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Wealth destruction on a massive scale? A study of acquiring-firm returns in the merger wave of the late 1990s

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Abstract

Acquiring-firm shareholders lost 12 cents for every dollar spent on economically significant acquisitions for a total loss of $240 billion from 1998 through 2001, whereas they lost $7 billion in all of the 1980s, or 1.5 cents per dollar spent. Though the announcement losses to acquiring-firm shareholders in the 1980s are more than offset by gains to acquired-firm shareholders, the losses of bidders exceed the gains of targets from 1998 through 2001 by $158 billion. The 1998-2001 aggregate losses of acquiring-firm shareholders are so large because the worst acquisition announcements are associated with extremely large losses. These acquisitions represent a large fraction of the amount spent on acquisitions because they are made by large firms and are usually the largest acquisitions of these firms. Firm and deal characteristics found useful in earlier work to explain acquirer returns cannot explain these large losses. It is also not the case that highly valued firms make systematically poor acquisitions. The evidence is consistent with three possible explanations for these deals that are not mutually exclusive: (1) acquirers with overvalued equity use it to pay for acquisitions to lock in physical assets, (2) overvalued equity enables managers to pursue a growth strategy that is not in the interests of long-term shareholders, and/or (3) these acquisitions reveal to investors that a firm's earnings growth will be lower than expected. In particular, most of the acquisitions with large losses involve some equity in payment, follow a period of successful acquisitions, are made close to the acquiring firm's valuation peak, are accompanied by a drop in expected earnings, and are followed by poor long-run performance.

JEL classification: G31; G32; G34

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1. Introduction

From 1998 to 2001, acquiring firms' shareholders lost an aggregate $240 billion, or 34 times the $7 billion they lost in the 1980s, although firms spent just 4.5 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 three days surrounding economically significant acquisition announcements (defined as transactions exceeding 1% of the capitalization of the acquirer), which we call the acquisition dollar return, and sum these losses to get the aggregate loss. Figure 1 reports the yearly aggregate losses to acquiring-firm shareholders for a sample of acquisitions of public firms, private firms, and subsidiaries from 1980 through 2001 and demonstrates how extraordinary the recent losses are.

The increase in losses we document is not caused by a worsening of the mean abnormal return associated with acquisition announcements because, even though the recent mean abnormal return is lower, it is still positive so that the average acquisition creates wealth for acquiring-firm shareholders. Statistically, the higher acquiring-firm shareholder losses from 1998 through 2001 are caused by an increase in the size of the dollar losses of the acquisitions with the worst dollar returns, so that the negative skewness of the distribution of dollar returns is sharply higher. Since, at the same time, the amount spent on the acquisitions with the worst returns increased much more than the amount spent on other acquisitions, the acquisitions with the worst returns correspond to a much larger fraction of the amount spent on acquisitions in 1998-2001 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 1980-1997 to 32.74% for 1998-2001.

Since the large loss of acquiring-firm shareholders is the result of a small number of acquisitions with extremely large losses, we focus on the bottom tail of the distribution of dollar returns to understand why the 1998-2001 acquiring-firm dollar losses differ from those in the 1980s. Although the definition of the bottom tail of a statistical distribution is somewhat arbitrary,

we choose to focus on the 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 $440 billion, while all other acquisitions made a total gain of $157 billion. The large loss deals represent only 2.1% of the 1998-2001 acquisitions, but they account for 43.41% of the money spent on acquisitions. On average, for one dollar spent on a large loss deal, the market value of the equity of the acquiring firm falls by 48 cents.

When confronted with acquiring-firm shareholder losses in the past, financial economists have always pointed out that despite these losses, acquisitions create wealth for the economy because the wealth gains of target firms exceed the wealth losses of acquiring-firm shareholders (see Bradley, Desai, and Kim, 1988). This reasoning is of little use for the sample period we focus on. Large loss deals decrease the combined wealth of acquiring and acquired firms, so that from 1998 through 2001, the announcements of the acquisitions of public firms were accompanied by a decrease of $158 billion in the aggregate combined value of the acquiring and acquired firms.

Why is it then that the period from 1998 through 2001 is associated with this clustering of acquisitions with extremely large losses for acquiring-firm shareholders? Firm characteristics and deal characteristics found to be important in earlier work on acquirer returns explain only part of the abnormal return associated with our large loss deals. On average, large loss deals have a negative abnormal return of −10%. Using a regression model estimated over the whole sample of acquisitions, we can explain roughly 20% of that abnormal return. Since Dong, Hirshleifer, Richardson, and Teoh (2002) provide evidence that firms that are overvalued using their valuation measures have poor abnormal returns, it could be that our result is simply an outcome of a period with many large overvalued firms. However, this is not so if firms with a high Tobin's q or a low book-to-market (BM) ratio are likely to be overvalued. The firms that make the large loss deals have indeed high q's and low BM ratios among all firms making acquisitions.

However, these firms create wealth through acquisitions before they make their large loss deal even though their valuations are similar. Further, firms with higher valuations experience substantially less negative abnormal returns and the relation between abnormal returns and q or the BM ratio is not economically significant for our whole sample.

We consider three hypotheses that are helpful to understand the large loss deals. These hypotheses are not mutually exclusive. First, Shleifer and Vishny (2003) provide a theory of mergers where long-horizon managers of overvalued firms use their equity to acquire less overvalued firms with short-horizon managers. This way, acquirers can lock in real assets and managers of overvalued targets can exit advantageously. With this theory, managers will sometimes fail to convince the markets that an acquisition is worthwhile and when they do, acquisition announcements will be associated with large wealth losses (the lock-in hypothesis). Second, Jensen (2003) presents an analysis where overvalued equity increases managerial discretion, making it possible for managers to use equity to engage in acquisitions that do not benefit long-term shareholders. Managers might consciously pursue acquisitions that favor their interests at the expense of those of long-term shareholders, or they might do so because of behavioral biases, such as the hubris emphasized by Roll (1986). When they engage in such acquisitions and investors realize that they do, stock prices fall (the agency costs of overvalued equity hypothesis).

We call our third hypothesis the growth reassessment hypothesis. It assumes that markets are efficient and managers maximize shareholder wealth. Based on the information they have, investors have expectations about the future growth of a firm's earnings. As the firm announces an acquisition, investors have to assess whether the information revealed by the announcement is consistent with their prior beliefs. When an acquisition leads investors to lower their expected growth rate for the firm, shareholder wealth falls. As a firm's valuation increases, it becomes less likely that an acquisition will convince investors that they underestimated the firm's growth rate, so that the distribution of revisions of firms' expected growth rates associated with acquisitions

becomes skewed. However, acquisitions that lead investors to decrease their expected growth rate for the acquirer will be associated with a much larger fall in shareholder wealth when stock prices are high.

The paper proceeds as follows. We discuss possible explanations for acquiring-firm shareholder losses in Section 2. In Section 3, we introduce our sample, document aggregate shareholder losses, and demonstrate how the distribution for acquiring-firm shareholder losses evolves through time. In Section 4, we examine the shareholder wealth losses associated with the announcement of large loss deals in detail and show that they are statistically and economically significant. In Section 5, we compare the characteristics of the firms and deals in our large loss deal sample with those of acquirers in general. In Section 6, we show how various firm and deal characteristics make it more likely that a firm will be in our large loss deal sample but fail to explain the abnormal returns associated with our large loss deals. In Section 7, we investigate which hypotheses predicting negative acquirer returns are consistent with the data. In Section 8, we show that large loss deals are followed by poor long-run firm performance. We conclude in Section 9.

2. The determinants of acquiring-firm announcement returns.

Much of the literature on acquirer returns has focused on the negative bidder returns for acquisitions of public firms. This literature has provided a number of reasons why acquisitions can have negative returns. Some of this literature emphasizes that acquisition announcement returns can be negative when the acquisition is a positive net present value project for the firm because the acquisition provides rational investors with new information about the value of the firm's assets in place or its internal growth opportunities. Travlos (1987) and others argue that when a firm pays for an acquisition with equity, it may signal to investors that its equity is overvalued since otherwise it would pay cash (the equity signaling hypothesis). As a result, shareholders lose when the acquisition is announced, but the loss is due to investors learning that

the value of the firm's assets in place is lower than they thought. Investors may also learn from the announcement that the firm has poor internal growth opportunities (the internal growth opportunities signaling hypothesis).[1] The equity signaling hypothesis predicts negative abnormal returns for acquisitions financed with equity, while the internal growth opportunities signaling hypothesis predicts negative returns for bidders in general.[2]

As emphasized by Jensen (1986), managers of firms with poor growth opportunities may make wealth-destroying diversifying acquisitions rather than increase dividends and repurchase stock. Jensen's free cash flow hypothesis predicts that firms with high cash flow, but poor internal growth opportunities, are more likely to make wealth-destroying acquisitions.

Roll (1986) develops a hypothesis where the poor returns of acquiring firms are due to behavioral biases of managers of acquiring firms. He calls his hypothesis the hubris hypothesis. With his hypothesis, managers tend to be overly optimistic about acquisitions, so they overpay. Overpayment means that acquisitions redistribute wealth from bidder shareholders to target shareholders, but well-diversified shareholders do not care about this and no collective wealth is destroyed.

Several theories focused on explaining mergers in the late 1990s have recently received attention. Shleifer and Vishny (2003) model a situation where the acquirer's stock is overvalued. To preserve shareholder wealth in the long-run, it is in the interest of acquiring-firm shareholders to use their overvalued equity to acquire physical assets. The theory does not require the target to be correctly valued, only less overvalued, but it does require target management to have a shorter horizon than acquirer management. The example Shleifer and Vishny (2003) use to illustrate the theory is the Times Warner/AOL merger, where AOL shares were used to acquire assets of a

[1] See Jovanovic and Braguinsky (2002) for a model.

[2] Rhodes-Kropf and Viswanathan (2003) have a theory based on private information where acquirers whose equity is overvalued given management's private information are more likely to succeed when they attempt to make an acquisition. With their theory, there is a negative stock-price reaction to the acquisition announcement if the market infers from the success of the offer that the acquirer is overvalued, but they make no prediction as to whether the acquirer's stock increases or falls when the announcement is made.

non-internet company. A clear prediction of Shleifer and Vishny (2003, p. 22) is that overvalued firms making acquisitions should not perform more poorly in the long-run than comparably overvalued firms that have not made acquisitions. We call their theory the lock-in hypothesis. Dong, Hirshleifer, Richardson, and Teoh (2002) investigate a related hypothesis they call the misvaluation hypothesis. They predict that overvalued firms make more acquisitions, are more likely to pay with equity, and experience worse abnormal returns. Dong, Hirshleifer, Richardson, and Teoh (2002), Ang and Cheng (2002), and Rhodes-Kropf, Robinson, and Viswanathan (2003) provide evidence that is supportive of models where overvalued firms make more acquisitions. In addition, Dong, Hirshleifer, Richardson, and Teoh (2002) find that more overvalued firms using their proxies for overvaluation have worse abnormal returns when they announce acquisitions.

