when they announce acquisitions. It seems sensible to conclude that the announcement of the large loss deal provides information to the market that the firm's valuation is not justified and that earlier acquisition announcements did not provide similar information. Alternatively, the market could just have overreacted to the large loss deal announcements. Overreaction should lead to high subsequent returns, but overvaluation, to the extent that it is not corrected completely by the market's reaction to the announcement, should lead to poor subsequent returns. Poor subsequent returns could also have other explanations, however.

Figure 4 presents buy-and-hold returns over the period 1998 to 2002 for various portfolios. The large loss deal portfolio is an equally weighted portfolio of firms that announce a large loss deal after January 1, 1998. Whenever a firm announces a large loss deal in a given month, the portfolio is rebalanced the following month to include that firm. Consequently, the portfolio return corresponds to what an investor would have earned by investing in firms after they announced large loss deals and held that portfolio until the end of 2002. From the graph it can be seen that the portfolio has a return of approximately −53% measured from January 1998 through the end of 2002. In contrast, an investment in the monthly CRSP value-weighted index results in a buy-and-hold return of −5%.

We also construct for each firm in our large loss deal sample an industry- and size-matched portfolio. Each portfolio consists of firms with the same 4-digit SIC code and the same NYSE-based size quartile as our sample firm. In cases where there are fewer than 10 firms available within a 4-digit SIC code, we use 2-digit SIC codes instead. The matching firms exclude firms that made a large loss deal in the 12 months preceding the portfolio forma-tion date. The buy-and-hold return of the matching-firm industry portfolio is −14%.

We construct a portfolio that follows the strategy of buying a large loss deal firm's matching portfolio when that large loss deal firm is added to the port-folio of large loss deals. The portfolio is an equally weighted portfolio of each matching-firm industry portfolio for the firms that have announced a large loss deal since January 1, 1998, up to the month the portfolio return is com-puted. The excess return of the large loss deal portfolio over the matching-firm portfolio is −39%.

Percent return x 100
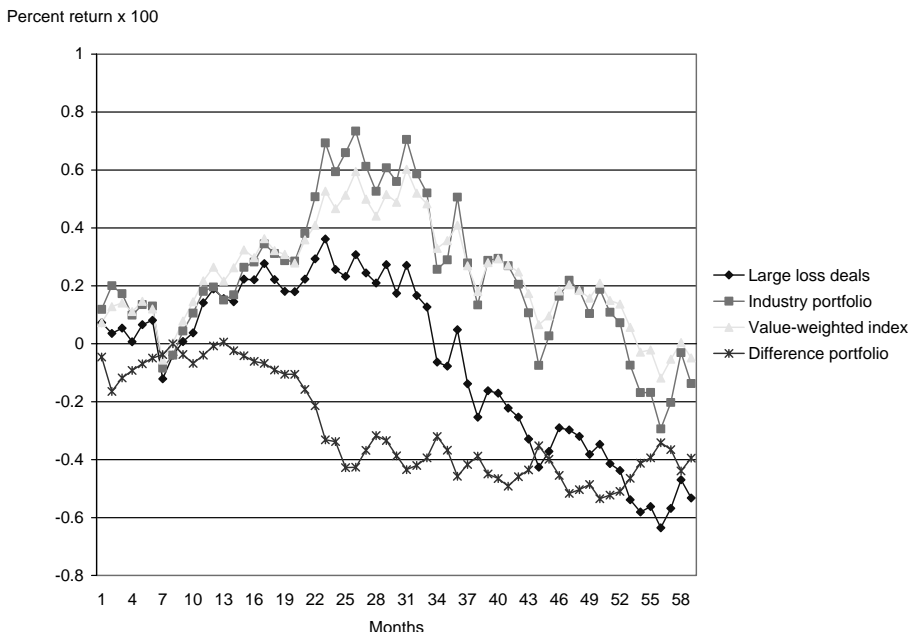
Figure 4. Monthly buy-and-hold returns (1998 to 2002). The figure plots monthly buy-and-hold returns (decimal returns) over the period 1998 to 2002 for various portfolios. The large loss deal portfolio is an equally weighted portfolio of firms that announced a large loss deal since January 1, 1998. Whenever a firm announces a large loss deal in a given month, the portfolio is rebalanced the following month to include that firm. The industry portfolios are constructed for each firm in our large loss deal sample and consist of firms with the same 4-digit SIC code and the same NYSE-based size quartile as our sample firm. In case there are fewer than 10 firms available within a 4-digit SIC code, we use 2-digit SIC codes. The matching firms exclude firms that are in the large loss sample with the announcement date within 12 months prior to the portfolio date. The difference portfolio follows the strategy of buying a long position in the large loss deal portfolio and a short position in the matching-firm industry portfolios. The value-weighted index is from CRSP.