Jensen (2003) advances an alternative explanation for the mergers of the late 1990s. Though earlier research in finance typically viewed agency costs to be inversely related to Tobin's q, Jensen argues that overvalued equity creates agency costs as it increases management's discretion to pursue its own agenda. Increases in equity prices, for given debt, make the firm less levered. This makes it possible for management to take actions where it is less subject to monitoring from debtholders and less concerned about the risks associated with large investments. As a result, management is freer to maximize his own interests, perhaps to build empires or to maximize the value of the firm in the short run at the expense of long-term shareholders. We call this hypothesis the agency costs of overvalued equity hypothesis.

Overvalued stock facilitates empire building, but can also breed hubris since managers have seen their stock price increase in value and their firm grow quickly. Further, management whose compensation is closely tied to share prices might have strong incentives to make the firm grow to satisfy the expectations of analysts and investors even though doing so is not in the interest of long-term shareholders. Fuller and Jensen (2002) amplify this point by stating that in the late 1990s "overvalued equity 'currency' encouraged managers to make acquisitions and other investments in the desperate hope of sustaining growth, continuing to meet expectations, and

buying real assets at a discount with their overvalued stock." (p. 42). With this argument, firms with high stock prices have to keep finding growth in the hope of verifying the beliefs of investors that these firms have high growth prospects. By any standard, compensation of managers in the 1990s was more closely tied to firm performance than compensation in the 1980s. This makes it quite unlikely that managers would pursue an agenda that knowingly leads to an immediate decrease in stock prices. However, when investors have positive sentiment for a firm, as in the model of Polk and Sapienza (2002), managers can successfully increase firm value in the short-run even by making poor investments as long as investors cannot distinguish between good and bad investments when they are announced. It is also possible that managers get overtaken by hubris and push through acquisitions that cannot increase shareholder wealth when evaluated more rationally.

Neither Jensen (2003) nor Shleifer and Vishny (2003) make predictions about abnormal returns, but their theories can be used to make such predictions. With Shleifer and Vishny (2003), long-horizon managers of acquiring firms make acquisitions even if they expect the market will react poorly to them as long as they believe these acquisitions will make long-run shareholders better off. Hence, if managers cannot identify acquisitions that they expect the market to embrace, they will make acquisitions whose announcement return is negative, provided that the acquisitions make shareholders better off in the long run. However, if they do that, it should still be that in the long-run the shareholders are better off than if the firm had not made that acquisition. The Shleifer and Vishny theory predicts that the acquisitions will be paid for at least partly with equity.

With Jensen (2003), overvaluation creates the opportunity to make acquisitions that end up destroying value. Suppose that it is known that management wants to grow the firm and has to use acquisitions to do so. Investors are assumed to look upon such a strategy favorably. Each period, management is faced with an acquisition opportunity. Acquisition opportunities not in the interests of managers are rejected. Acquisition opportunities in the interests of management are

taken, but some of these are also increase the true value of the firm. Similarly to Polk and Sapienza (2002) investors eventually find out whether an acquisition increased true firm value. However, in some cases, they find out immediately. In those cases, firm value drops when the acquisition does not increase true firm value. With this theory, overvalued equity gives more discretion to managers to pursue acquisitions, whether they are paid for with cash or equity, but acquisitions paid for with equity are those that are the least costly to managers because they reduce their future discretion the least. Further, we expect firms where management is more constrained through leverage to be less likely to make acquisitions that are poorly received since a drop in equity prices makes leverage more constraining.

Though Shleifer and Vishny (2003) and Jensen (2003) rely on overvaluation to explain the acquisition activity of the most recent merger wave, there is an alternative explanation for the clustering of large loss deals we observe that is consistent with firms being correctly valued given the investors' information and with managers maximizing shareholder wealth. This explanation is that these acquisitions are economically important events that lead investors to reassess their expectations of the firm's prospects. If such a reassessment is adverse to the firm, it leads to a drop in the stock price. For firms growing through acquisitions, the market may conclude that the firm makes this acquisition because its opportunities to grow through acquisitions are more limited than expected. This could be because the acquisition reveals there are few suitable targets, the task of incorporating the new acquisition into the firm will slow growth, or the new acquisition does not fit in the business model the market expected the firm to pursue to justify its growth expectations. We call this hypothesis the growth reassessment hypothesis. This hypothesis is closely related to the internal growth opportunities signaling hypothesis, but it differs from that hypothesis because it applies to firms that have been making acquisitions and it does not imply that acquisitions in general have negative returns for acquirers.

When a firm is highly valued because of high growth expectations, a small change in these expectations can bring about a sizeable change in firm value. To see this, suppose the simple

Gordon growth model holds. The firm's cost of equity capital is 10% and unaffected by acquisitions. The firm pays a dividend of \$1 per share. Figure 2 shows how firm value depends on the firm's expected growth rate and the impact of a 100 basis point decrease in the expected growth rate. When the expected growth rate is high, the value of the firm is extremely sensitive to a change in the growth rate. To see this, let r be the cost of capital and g the expected growth rate. The derivative of the elasticity of the share price with respect to the growth rate is $r/(r-g)^2$, so that the share price becomes more sensitive to changes in g as it increases.

For changes in the expected growth rate to explain large losses associated with acquisition announcements, it has to be that in some cases an acquisition leads investors to reassess downwards the firm's expected growth. When the expected growth rate is very high, it is unlikely that a corporate action would lead to a sharp increase in the expected growth rate. Suppose there is a 0.8 probability that an acquisition will confirm a growth rate of 8% and a 0.2 probability that the expected growth rate is too high and should be 7.5%. As Figure 2 shows with a growth rate of 8%, a share is worth \$50 while it is only worth \$40 with a growth rate of 7.5%. Before the acquisition is announced, the firm is worth \$48. If the acquisition confirms the 8% growth rate, firm value increases to \$50 for an abnormal return of 4.2%. Instead, if the acquisition confirms the lower growth rate, firm value falls to \$40 for an abnormal return of −16.66%. With this example, the acquisition that corresponds to a reduction in the firm's expected growth leads to a large shareholder wealth loss. However, if the expected growth rate is 4% and the same acquisition leads to a reduction in expected growth rate of 50 basis points, firm value before the acquisition is \$16.67. With the acquisition that leads to a reassessment of the growth rate, firm value falls to \$15.38 for an abnormal return of −7.74%.

Our example shows that similar growth rate reassessments lead to very different abnormal returns depending on the expected growth rate before the acquisition. Consequently, this simple model predicts acquisitions that lead to a reduction in expected growth rates when expected

growth rates are high are accompanied by large wealth losses for acquiring-firm shareholders. In an efficient market with shareholder-wealth maximizing managers, the outcome where an acquisition lowers the growth rate expected by investors can be in the interests of long-term shareholders, but not in the interests of short-term shareholders. For a given valuation, firms with higher operating cash flow have a lower expected growth rate. Consequently, we predict that firms with higher operating cash flow are less likely to make a large loss deal. Firms with better growth opportunities are more likely to use equity financing, so we expect the most highly valued firms to use equity financing.[3] Note that the internal growth opportunities signaling hypothesis could be formulated as a special case of the growth reassessment hypothesis. In particular, it could be that when the firm does not make an acquisition, this confirms the existing expected growth rate, but any acquisition indicates that the existing expected growth rate is too high. In that case, however, the average abnormal return associated with acquisitions would be negative.

The predictions of the various hypotheses for which firms make acquisitions, how the acquisitions are financed, the determinants of abnormal announcement returns, and long-run returns, can be summarized as follows:

(i) **Which firms make acquisitions and how acquisitions are financed.** The lock-in, misvaluation, and agency costs of overvalued equity hypotheses predict that firms with overvalued equity make acquisitions financed with equity. The free cash flow hypothesis predicts that firms with poor investment opportunities but high cash holdings or cash flow are more likely to make bad cash acquisitions. The empirical evidence that high growth firms are more likely to use equity finance predicts that high valuation firms will use equity finance and is consistent with the equity and

[3] Jung, Kim, and Stulz (1996) show that high q firms are more likely to issue equity than debt. Martin (1996) shows that firms with valuable growth opportunities are more likely to finance acquisitions with equity.

internal growth signaling hypotheses as well as with the growth reassessment hypothesis.

(ii) **Determinants of abnormal returns.** The equity signaling hypothesis predicts negative returns for equity-financed acquisitions. The internal growth opportunities signaling hypothesis predicts negative returns for all acquisitions. The free cash flow hypothesis predicts lower average returns for firms with high cash holdings or cash flow and poor investment opportunities. The lock-in and agency costs of overvalued equity hypotheses predict lower average returns for firms that are overvalued because such firms will make acquisitions that do not benefit short-term shareholders. The misvaluation hypothesis predicts that overvalued firms announcing acquisitions have lower abnormal returns because the acquisitions are interpreted as evidence of overvaluation. If overvalued equity reduces the constraints on managerial hubris, we would expect acquisitions that destroy shareholder wealth to follow successful acquisitions. For given firm valuation and size, the agency costs of overvalued equity hypothesis predicts that firms with higher leverage are less likely to make acquisitions that destroy shareholder wealth. The growth reassessment hypothesis predicts that acquisitions with poor returns are accompanied by a reduction in the acquirer's expected growth and that, for a comparable reduction in the acquirer's expected growth, the returns of these acquisitions are worse for acquirers with higher expected growth before the acquisition.

(iii) **Long-run returns.** The lock-in, misvaluation, and agency costs of overvalued equity hypotheses predict that firms that make acquisitions fare poorly afterward because they are overvalued. However, the lock-in hypothesis predicts these firms should outperform comparably overvalued firms that do not make acquisitions while the agency costs of overvalued equity hypothesis predicts that firms that make acquisitions should perform more poorly than firms that do not. The other hypotheses

assume markets are efficient, so they predict no abnormal returns following large loss deals.

3. Acquisition returns, merger waves, and large loss deals

To evaluate the performance of acquisitions for acquiring-firm shareholders during the recent merger wave, we focus on acquisitions that are material to the acquirer. We investigate samples of acquisitions where the deal value corresponds to 10%, 5%, and 1% of the capitalization of the acquirer. 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 occurs between 1980 and 2001;
2. The acquirer controls less than 50% of the shares of the target at the announcement date if the target is a public or a private firm;
3. The acquirer eventually obtains 100% of the target shares if the target is a public or private firm;
4. The deal is completed;
5. The deal value is equal to or greater than $1 million;
6. The target is a U.S. public firm, private firm, subsidiary, division, or branch;[4]
7. The acquirer is listed on CRSP and Compustat;
8. The number of days from announcement to completion of the deal is between zero and one thousand.

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-

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

firm shareholders. The sum of the dollar returns divided by the sum of the equity capitalization of the acquiring firm corresponds to a value-weighted return. We add up the dollar returns across all acquisitions each year and report the results in Table 1. Through the paper, we report dollar gains 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.

In our sample, 4,136 acquisitions occur between 1998 and 2001. Adding up the dollar returns, the wealth of acquiring-firm shareholders fell by $240 billion dollars. 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 or because the typical acquisition has a worse return? To consider these hypotheses, we estimate the abnormal returns associated with acquisitions from 1998 through 2001 and 1980 through 1997. 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. 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.[5]

Table 2 shows the abnormal returns for acquisitions for these two subperiods according to how they are financed and the organizational form of the acquired firms. The first important result is that acquisitions have a lower mean abnormal return in 1998-2001 than in 1980-1997, but the mean abnormal return is positive in both periods. Since dollar returns are worse in 2000, we examine abnormal returns for that year separately. The average abnormal return for 1998-

[5] We also calculate abnormal returns using the value-weighted CRSP market return in the estimation of the market model and in using net-of-market returns. Our results are not sensitive to using either definition of abnormal returns.

2001 for all the acquisitions is 0.692%, but it is 1.081% for 2000. Hence, the large losses for the large loss deals in 2000 are not due to unusually poor returns for acquisition announcements.

As defined by Malatesta (1983), the dollar abnormal return is the actual dollar return minus the dollar return the firm would have earned because of the market return, so that it is the firm's equity capitalization times the abnormal return cumulated over the event window. It is immediately clear from Table 2 that the explanation for the large aggregate loss of acquiring-firm shareholders cannot be a worsening of the abnormal return associated with acquisitions because, even though the mean abnormal return falls, it is positive from 1998 through 2001. So, if each acquisition would have earned the mean abnormal return, acquiring-firm shareholders would have gained from acquisition announcements. The lower abnormal returns in 1998-2001 are reminiscent of the finding by Harford (2003) that abnormal returns are lower at the end of industry merger waves. However, the striking result in Table 2 is that mean abnormal returns are positive during this period, so the typical merger creates wealth.

The amount spent on acquisitions from 1998 through 2001 is much larger than the amount spent in earlier periods. In our sample, the aggregate transaction value from 1980 to 1997 is $1.421 trillion and it is $1.992 trillion from 1998 through 2001. In addition, stock prices increased dramatically. However, since the mean abnormal return is positive, these changes do not explain the large losses we document.

It is quite clear from Table 2 that the decrease in the mean abnormal return is due to the acquisitions of public firms paid for with equity. Most dramatically, the mean abnormal return of acquisitions of public firms paid for completely with equity falls by 2.472%, so that the mean abnormal return for these acquisitions, -3.551%, is much lower than observed in other samples in the literature (see Andrade, Mitchell, and Stafford, 2001) or in our sample for 1980-1997. In contrast, the mean abnormal return for cash acquisitions of public firms increases so that it is positive and significant. As a result, the difference between the mean abnormal return for equity acquisitions and the mean abnormal return for cash acquisitions is more than 5%. However, the

mean abnormal return for private firm acquisitions paid for with equity is insignificantly different between 1998-2001 and 1980-1997. Our result cannot therefore be due to greater use of equity finance in 1998-2001 than in 1980-1997. The only acquisitions with significantly negative abnormal returns in 1998-2001 are those of public firms paid for with all equity or some equity.[6]

To explain the large losses of acquiring-firm shareholders in 1998-2001, the acquisitions of the very largest firms are more likely to have extremely poor abnormal returns, *i.e.*, acquisitions of public firms paid for with some equity, than the acquisitions of other firms during that period. Since the largest firms must be more likely to make acquisitions with low mean abnormal returns to explain our evidence and since the acquisitions with the lowest mean abnormal returns have worse abnormal returns in 1998-2001, the distribution of dollar returns must have changed so that the dollar returns at the lowest percentiles of the distribution of dollar returns are much worse in 1998-2001 than in 1980-1997. Such a change would have only a small impact on the mean abnormal return of acquisitions because it would affect the abnormal returns of a small fraction of the observations.

Figure 3 shows a box plot that illustrates how the distribution of dollar returns evolves through time. From 1998 through 2001, there are more acquisitions with extremely large dollar losses and gains than any other time, but the increase in the frequency and magnitude of large dollar loss acquisitions dwarfs the increase in large dollar gain acquisitions. In statistical terms, this means that 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 1980-1997 and −6.99 for 1998-2001, 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

[6] The average abnormal return for the mixed group containing some equity (n=203) during the period 1998-2001 is significantly negative, while the average abnormal return for the mixed group without some equity (n=162) is insignificantly positive.

by the aggregate value of all transactions. We find that the aggregate losses for the 5th and 95th percentiles for 1980-1997 are, respectively, –6% and 7%, so the distribution is almost symmetric. In contrast, for the second subperiod, the aggregate losses for the 5th and 95th percentiles are –19% and 13% respectively, so the distribution is no longer symmetric. Third, in Figure 4, diagnostic plots show how the distribution of dollar returns in 1998-2001 departs from a symmetric distribution more in comparison to the distribution of dollar returns in 1980-1997.

As shown in Figure 3, the increase in the negative skewness of the distribution of dollar returns is due to an increase in the frequency of acquisitions in the tail of the distribution which have extremely large dollar losses. To understand the large aggregate losses of acquiring-firm shareholders, we therefore 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. There are 87 acquisition announcements where acquiring-firm shareholders lose more than $1 billion from 1998 to 2001. The total loss for acquiring-firm shareholders from these announcements is $413 billion. If we exclude these 87 acquisitions, shareholders of acquiring firms gained $157 billion from 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.

Acquisitions announcements with shareholder losses in excess of $1 billion are unusual. Table 3 presents the distribution of these announcements over the sample period. As is apparent, almost all large loss deals take place in the period 1998-2001. In fact, only 17 out of 104 large loss deals occur in the period before 1998, and only 5 cases occur during the 1980s. This distribution of large loss deals differs sharply from the distribution of all acquisitions, because the large loss deals are clustered in 1998-2001. Though approximately 34% of the mergers (4,136 out of 12,023) occur in 1998-2001, about 84% of the large loss deals (87 out of 104) occur in the

same period. Table 3 also shows the fraction of the amount spent on acquisitions that corresponds to large loss deals. The four-year period from 1998 to 2001 represents 58% of the total amount spent on acquisitions for the entire sample, 1980 to 2001. However, 90% of the amount spent on large loss deals is spent during that 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.

The sample of large loss deals is constructed using the change in the announcing firm's capitalization rather than the abnormal dollar return. In other words, we did not correct for market movements in constructing that sample. We chose to proceed this way because we cannot exclude the possibility that some of our large loss deals may have affected the market return, so it makes sense to start from the dollar change in shareholder wealth. The aggregate abnormal dollar return associated with the 104 large loss deals is a loss of $444 billion in 2001 dollars, which exceeds the loss of $430 billion we obtain without adjusting for market movements, so that it makes little difference whether we use the abnormal dollar return or the dollar return. If we use the dollar abnormal return, our total sample size increases by 2 and the composition changes slightly with 15 transactions leaving the sample and 17 entering it. With these changes, the distribution over time is similar. None of the conclusions of our paper are sensitive to whether we use the dollar return or the abnormal dollar return to construct the sample of large loss deals.

4. The statistical and economic significance of the large loss deals

In this section, we establish that the large loss deals are economically and statistically significant, they cannot be explained by existing evidence on returns for large firms acquiring public firms with equity, they cannot be explained by industry or market returns, and their announcement is accompanied by a reduction in the combined shareholder wealth of the acquiring firm and the acquired firm.

4.1. Are the large loss deals noise resulting from more volatile stock prices?

The clustering of the large loss deals in the last four years of the sample suggests a potential explanation for their existence. The last four years of our sample are years of high volatility. One has to be concerned that large dollar losses might not be unusual for firms during these years. Another way to put this is that it could be that the losses of our sample are not statistically significant because of the high volatility.

It makes no sense to test whether the cross-sectional mean of raw and abnormal returns in our sample is significantly negative since we select our sample so the returns are 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. First, we compute the standard deviations 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 three firms. The average *t*-statistic for the three-day return is –5.93 and the median is –4.47. We find similar results when we repeat the test using market model residuals. The bottom line is that the returns and abnormal returns associated with these acquisitions are significant when compared to the recent returns history of the announcing firms.

4.2. Can our results be predicted using previous evidence on abnormal returns?

Moeller, Schlingemann, and Stulz (2003) show that large firms have worse acquisition abnormal returns and 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. Not surprisingly, all of the firms in our sample of large loss deals are large firms. Consider a firm with a market capitalization of $50 billion whose stock price falls by 2.45% when it announces an acquisition. A –2.45% abnormal return would lead to a $1.225 billion reduction in

shareholder wealth. We also show in Table 2 that acquisitions of public firms paid for with equity only have a mean abnormal return of –3.551%, so that firms with less than $50 billion of equity market capitalization could make a loss of $1 billion announcing such acquisitions.

Can the evidence on equity-financed acquisitions of public firms having negative abnormal returns explain our large loss deals? The answer is no because too few of our large loss deals are pure equity acquisitions of public firms and because the abnormal returns of the large loss deals are too large in absolute value. Table 4 shows that 50 acquisitions are financed with equity only, 17 are financed with cash only, and 37 deals are financed with a mix containing equity, cash, and/or other forms of consideration. Of the 50 acquisitions financed with equity, only 35 are acquisitions of public firms. Chang (1998), Fuller, Netter, and Stegemoller (2002), and Moeller, Schlingemann, and Stulz (2003) show that acquisitions of private firms financed with equity have positive abnormal returns. This suggests that explanations for the large loss deals based on all-equity financing can at most explain one third of the large loss deals. Table 4 shows that the average abnormal return of the large loss deals over the three days surrounding the acquisition announcement is –10.089% and the median loss is –7.474%. The mean abnormal return of firms that pay with equity, –11.341%, is almost twice the mean abnormal return for firms that pay with cash, –6.488%, but regardless of how the acquisition is paid for, the percentage loss is much larger than the mean abnormal return for equity offers to acquire public firms for the whole sample.

4.3. Are the large loss deals due to industry returns?

It is common practice in event studies to control for the return of the market. However, we know that from 1998 through 2001 there were 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 at explaining the large loss deals in 2000 and 2001 than those earlier since stock prices fell in these years, but it is a

legitimate concern. Of the 104 large loss deals and using the SDC provided SIC codes, 50 acquirers are in manufacturing. Within the manufacturing sector, 20 of the 50 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 ten firms or more with that SIC code. If we cannot find ten 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 three-day abnormal return of the portfolio. It is immediately clear that poor contemporaneous industry returns cannot explain the large loss deals. The three-day abnormal return for the matching firms is –0.46% with a *t*-statistic of –2.23. 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 –9.99% (the median is –7.50%).

The return for the acquiring firm's industry over the three days surrounding the acquisition is negative, but quite small. As a result, the large loss deals can only have a very limited impact on the industry of the acquirer. Almost all of the adverse information revealed through the acquisition announcement is specific to the acquirer and deal. In particular, information about industry growth opportunities revealed by the acquisition is of little importance.