Finally, we estimate a regression of the monthly return of a long position in the large loss deal portfolio and a short position in the matching-firm industry portfolio on the Fama–French factors.[7] This investment strategy has a significant intercept of -0.85% (p-value of 0.022). If we add the Carhart (1997) momentum factor to the regression, the estimate of the intercept is -0.77% (p-value of 0.041). These results are consistent with the view that the large loss deal firms were overvalued and that this overvaluation was corrected over time, but one must be cautious in interpreting the results, since they correspond to one historical episode.

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[7] The factor returns are obtained from Kenneth French's website (http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html).

VI. Conclusion

We find that acquisition announcements in the 1990s are profitable in the aggregate for acquiring-firm shareholders until 1997, but that the losses of acquiring-firm shareholders from 1998 through 2001 wiped out all the gains made earlier, so acquisition announcements in the latest merger wave are costly for acquiring-firm shareholders. The losses result from relatively few acquisition announcements, as can be seen from the fact that from 1998 through 2001, the equally weighted average abnormal return associated with acquisition announcements is positive. Without the acquisition announcements with shareholder wealth losses of $1 billion or more in our sample, that is excluding just over 2% of the observations, shareholder wealth would have increased with acquisition announcements. Looking at the aggregate performance of acquisitions, the economic importance of acquisitions with large announcement losses overwhelms that of thousands of other acquisitions.

The firms that make large loss deals are successful with acquisitions until they make their large loss deal. The high valuation of the firms announcing the large loss deals is not sufficient to explain the change in returns associated with acquisition announcements, since these firms have comparable valuations when they announce previous mergers or acquisitions that are associated with positive abnormal returns. The magnitude of the losses is large enough and the performance of the firms after the announcement poor enough that it seems probable that the acquisitions led investors to reconsider the extremely high stand-alone valuations of the announcing firms. Since the firms making these large loss deals were serial acquirers, it is possible that the acquisition demonstrates to investors that the acquiring firm's strategy of growing through acquisitions is no longer sustainable and will not create as much value as they believed previously.

REFERENCES

Ang, James S., and Yingmei Chen, 2003, Direct evidence on the market-driven acquisitions theory, Working paper, Florida State University.

Asquith, Paul, Robert F. Bruner, and David W. Mullins, 1983, The gains to bidding firms from merger, *Journal of Financial Economics* 11, 121–139.

Bradley, Michael D., Anand S. Desai, and E. Han Kim, 1988, Synergistic gains from corporate acquisitions and their division between the stockholders of target and acquiring firms, *Journal of Financial Economics* 21, 3–40.

Brown, Stephen J., and Jerold B. Warner, 1985, Using daily stock returns: The case of event studies, *Journal of Financial Economics* 14, 3–31.

Carhart, Mark M., 1997, On the persistence in mutual fund performance, *Journal of Finance* 52, 57–82.

Chang, Saeyoung, 1998, Takeovers of privately held targets, method of payment, and bidder returns, *Journal of Finance* 52, 773–784.

Comment, Robert, and G. William Schwert, 1995, Poison or placebo? Evidence on the deterrence and wealth effects of modern antitakeover measures, *Journal of Financial Economics* 39, 3–43.

Datta, Sudip, Mai Iskandar-Datta, and Kartik Raman, 2001, Executive compensation and corporate acquisition decisions, *Journal of Finance* 56, 2299–2336.