The negative returns of firms in the industry could come about either because the market reassesses industry growth opportunities or because the acquisition hurts these firms directly, perhaps through consolidation. Akdogu (2003a) develops a competitive advantage theory of bidder returns, whereby the bidder gains a competitive advantage through the acquisition. Because of this, competitors lose. The bidder loses when all parties would have been better off absent an industry restructuring. In this case, the bidder is forced into making an acquisition so that its competitors do not make that acquisition. Akdogu (2003b) provides evidence of a

negative abnormal return for competitors in the case of acquisitions in the telecommunication industry. The mean abnormal return is similar to the one we report here. It could therefore be argued that the negative abnormal returns of firms in the acquirer's industry are due to the acquirer obtaining a competitive advantage. However, the cost involved for the shareholders suggests that the acquisition does not make sense from their perspective. The competitive effect of acquisitions seems to be more important for acquisitions within the acquirer's industry, but the acquirer's industry return is not significantly different for acquisitions outside the industry.

4.4. Do the losses just redistribute wealth from bidder shareholders to target shareholders?

The losses of acquiring-firm shareholders would certainly be painful for undiversified shareholders. However, most shareholders are diversified, so they might hold shares in the acquired firms also. Consequently, it is important to consider the impact of the announcement on the combined wealth of the acquiring-firm and acquired-firm shareholders. If the acquisition involves synergy gains, the loss in value for the acquiring firm would be more than offset by the gain of the acquired firm. Bradley, Desai, and Kim (1988) show that such an outcome is typical for their sample of takeovers in the 1970s and 1980s.

We measure the impact of the acquisition announcement on the combined value of the acquiring firm and of the acquired firm in percentages and in dollars following the method of Bradley, Desai, and Kim (1988). We start by forming a time-series of portfolio returns in event-time for each sample transaction, where the portfolio is a value-weighted average of the target and bidder return. The subscript T denotes the acquired firm and the subscript B denotes the acquiring firm. The portfolio return for firm i at time t,$R_{P(i),t}$, is defined as:

$$R_{P(i),t} = (W_{T(i)} / (W_{T(i)} + W_{B(i)})) \times R_{T(i),t} + (W_{B(i)} / (W_{T(i)} + W_{B(i)})) \times R_{B(i),t},$$

and

$$W_{T(i)} = (1 - PCTOWN_i) \times MVE_{T(i)} \text{ and } W_{B(i)} = MVE_{B(i)}.$$

We denote by *PCTOWN* the percentage of target shares held by the acquirer prior to the announcement of the deal and *MVE* stands for market value of equity two days prior to the announcement.

The abnormal return over an event-window, $CARC_i$, is defined as the cumulative abnormal return over the event window for the portfolio. 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 return for the portfolio over an event-window, $\$CARC_i$, is defined as $(W_{T(i)} + W_{B(i)}) \times CARC_i$.

The last panel of Table 4 reports the results for the percentage change and the dollar change in the combined value of the acquiring and acquired firm. We can only report these results for publicly-traded acquired firms. 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 using the time-series and cross-sectional distribution. We find that the combined value of the acquiring and acquired firm falls by roughly 7%. This abnormal return is significantly different from zero. 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 −1.93. The abnormal return is positive and significant for only one acquisition. The dollar loss is highly significant and aggregates to $212 billion. In other words, these announcements are associated with a considerable loss in shareholder wealth when we take into account the gains made by acquired-firm shareholders. Perhaps an even more striking result is that for 49 acquisitions the loss of acquiring-firm shareholder wealth exceeds the consideration paid to the acquired firm. There is no evidence of

positive synergy gains to acquisitions in our sample when these gains are measured using the Bradley, Desai, and Kim (1988) method.

The fact that the combined value of the acquired and acquiring firms falls when the acquisition is announced in our sample means that there is little support for Roll's hubris hypothesis when that hypothesis is formulated to imply that acquiring-firm losses just redistribute wealth from acquiring-firm shareholders to acquired-firm shareholders. Obviously, this result does not reject the more general version of the hubris hypothesis, where hubris may lead managers to make wealth-destroying acquisitions.[7]

5. Firm and deal characteristics for our large loss deal sample

Table 5 compares the firms in our large loss deal sample with other firms announcing acquisitions. The mean and median transaction value in our large loss deal sample are very large: the mean value is more than 40 times the mean value for the 11,919 other transactions and the median is more than 100 times the median for the other transactions. Another way to see that large loss deals have a uniquely large transaction value is to analyze 1998 through 2001. There are only 9 non-large loss deals that have a larger transaction value than the mean of the large loss deals in our sample and 75 non-large loss deals that are larger than the median transaction value of the large loss deals. These 75 transactions have a mean abnormal return of –0.76%, so that transaction value alone cannot explain the large loss deals. We turn next to the ratio of transaction value to the market value of assets (computed as the book value of assets minus the book value of equity plus the market value of equity) and to the market value of equity. Neither the mean nor the median ratios differ between large loss deals and the other transactions. So, firms in our large loss deal sample do not make acquisitions that are significantly larger relative to the market value

[7] See Malmendier and Tate (2003) for evidence on the relation between managerial overconfidence and acquisitions.

of their assets or of their equity. Large loss deals take longer to complete, which is not surprising since they are larger and presumably more complicated transactions.

Equity is used more often with large loss deals than with other deals and cash is used less often. However, as we saw earlier, roughly half of the large loss deals are acquisitions of public firms financed with equity only. So, pure equity-financed deals cannot explain the clustering of large loss deals in the period from 1998-2001 – even without these deals, the number of large loss deals in that period would be exceptional. However, 80% of the large loss deals in that period involve the use of at least some equity in payment. 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 cannot explain the large loss deals. The acquisitions in our large loss deal sample are more likely to be within the acquirer's industry than 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. Almost half of the acquisitions from 1980 through 2001 in our sample of 12,023 acquisitions are acquisitions of private firms. Yet, only 12.5% of large loss deals (13 out of 104) are private firm acquisitions. In contrast, 77.88% of the large loss deals are acquisitions of public firms (81 out of 104). This evidence is consistent with the lock-in hypothesis and with the agency costs of overvalued equity hypothesis. With a private firm acquisition financed with equity, the shareholders of the acquired firm have concentrated ownership, so they negotiate with the acquirer and can obtain valuable private information from the acquirer about the value of its equity. One would expect firms that are overvalued to be less likely to subject themselves to such scrutiny. However, there is another possible explanation for why large loss deals are more likely to be acquisitions of public firms. Mitchell, Pulvino, and Stafford (2002) 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 acquisition announcement. Though we do not reproduce the results in a table, we examined how the cumulative abnormal returns evolve after the announcement date. The cumulative abnormal return is −10.5% at day +10 and −14.2% at day +60, so that there is no indication that there is a significant transitory component to the announcement abnormal return.

More competition could 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 so that it cannot 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. With that measure, the large loss deals seem to take place in industries with slightly less activity than the other deals. Consequently, there is no evidence suggesting that our large loss deals can be explained by greater competition. Large loss deals are more likely to include options and termination fees (not reported). A possible explanation for the large loss deals is that the firms making these deals are stuck with them because of breakup fees. In other words, they announced a deal, saw that the market reacted poorly to it, but could not walk away because of a contractual arrangement with the target. This is not a plausible explanation because only about a fifth of the acquisitions have acquirer termination fees and these fees are lower than the shareholder wealth loss associated with the announcement, suggesting that management wanted to conclude the acquisition.[8]

In Panel B, Table 5, we report characteristics for firms in our sample of large loss deals and firms that make other acquisitions. The difference in market value of equity between firms in our large loss deal sample and other firms is enormous. The median market value of equity of the firms that are not in our large loss deal sample is 1% of the market value of equity of the firms that are. This percentage is 1.5% for the equity-financed acquisitions from 1998 through 2001.

[8] The largest bidder breakup fee we have is $1.8 billion. According to Bates and Lemmon (2003), this is the largest bidder break-up fee on record. Typical breakup fees are much lower, though.

Similar results hold when we compare the book value of assets. However, it is not the case that acquisitions by the largest firms ineluctably are large loss deals. For 1998 through 2001, ten large loss deals are by firms that are not in the 10th decile of firm size of firms making acquisitions. Further, there are 330 acquisitions by firms in the 10th decile of firm size where the mean abnormal return for these acquisitions is 0.462%. If we consider firms that are in the 10th decile of the firm size distribution of firms that are not large loss deals and that use some equity to pay for the acquisition, we find 278 acquisitions with a mean abnormal return of −2.859%.

Free cash flow theory predicts that firms with more cash and cash flow, lower leverage, and poor investment opportunities are more likely to make acquisitions against the interests of shareholders. 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.

The growth reassessment hypothesis predicts that highly-valued firms are more likely to announce acquisitions leading to large losses, while the free cash flow hypothesis predicts the contrary if high valuation firms are those with valuable growth opportunities. We use two valuation measures: Tobin's q and the Fama-French book-to-market ratio, BM. We find that the median and mean of the Tobin's q of acquiring firms in our large loss deal sample are significantly higher than the median and mean of the Tobin's q of the other acquiring firms. One might be tempted to attribute the reason for this difference to the clustering of large loss deals in the later years of the sample, when equity valuations are high. However, during that period, the large loss deal firms have a high Tobin's q relative to the other firms. From 1998 to 2001, the q's of the firms in our large loss deal sample are significantly higher than the q's of other firms making acquisitions. In the 1980s, though, the large loss deals are not made by high q firms. Further, we report the industry-adjusted q, which is the firm's q minus the median industry q when the industry is defined using the 4-digit SIC code. Large loss deals have a significantly higher industry-adjusted q than other acquirers and acquirers have a positive industry-adjusted q. Dong et al. (2002) 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 what it is for the other firms in our sample. Large loss deal firms have a lower BM ratio than their industry, but the other acquirers do not. The evidence on q and the BM ratio is consistent with the hypotheses discussed in Section 2 that explain poor abnormal returns by the high valuation or overvaluation of acquiring firms. Whether the high valuations reflect overvaluation or growth opportunities, we would expect firms with such high valuations to be more likely to make equity financed acquisitions than other firms, which is what we observe.

Finally, there is a significant difference in operating cash flow to assets when using the mean, but there is none using the median. Large loss deal firms have a somewhat lower operating cash flow. Since large loss deal firms have lower cash flow, a similar amount of cash, and a higher Tobin's q, the large loss deals cannot possibly be explained by free cash flow theory.

We also compare the large loss deals from 1998 through 2001 to other acquisitions during that period restricting the sample to acquisitions involving at least some equity payment but do not report the results in a table. Strikingly, this comparison leads to no significant change in our conclusions. The only result that changes is there is no difference in operating cash flow. Large loss deal firms differ from other firms making acquisitions in much the same way whether we compare them to the whole sample of acquisitions or whether we restrict our comparison to only firms that use equity in payment from 1998 through 2001. This means that the differences are not driven by the clustering of large loss deals during the period from 1998 through 2001 and the use of equity finance.

6. Can firm and deal characteristics explain large loss deals?

In this section, we investigate whether firm and deal characteristics can explain the probability that a particular acquisition is a large loss deal and whether the abnormal returns associated with large loss deals can be explained with firm and deal characteristics.

We first estimate logistic regressions using all acquisitions from 1980 through 2001. In each regression, the dependent variable takes a value of one if an acquisition is in our large loss deal sample. Table 6 shows the results for the logistic regressions reporting both regular and marginal coefficients. Deal characteristics presumably depend on firm characteristics. We therefore first estimate regressions that depend only on exogenous variables at the time of the deal.

The explanatory variables in regression (1) are market leverage which is defined as the book value of debt divided by the market value of assets, operating cash flow divided by total assets, the logarithm of total assets, the book-to-market ratio computed as in Fama and French (1993), and year and industry (two-digit SIC main classification) dummy variables (coefficients not reported). We find that an acquisition is much more likely to be in our large loss deal sample if the acquirer has low leverage (consistent with the agency hypothesis), low operating cash flows (consistent with the growth reassessment hypothesis), a low BM ratio, and finally, but least surprising, is a large firm. Strikingly, none of the industry and year dummy variables are significant. We estimate (but do not report) the regression using the industry-adjusted BM ratio, but this has no noticeable impact on the regression. Since there are industry differences in BM, one might think that the industry-adjusted BM ratio would be a better proxy for overvaluation than the absolute value of the ratio. In that case, our evidence would not be supportive of BM proxying for overvaluation. In model (2) we replace the BM ratio with Tobin's q. Tobin's q has a significant positive coefficient and the sign of the other significant variables is not affected.

The sign of the coefficients on the valuation measures implies that firms with greater valuation measures are more likely to make an acquisition announcement with a loss in shareholder wealth that exceeds $1 billion. Since most large loss deals involve some equity payment, this also means that firms with higher valuations are more likely to use equity as a form of payment. The negative coefficient on leverage is consistent with the hypothesis that constraints on managerial discretion make it less likely that management will make a large loss deal. The result is consistent with the evidence of Maloney, McCormick, and Mitchell (1993). The negative

coefficient on operating cash flow is not supportive of the free cash flow hypothesis but is consistent with the growth reassessment hypothesis. The positive sign on q is not consistent with the free cash flow hypothesis either.

Regression (3) uses the same variables as regression (1), but now adds a number of deal-specific variables. As before, leverage and book-to-market have significant negative coefficients. Acquisitions of public firms are more likely to be large loss deals. The omitted acquisitions are acquisitions of subsidiaries. The probability that an acquisition will be a large loss deal increases with the size of the acquisition relative to the value of the acquirer, but otherwise is unaffected by deal characteristics. Whether the acquired firm is in the same industry as the acquirer does not seem to matter. Regression (4) again uses our proxy for Tobin's q instead of market-to-book. The results are similar.

Table 7 shows regressions where the dependent variable is the acquirer abnormal return. We then calculate the mean regression residual of the large loss deals to evaluate whether these regressions can explain the abnormal returns associated with the large loss deals. Tobin's q has a negative coefficient and the BM ratio has a positive coefficient. The significance of these coefficients depends on whether the values for q and BM are trimmed or not. It is common in the literature to set the highest values of q at a pre-set value. We trim q at the 1% level. Absent trimming, the coefficients are not significant. Regardless of whether these values are trimmed or not, the economic significance of the coefficient is limited: Going from the mean BM of all firms when they announce acquisitions (0.554) to the mean BM of firms that announce large loss deals (0.259) decreases the abnormal return by 0.25%. The coefficient on the market value of leverage is positive and significant, indicating that firms with higher leverage have higher announcement returns, which is the result reported by Maloney, McCormick, and Mitchell (1993). 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 as expected. Finally, the coefficient on size is negative and significant in each specification as expected from Moeller, Schlingemann, and

Stulz (2003). The economic significance of the size coefficient is large since the difference in abnormal return going from the average size of the whole sample to the average size of the large loss deal firms is –2%. We estimate the residuals associated with the large loss deals. The mean large loss deal residual is at least 7.5% in absolute value for each regression, so that the regression models would predict abnormal returns of the order of –2.5% for our large loss deal acquisitions. The mean and median residuals for our large loss deals are significantly different from zero with *t*-statistics of at least 7 in absolute value.

We re-estimated the regression models (1) through (4) for the period 1998-2001, but for parsimony do not report the results. Neither Tobin's *q* nor book-to-market are significant for the OLS abnormal return regressions for the 1998-2001 period that use deal variables.

The regressions estimated so far do not include the bidder premium as an independent variable. The reason for this is that premium data is only available for a subset of the public firm acquisitions. However, since most large loss deals are public firm acquisitions, it useful to consider such acquisitions separately and to also investigate whether the large loss deals are caused by unusually large premiums. SDC gives three different pieces of information on the premium: (1) a measure based on the aggregate value of cash, stock, and other securities offered by the bidder to the target shareholder (the component premium), (2) an initial price offered, and (3) a terminal price offered. As Officer (2003) points out, these measures are only weakly correlated. The initial price is available for fewer firms than the other measures. To obtain a percentage premium, these measures are typically divided by the stock price at some date before the announcement. When using them, we compute a percentage premium using the stock price 50 days before the offer similar to Moeller, Schlingemann, and Stulz (2003). Alternatively, Schwert (2000) uses the cumulative abnormal returns of the acquired firm for a period that starts on day –63 and ends 124 days after the announcement as an estimate of the premium. We estimate regressions predicting the premium offered using each of the four premium measures (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 insignificant with three out of four premium measures. The only case where the dummy variable is significant and positive is with the initial price measure. In this case, the dummy variable has a significant coefficient of roughly 0.11, but the sample is dramatically smaller. The problem may be that the premium data is too noisy. In most regressions, the coefficient on the large loss deal dummy is economically significant, typically indicating a higher premium of 8% – 10%. However, overpayment of the order of 10% can not explain our large loss deals.

Regressions (5) and (6) in Table 7 are estimated only for the acquisitions for which we have premium information. These regressions are the same as regressions (3) and (4) with the premium added.[9] In these regressions, we use the component premium since it is available at the time that the abnormal returns are estimated and since the sample is substantially larger with that measure than with the initial price measure. The premium has no impact on the abnormal returns or on the estimate of the dummy variable for large loss deals. The same result holds if we use the initial price measure. Our regressions do not provide evidence that the large loss deals are deals where the acquirer overpays. The mean residuals for the large loss deals are substantially smaller than for regressions (1) through (4). Nevertheless, the mean residuals are close to –5% and with *t*-statistics in excess of 4 in absolute value.

One might argue that a firm's Tobin's q or BM ratio relative to its industry is a better measure of misvaluation. We re-estimated all our regressions using industry-adjusted q's and BM ratios. There is no evidence that industry-adjusted measures are more useful in predicting abnormal returns than the measures we use in the reported regressions.

The growth reassessment hypothesis implies that among firms whose growth is reassessed by the market, those firms with the highest equity valuation should have the worst abnormal returns.

[9] Since the premium is only available for public targets, the dummy variables for private and public have been removed in models (5) and (6) as well.

We re-estimate regressions (3) and (4) only for the large loss deals but do not report the results in a table. We find a very strong positive effect of the BM ratio and a strong negative effect of q, so the large loss deals of firms that are valued less have more positive abnormal returns. The coefficients on the BM ratio and q are more than ten times what they are for the sample as a whole.

7. Theories of negative acquirer returns and large loss deals

We first test the simple overvaluation hypothesis that overvalued firms make poor acquisitions, using q and the BM ratio as proxies for overvaluation. We then show that the signaling hypotheses are inconsistent with our evidence. We finally provide evidence consistent with a role for hubris and agency costs and with the growth reassessment hypothesis.

7.1. Comparison of large loss deals to acquisitions by highly valued firms.

At the time firms make a large loss deal, they have high valuations as measured by Tobin's q or the BM ratio. Further, firms with high valuations are more likely to be in that sample. In the abnormal return regressions we estimate, neither Tobin's q nor the BM ratio have economically significant coefficients when we use the whole sample. Consequently, high valuations cannot explain the poor announcement returns in a linear model. However, the models discussed in Section 2 do not predict that the relation between valuation and abnormal returns has to be linear. We re-estimated the regressions allowing for quadratic terms, but this did not change our inferences about the economic significance of the valuation measures. Another approach is to look at firms whose valuation exceeds the average or median valuation of the large loss deal firms.

To investigate whether there is something unique about very high valuations we construct a sample of acquisitions made by firms with higher valuations than the mean valuations of the firms in our large loss deal sample for 1998-2001. We show the results in Panel A of Table 8.

Whether we use Tobin's q or BM and whether we adjust for the industry median or not, we find that for the sample without the large loss deal firms, the higher valuation firms have higher abnormal returns. Note that the mean abnormal return for the acquirers with higher valuations is positive. No case can therefore be made that the acquisitions of high valuation firms have poor returns from 1998 through 2001. If the valuation measures we use are suitable proxies for overvaluation, our evidence is inconsistent with the misvaluation hypothesis that predicts overvaluation alone leads to poor acquisition returns.

The models that focus on overvaluation discussed in Section 2 predict that overvalued firms should use equity to pay for acquisitions. We saw the large loss deals are more likely to involve equity as a form of payment than the other acquisitions. We construct a sample of acquisitions of public firms paid for with equity only and then split the sample each year according to whether the acquirer has a higher q than the average q of the firms that make large loss deals in that year. The results are reported in Panel B of Table 8. We find no significant difference in abnormal returns between the firms in the high q versus the low q subsample. Furthermore, the average abnormal returns are not noticeably larger than those reported for these types of offers in the earlier literature. We proceed in the same way using the BM ratio. Again, there is no significant difference between the abnormal returns of firms with a BM ratio higher than the average BM ratio of firms in our large loss deal sample and the abnormal returns of firms with a lower BM ratio. Importantly, regardless of the valuation measure we use, the abnormal returns of either sample are much closer to zero than the abnormal returns of our large loss deal sample. Rather than looking for firms with a lower BM ratio than the large loss deal firms, we also constructed a subsample of public firm acquisitions paid for with equity where the firm is in the top decile of equity capitalization of firms making acquisitions and where the firm's BM ratio is in the bottom decile of the BM ratio of firms making acquisitions. The acquisitions in that subsample that are not large loss deals have a positive insignificant abnormal return of 0.86% (not reported in the table).

Relatively large deals will have more of an impact on a firm's growth rate than other deals. We therefore consider a subsample of Panel B where firms in addition have deals that are relatively larger than the mean large loss deal compared to the firm's equity capitalization. We see that the abnormal returns are closer to those of large loss deals. In fact, for low BM firms, the average abnormal return is not significantly different from the abnormal return of the large loss deal firms. However, these abnormal returns do not seem to be estimated precisely, so they are not significantly different from the high BM firms either.

7.2. Large loss deals and signaling.

The equity signaling and the internal growth opportunities hypotheses predict negative acquirer returns because acquisitions convey negative information about the true value of firms. If these hypotheses are relevant in the context of our sample of large loss deals, they should do a good job of predicting returns of acquisitions for the firms making large loss deals in general. They do not. In Panel A of Table 9, 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.