Dong, Ming, Daniel Hirshleifer, Scott Richardson, and Siew Hong Teoh, 2003, Does investor misvaluation drive the takeover market? Working paper, The Ohio State University.

Fama, Eugene F., and Kenneth R. French, 1992, The cross-section of expected stock returns, *Journal of Finance* 47, 427–465.

Fama, Eugene F., and Kenneth R. French, 1993, Common risk-factors in the returns on stocks and bonds, *Journal of Financial Economics* 33, 3–56.

Fuller, Kathleen, Jeffry M. Netter, and Mike Stegemoller, 2002, What do returns to acquiring firms tell us? Evidence from firms that make many acquisitions, *Journal of Finance* 57, 1763–1794.

Harford, Jarrod, 1999, Corporate cash reserves and acquisitions, *Journal of Finance* 54, 1969–1997.

Harford, Jarrod, 2003, Merger waves: Hubris, herding, or efficient response to a shock? Working paper, University of Washington.

Jensen, Michael C., 2003, Agency costs of overvalued equity, work in progress, Harvard Business School.

Jovanovic, Boyan, and Serguey Braguinsky, 2002, Bidder discounts and target premia in takeovers, Working paper, NBER.

Lang, Larry H. P., René M. Stulz, and Ralph A. Walkling, 1989, Managerial performance, Tobin's *q*, and the gains from successful tender offers, *Journal of Financial Economics* 24, 137–154.

Lewellen, Wilbur, Claudio Loderer, and Ahron Rosenfeld, 1985, Merger decisions and executive stock ownership in acquiring firms, *Journal of Accounting and Economics* 7, 209–231.

Malatesta, Paul, 1983, The wealth effect of merger activity and the objective function of merging firms, *Journal of Financial Economics* 11, 155–182.

Malmendier, Ulrike, and Geoffrey A. Tate, 2003, Who makes acquisitions? CEO overconfidence and the market's reaction, Working paper, Harvard Business School.

Maloney, Michael T., Robert E. McCormick, and Mark L. Mitchell, 1993, Managerial decision making and capital structure, *Journal of Business* 66, 189–217.

McCardle, Kevin F., and S. Viswanathan, 1994, The direct entry versus takeover decision and stock price performance around takeovers, *Journal of Business* 67, 1–43.

Mitchell, Mark, Todd Pulvino, and Erik Stafford, 2004, Price pressure around mergers, *Journal of Finance* 59, 31–63.

Moeller, Sara B., Frederik P. Schlingemann, and René M. Stulz, 2004, Firm size and the gains from acquisitions, *Journal of Financial Economics* 73, 201–228.

Morck, Randall, Andrei Shleifer, and Robert W. Vishny, 1990, Do managerial objectives drive bad acquisitions? *Journal of Finance* 45, 31–48.

Officer, Micah, 2003, Termination fees in mergers and acquisitions, *Journal of Financial Economics* 69, 431–467.

Rhodes-Kropf, Matthew, David T. Robinson, and S. Viswanathan, 2003, Valuation waves and merger activity: The empirical evidence, Working paper, Columbia University.

Roll, Richard, 1986, The hubris hypothesis of corporate takeovers, *Journal of Business* 59, 197–216.

Schlingemann, Frederik P., René M. Stulz, and Ralph A. Walkling, 2002, Divestitures and the liquidity of the market for corporate assets, *Journal of Financial Economics* 64, 117–144.

Schwert, G. William, 2000, Hostility in takeovers: In the eyes of the beholder? *Journal of Finance* 55, 2599–2640.

Servaes, Henri, 1991, Tobin's *q* and the gains from takeovers, *Journal of Finance* 46, 409–419.

Shleifer, Andrei, and Robert W. Vishny, 2003, Stock market driven acquisitions, *Journal of Financial Economics* 70, 295–312.

Travlos, Nicolas G., 1987, Corporate takeover bids, methods of payment, and bidding firms' stock returns, *Journal of Finance* 42, 943–963.