The firms in our sample are serial acquirers. If we ignore the criterion of economically significant acquisitions, SDC reports an average of 19.4 acquisitions from 1980 through 2001 for the large loss deal firms. It does not make sense therefore to conclude that the large loss deal reveals poor internal growth opportunities. If acquisitions reveal poor internal growth opportunities, that information would have been conveyed to the markets by the earlier acquisitions. Table 9 shows that the firms in our sample make acquisitions before the large loss deal with mean abnormal returns that are much less negative than those of the large loss deals. In particular, when we consider only acquisitions of public firms financed with at least some equity

or only equity, the mean abnormal return of the firms that make large loss deals is more positive than the mean abnormal return of the firms that do not make large loss deals.

7.3. Bad acquirers or hubris?

One possibility could be that the firms that make large loss deals are just bad acquirers. Another possibility is that they did so well that management became overconfident. Table 9 already provides some evidence indicating that the firms that make large loss deals are not bad acquirers. In that table, we also sum the abnormal dollar returns for the acquiring firms. We find that for the two years before the large loss deal, the firms create value through acquisitions for a total of $20 billion. They create value in total for each type of acquisition. In the year before the large loss deal announcement, 26 firms make an economically significant acquisition and the mean abnormal return is 2%. However, the large loss deal is a watershed event. In the two 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 is significantly lower and is –3.27%.

We cannot reject that the firms that make large loss deals are very successful with acquisitions until they make the large loss deal. Valuation alone cannot explain this change in the returns associated with acquisition announcements. It could be that these firms exhausted opportunities to make valuable acquisitions. Alternatively, it is possible that the firms did so well that management's confidence grew into overconfidence. In this case, hubris would lead the firms to make acquisitions that are viewed by the outside world as value-destroying, but management does not believe they are. It is also possible management decided if it did not try to make acquisitions, firm value would eventually fall even more.

With the growth reassessment hypothesis, a large acquisition would be more likely to lead to significant change in the firm's expected growth rate – smaller transactions will affect the

operations of the firm less. However, the size of the deal could matter for other reasons. In particular, in a behavioral perspective, a large deal might be more salient for investors and more easily lead them to change their views about the firm. The large loss deals are much larger acquisitions than the other acquisitions made by the same firms. The large loss deals are transactions with an average consideration of $8.76 billion, while the other transactions by the same firms in our sample have an average consideration of $1 billion. As a fraction of equity market value, the average fraction for the deals by these firms that are not in our large loss deal sample is 17% of market value; in contrast, the large loss deals represent 26.80% of market value. Even more strikingly, for 58 out of the 76 firms in our large loss deal sample, their largest transaction in the sample is a large loss deal. Another way to look at the importance of these transactions is as follows. In our sample, there are only 2 transactions from 1998 through 2001 where the consideration paid exceeds the average consideration paid in our large loss deals for acquisitions of public firms paid for with equity.

Does this mean that large loss deals are simply the outcomes of large acquisitions by large firms? We construct a sample of all acquisitions from 1998-2001 by firms in the top decile of equity market capitalization that are also in the top decile of the size of transactions but are not large loss deals. We then select from that sample all acquisitions of public firms paid for with some equity. The mean abnormal return for these transactions is −1.143%. Acquisitions that are not in that set have a mean abnormal return of −2.743%. If the cutoff values for equity market capitalization and transaction size are applied to the large loss deal firms that pay with some equity, 60 out of 70 would be in the top decile of equity market capitalizations and top decile of transactions. The large loss deals have significantly worse abnormal returns than the acquisitions corresponding to the largest deals of the largest firms for the firms that do not make a large loss deal.

We next consider whether the role of the firm's valuation relative to its own history. A high valuation can breed overconfidence since management may attribute too much of that high

valuation to its skills. Further, a high valuation makes transactions possible that otherwise would not be. In particular, with a high valuation, a firm can pay a high premium for an equity-financed acquisition without having the acquisition lead to a decrease of earnings per share. Almost all the large loss deals (77 out of the 87 large loss deals from 1998 through 2001) are acquisitions where the consideration paid exceeds the cash holdings of the acquirer. Consequently, these deals had to be paid for with equity or the firm would have had to raise debt to pay for them. Using debt would have subjected the firm to higher leverage and a close examination of the deal by investment bankers or banks.

If large loss deals are associated with high valuations for the firms that make them, it ought to be the case that these firms have a higher value when they announce a large loss deal than when they announce their other acquisitions. To investigate this hypothesis, we proceed as follows. We compute Tobin's q and the BM ratio for each year a firm announces 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 would expect the normalized q ratio to be zero if there is no relation between valuation and large loss deals. This 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). Another way to investigate this hypothesis is to examine whether the firms in our large loss deal sample make their large loss deal acquisition when their Tobin's q is at or close to a peak. 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.

To see whether a firm's valuation is helpful in predicting when a firm is in the large loss deal sample, we estimate a logistic regression (not reported) using all acquisitions made by the firms in our large loss deal sample. The dependent variable takes value 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.

Another approach to see the impact of valuation for our large loss deal firms is to estimate an OLS regression of the abnormal returns of all the announcements of these firms on the normalized valuation measures of these firms. The regression estimates using Tobin's q are (p-value in parentheses):

Abnormal return =	−0.0189	−0.0028 × normalized q
	(0.001)	(0.003)

The coefficient on q is significant at the 1% level and the R-square is 0.045. The economic significance of the coefficients is again limited. The difference in mean normalized q between the large loss deal and the other deals explains at most a decrease in abnormal return of 1%. The regression coefficient on normalized BM (not reported) is also significant, but the R-square drops substantially. We further normalize the valuation proxies by a weighted average valuation, where the weights are given by the size of the acquisitions instead of an equally-weighted average, but doing so does not change the results.

7.4. Expected growth and large loss deals

If a firm makes an acquisition that is expected to hurt the firm, we would expect the firm's expected earnings growth to fall. However, expected earnings growth could fall even if the acquisition itself does not affect the firm adversely. This is the case when the acquisition conveys information about the firm's future growth. For instance, the acquisition could indicate to the markets that the firm has had to change its strategy to one that is less valuable. We use I/B/E/S data to find the change in the analysts' consensus long-term earnings growth rate for the large loss deal firms. We consider the difference between the growth rate the month after the acquisition is announced and the growth rate one month before the acquisition is announced for

acquisitions from 1998 through 2001. The mean expected long-term growth rate for the large loss deal firms is 25.81%. The mean expected long-term growth rate falls following the acquisition announcement by 0.33%. This decrease is significant with a *p*-value of 0.06. The expected growth rate for other acquisitions falls by 0.03% and is not significantly different from zero. The difference between the two numbers has a *p*-value of 0.12.

The growth reassessment hypothesis predicts a positive relation between the abnormal return and the change in the expected long-term growth rate. To investigate this for our large loss deal sample, we regress the abnormal return on a constant, the change in the long-term expected growth rate ($\Delta LTEG$), and the earnings surprise (ES) if there is one during the three-month window used to compute the change in the long-term expected growth rate. The regression estimates (*p*-values in parentheses) are:

$$\begin{array}{lcccc} \text{Abnormal return} = & -0.0954 & + 0.0292 \times \Delta LTEG & + 0.0972 \times ES \\ & (0.001) & (0.001) & (0.018) \end{array}$$

The R-square of this regression is 0.18. The evidence is consistent with a fall in earnings growth expectations and a relation between the abnormal return and the change in earnings growth expectations as predicted by the growth reassessment hypothesis. However, the average effect is economically small.

8. Do large loss deals ultimately pay off?

With the Shleifer and Vishny (2003) theory of acquisitions, overvalued firms make acquisitions to lock in real assets. This would benefit them in the long run. In contrast, Jensen (2003) predicts that firms do not benefit in the long-run. This raises the question of whether firms that made acquisition announcements associated with large dollar losses perform better or worse than similarly overvalued firms. We examine this issue by comparing the performance of the large loss deal firms to firms of similar size in their four-digit CRSP SIC code.

Figure 5 presents buy-and-hold returns over the period 1998-2002 for various portfolios. The large loss deal portfolio is an equally-weighted portfolio of firms that have 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. Consequently, the portfolio return corresponds to what an investor would have earned by investing in firms that announced large loss deals and held that portfolio until the end of 2002. From the graph it can be seen that an investment in an equally weighted portfolio of large loss deals, where deals are added following the announcement month, results in a buy-and-hold 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 formation date. The buy-and-hold return of the matching-firm portfolio is –14%.

We then 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 portfolio of large loss deals. The portfolio is then an equally-weighted portfolio of each matching-firm portfolio for the firms that have announced a large loss deal since January 1, 1998 up to the month the portfolio return is computed. The excess return of the large loss deal portfolio over the matching-firm portfolio is therefore –39%.

It could well be that the large loss deal portfolio and the matching-firm portfolio have different risks. To take this into account, 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 portfolio on the

Fama-French factors.[10] The estimates are shown in Table 10. This investment strategy has a significant intercept of –0.85% (p-value=0.022). If we add the Carhart momentum factor to the regression, the estimate of the intercept is –0.77% (p-value=0.041). Consequently, the large loss deal firms underperform firms of comparable size in their industry significantly after taking into account possible differences in risk. As can be seen from the regression estimates, the matching firms have a higher exposure to the market portfolio, the SMB portfolio, and the HML portfolio than the firms in the large loss deals sample.

If the large loss deals do not pay off for firms, could those deals that involved acquisitions outside the acquirer's industry be less damaging to shareholders in the long run? That turns out not to be the case. If we split the sample between firms that acquire within and outside their industry, the intercepts in the regressions of the returns of a long position in the large loss deal portfolio and a short position in the matching-firm portfolio are indistinguishable.

There is no evidence that managers who enter the large loss deals succeed in increasing the wealth of their shareholders in the long run. Firms that do not make a large loss deal vastly outperform the firms that do. This evidence is not supportive of Shleifer and Vishny (2003) if the matching firms are the appropriate comparison firms for the large loss deal firms. The Shleifer and Vishny (2003) theory requires a comparison of firms that are equally overvalued. We use a valuation measure as a proxy for overvaluation. Other proxies might lead to results that are more supportive of their theory. However, a fundamental difficulty with this approach is that we are really looking at one historical event. Random shocks can explain poor performance over a short sample period. Over long sample periods, one would expect random shocks to average out. Hence, it could be the large loss deal firms are unlucky, they are more overpriced than comparable firms in the industry, or the market initially underestimates the impact of the large loss deal or of the factors that led to that deal on the firm's performance.

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

9. Conclusion.

Acquisition announcements are associated with massive wealth destruction from 1998 through 2001. Though it is common place to believe that acquisitions create wealth by increasing the joint value of the target and the bidder, this is not true from 1998 through 2001. The wealth destruction is caused by relatively few acquisitions. Without the acquisitions that lost $1 billion or more for their shareholders in the sample, which means without slightly more than 2% of the acquisitions, acquisitions would have created wealth. The economic relevance of acquisitions with large losses overwhelms the economic relevance of the thousands of other acquisitions. It is therefore important to understand why the market reacted so poorly to these acquisitions. Theories used in the earlier literature to explain the abnormal returns associated with acquisitions cannot explain the results we document. High valuations alone cannot explain our results either. High valuation firms and the firms that make the large loss deals do not systematically make poor acquisitions before the large loss deals when typically they have even higher valuations. The acquisitions that lead to these large losses are unusual for the firms that make them, in that they are extremely large acquisitions, typically the largest they ever made, and occur close to their valuation peak. After these acquisitions, the firms perform poorly relative to their industry.

The poor performance of the firms that make these large loss deals seems most consistent with three theories:

1) **Lock-in and misvaluation hypotheses.** The firms that make these acquisitions are overvalued. They make the acquisitions to exchange overvalued equity for real assets, but the acquisitions either are poor acquisitions or reveal to investors that the firm is overvalued. The firms perform poorly afterwards because the overvaluation gets corrected. Shareholders benefit in the long-run and we fail to find this benefit because we did not use the correct comparison firms.

2) **Agency costs of overvalued equity.** Management uses the freedom conferred by high equity prices to make acquisitions that they would not otherwise make, perhaps

because of hubris, because of empire building, or to meet the expectations of investors about the firm's growth.

3) **Growth reassessment hypothesis.** The market learns from some acquisitions that its expectation of the acquirer's earnings growth rate was too high. This correction is large for firms that have high expected growth rates. Firms perform poorly afterwards if they experience further downward reassessments of their expected earnings growth.

With all these hypotheses, the acquisitions destroy wealth for short-run shareholders. Absent the acquisition, a shareholder selling equity the day after the acquisition announcement would have been better off. With the growth reassessment hypothesis, the wealth of long-run shareholders is not reduced, but to believe in that hypothesis, one has to believe that the poor performance of the large loss deal firms after the acquisition can be explained by an unusual succession of adverse shocks rather than by a slow elimination of overvaluation. With the lock-in hypothesis, long-run shareholders may have not been hurt, but then one has to attribute the poor long-run performance to the use of inappropriate matching firms. Finally, with the agency costs of overvalued equity, the wealth of long-run shareholders is destroyed. Irrespective of which hypothesis one is more inclined to accept, it makes little sense to evaluate acquisition activity over the last merger wave by focusing on equally-weighted averages of abnormal returns for acquisition announcements. This is because the aggregate outcome of acquisition activity was dominated by a small subset of extremely large deals by extremely large firms with extremely large valuations. Further research could help in distinguishing among the three hypotheses by analyzing the situation of the firms that made those deals more directly than can be done in a large sample study.

References

Akdogu, E., 2003a, Value-maximizing managers, value-increasing mergers and overbidding, working paper, Washington University, St. Louis, MO.

Akdogu, E., 2003b, Gaining a competitive edge through acquisitions: Evidence from the Telecom industry, working paper, Washington University, St. Louis, MO.

Andrade, G., M. Mitchell, and E. Stafford, 2001, New evidence and perspectives on mergers, Journal of Economic Perspectives 15, 103-120.

Ang, J., and Y. Chen, 2003, Direct evidence on the market-driven acquisitions theory, unpublished working paper, Florida State University, FL.

Bates, T.W., and M. L. Lemmon, 2003, Breaking up is hard to do? An analysis of termination fee provisions and mergers outcomes, Journal of Financial Economics 69, forthcoming.

Bradley, M., A. Desai, and E.H. 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, S.J., and J. B. Warner, 1985, Using daily stock returns, the case of event studies, Journal of Financial Economics 14, 3-31.

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

Chang, S., 1998, Takeovers of privately held targets, method of payment, and bidder returns, Journal of Finance 52, 773-784.

Dong, M., D. Hirshleifer, S. Richardson, and S. H. Teoh, 2002, Does investor misvaluation drive the takeover market?, unpublished working paper, The Ohio State University, Columbus, OH.

Fama, E.F., and K. French, 1992, The cross-section of expected stock returns, Journal of Finance 47, 427-465.

Fama, E.F., and K. French, 1993, Common risk-factors in the returns on stocks and bonds, Journal of Financial Economics 33, 3-56.

Fuller, K., J. Netter, and M. Stegemoller, 2002, What do returns to acquiring firms tell us? Evidence from firms that make many acquisitions, Journal of Finance 57, 1763-1794.

Fuller, J., and M.C. Jensen, 2002, Just say no to Wall Street, Journal of Applied Corporate Finance 14, 41-46.

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

Jensen, M.C., 1986, Agency costs of free cash flow, corporate finance, and takeover, American Economic Review 76, 323-329.

Jensen M. C., 2003, Agency costs of overvalued equity, work in progress.

Jovanovic, B., and S. Braguinsky, 2002, Bidder discounts and target premia in takeovers, NBER working paper 9009, NBER, Cambridge, MA.

Jung, K., Y.C. Kim, and R.M. Stulz, 1996, Timing, investment opportunities, managerial discretion, and the security issue decision, Journal of Financial Economics 42, 159-185.

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

Malmendier, U., and G.A. Tate, 2003, Who makes acquisitions? CEO overconfidence and the market's reaction, Harvard Business School Working Paper.

Maloney, M.T., R.E. McCormick, and M.L. Mitchell, 1993, Managerial decision making and capital structure, Journal of Business 66, 189-217.

Martin, K.J., 1996, The method of payment in corporate acquisitions, investment opportunities and management ownership, Journal of Finance 51, 198-217.

Mitchell, M., T. Pulvino, and E. Stafford, 2003, Price pressure around mergers, Journal of Finance, forthcoming.

Moeller, S.B., F.P. Schlingemann, and R.M. Stulz, 2003, Firm size and the gains from acquisitions, unpublished working paper, Ohio State University, Columbus, OH.

Officer, M., 2003, Termination fees in mergers and acquisitions, Journal of Financial Economics 69, forthcoming.

Polk, C.K., and P. Sapienza, 2002, The real effects of investor sentiment, working paper, Northwestern University, Evanston, IL.

Rhodes-Kropf, M., D.T. Robinson, and S. Viswanathan, 2003, Valuation waves and merger activity: The empirical evidence, working paper, Columbia University, New York, NY.

Rhodes-Kropf, M., and S. Viswanathan, 2003, Market valuation and merger waves, working paper, Columbia University, New York, NY.

Roll, R., 1986, The hubris hypothesis of corporate takeovers, Journal of Business 59, 197-216.

Schlingemann, F.P., R.M. Stulz, and R.A. Walkling, 2002, Divestitures and the liquidity of the market for corporate assets, Journal of Financial Economics 64, 117-144.

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

Shleifer A., and R.W. Vishny, 2003, Stock market driven acquisitions, Journal of Financial Economics, forthcoming.

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

Figure 1

Yearly aggregate dollar return of acquiring-firm shareholders (1980-2001)

Data comes 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 fractional abnormal return of each announcement multiplied by the equity capitalization of the acquirer.

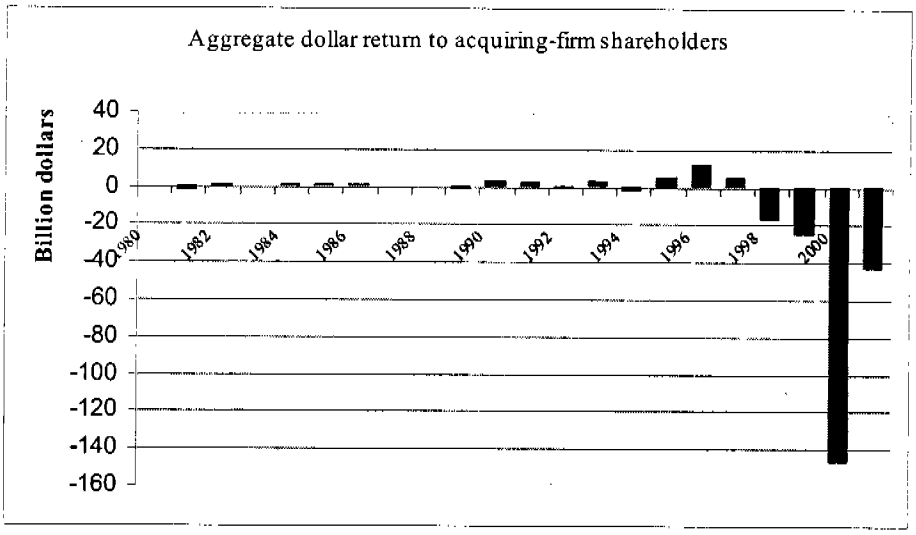


Figure 2
Gordon growth model

The graph depicts the simple Gordon growth model using a 10% discount rate and a $1 dividend. The value of the share as the growth rate increases from 0% to 9% is plotted in the top half of the figure. The bottom half of the figure shows the reduction in firm value as the growth rate decreases by 100 basis points.

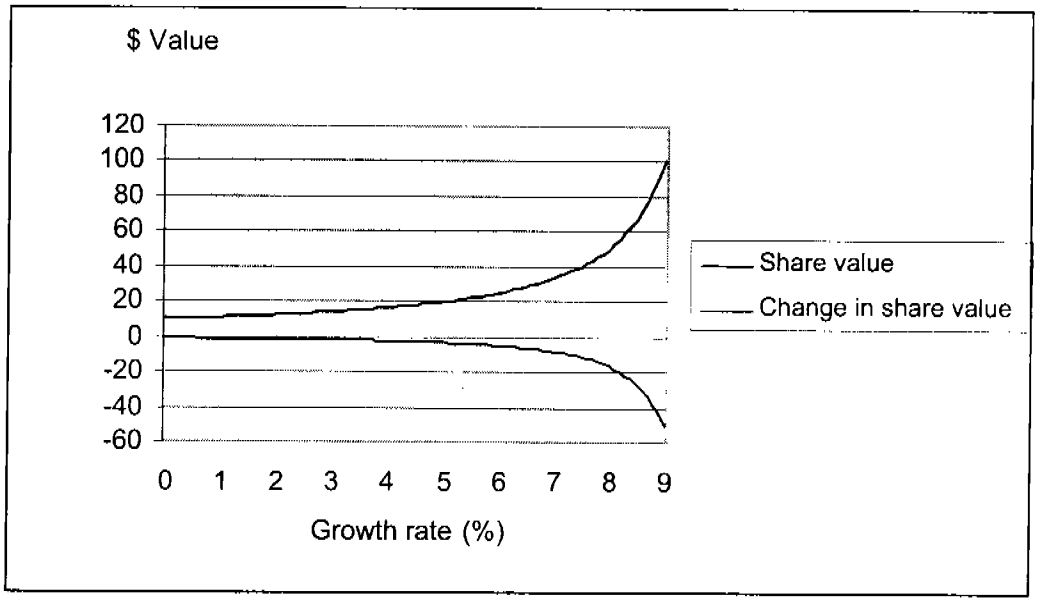


Figure 3

Box plot of the dollar return of acquiring-firm shareholders (1980-2001)

Data comes 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 return loss so the large loss deals are to the left of the line.

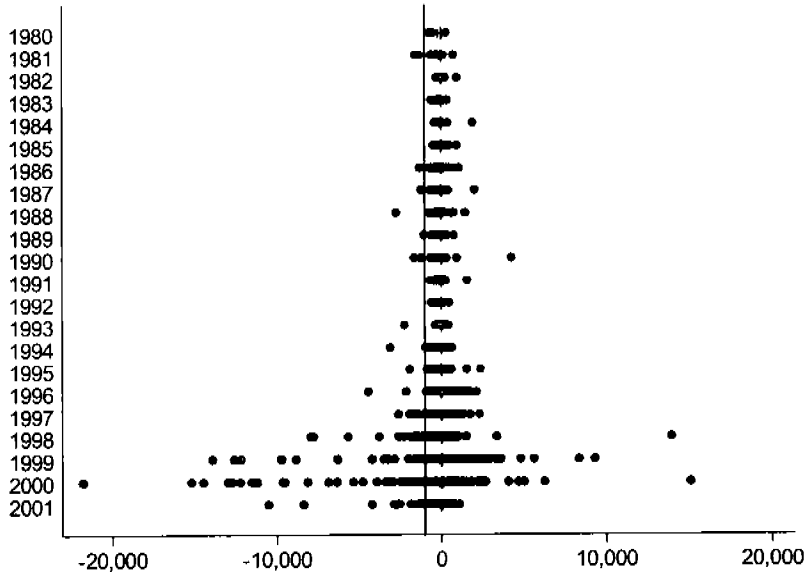
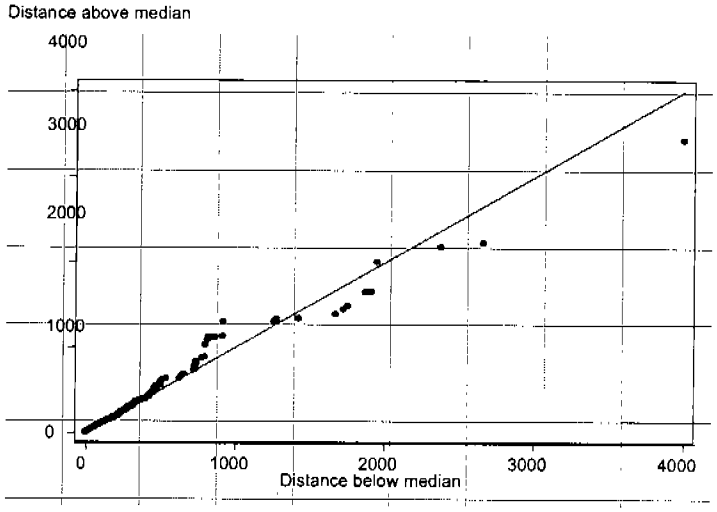


Figure 4. Symmetry plots.

Dollar return symmetry plot showing each value of dollar return for a period plotted against the 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).

Panel A. Years 1980-1997.



Panel B. Years 1998-2001.

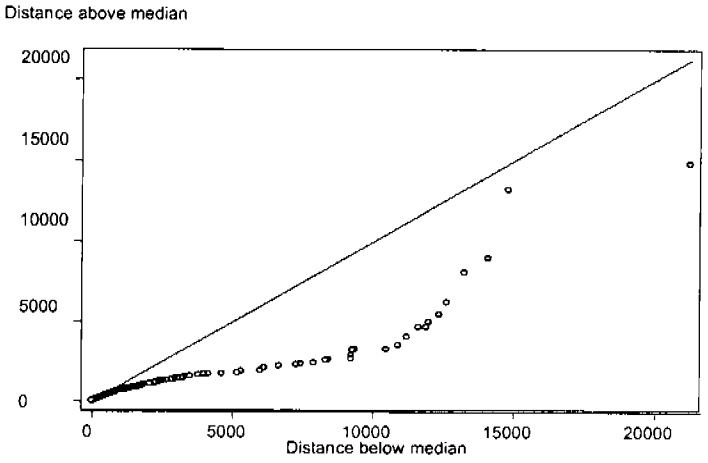


Figure 5
Monthly buy-and-hold returns (1998-2002)

The figure plots monthly buy-and-hold returns (×100%) over the period 1998-2002 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 portfolios. The value-weighted index is from CRSP.

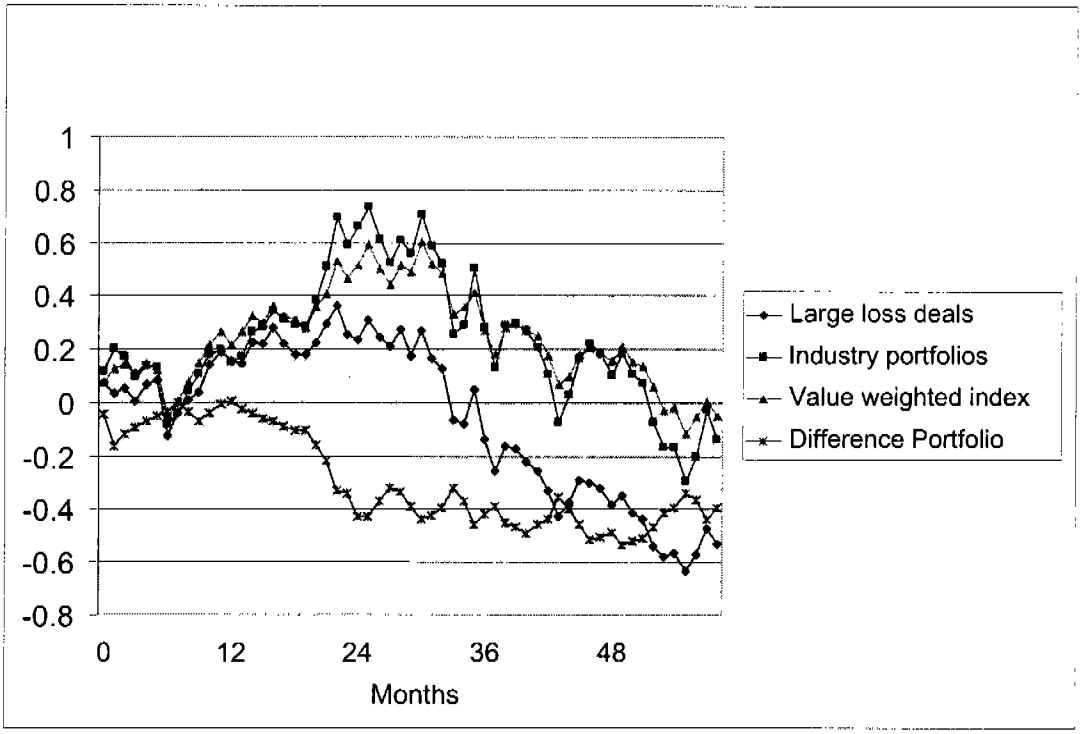


Table 1
Full Sample Distribution of Aggregate Dollar Values
Sorted by Announcement Year

The second column lists the number of observation for the whole sample of successful acquirers for the period 1980-2001 from SDC Merger and Acquisition Database. The third column lists the aggregate transaction value per year in 2001 million dollars for the whole sample. The fourth column lists the aggregate dollar return in year 2001 million dollars ($\$Return_{(\$2001)}$) for the whole sample each year. $\$Return_{(\$2001)}$ is 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 aggregate $\$Return_{(\$2001)}$ for a year is obtained by adding up the dollar returns within the year. Acquirers are U.S. publicly listed firms and are collected from the SDC Mergers and Acquisitions Database. Targets include private firms, public firms, and subsidiaries.

Announcement Year	n	Aggregate Transaction $Value_{(\$2001)}$	Aggregate $\$Return_{(\$2001)}$
1980	22	$5,461	−$1,292
1981	113	33,172	−4,781
1982	149	29,851	1,128
1983	214	31,587	−152
1984	281	46,925	324
1985	157	69,116	221
1986	245	62,029	188
1987	216	52,364	−1,028
1988	225	66,762	-399
1989	304	52,808	−1,258
1990	256	32,530	2,806
1991	304	32,875	1,539
1992	475	41,278	−1,295
1993	633	71,178	2,627
1994	804	110,213	−3,189
1995	896	164,856	5,439
1996	1,076	214,611	13,305
1997	1,517	303,720	5,211
1998	1,508	560,497	−18,829
1999	1,115	632,016	−26,616
2000	885	549,011	−151,127
2001	628	250,321	−43,382
All	12,023	$3,413,180	−$220,560

Table 2
Announcement abnormal returns
sorted by organizational form, form of payment, and date

Cells denote the mean [median] of the abnormal returns (in percent), $CAR_{(-1,+1)}$, calculated as the market model residuals, where the parameters are estimated over the (−205, −6) period relative to the announcement date, for the whole sample of successful acquirers for the period 1980-2001 from the SDC Merger and Acquisition Database (n=12,023). The abnormal returns are reported for the period 1980-1997 and the period 1998-2001, as well as the difference in abnormal returns between these periods. The groups mixed, equity, and cash, are defined as transactions with a mix of cash, equity, and/or other considerations, all equity, and all cash respectively. Panels A through D contain results for the full sample and deals involving private, public, and subsidiary targets respectively. Significance of differences in means (medians) is based on t-tests (Wilcoxon-tests). Significance of the mean (median) abnormal return is based on the time-series and cross-sectional standard errors (Brown and Warner (1985)) for the mean and on a sign-rank test for the median. Respectively, [a], [b], and [c] denote statistical significance at the 1%, 5%, and 10% level.

Panel A: *Full Sample*							
	Mixed	Equity	Cash	All	Difference		
	(1)	(2)	(3)	(4)	(1) − (2)	(2) − (3)	(1) − (3)
All	1.452[a]	0.153[a]	1.377[a]	1.102[a]	1.300[a]	−1.223[a]	0.076
	[0.519]	[−0.322]	[0.613]	[0.362]	[0.841][a]	[−0.935][a]	[−0.094]
	n=4,203	n=2,958	n=4,862	n=12,023			
1980-1997	1.569[a]	0.642	1.489[a]	1.317[a]	0.927[a]	-0.847[a]	0.080
	[0.574][a]	[−0.041]	[0.639][a]	[0.447][a]	[0.615][a]	[−0.680][a]	[−0.065]
1998-2001	1.212[a]	-0.684[a]	1.162[a]	0.692[a]	1.896[a]	−1.846[a]	0.050
	[0.461][a]	[−1.172][a]	[0.566][a]	[0.214][a]	[1.633][a]	[−1.738][a]	[−0.105]
Difference	0.357	1.326[a]	0.327	0.625[a]			
	[0.113][c]	[1.131][a]	[0.073]	[0.233][a]			
Panel B: *Private targets*							
All	1.799[a]	1.493[a]	1.208[a]	1.496[a]	0.305	0.286	0.591[b]
	[0.891][a]	[0.450][a]	[0.591][a]	[0.623][a]	[0.441][b]	[−0.141]	[0.300]
	n=1,970	n=1,553	n=2,060	n=5,583			
1980-1997	1.689[a]	1.396[a]	1.387[a]	1.500[a]	0.293	0.009	0.302
	[0.862][a]	[0.500][a]	[0.766][a]	[0.705][a]	[0.361]	[−0.266]	[0.096]
1998-2001	1.994[a]	1.659[a]	0.939[a]	1.489[a]	0.334	0.720	1.055[c]
	[0.910][a]	[0.293][c]	[0.345][a]	[0.509][a]	[0.617][b]	[−0.052]	[0.565][c]
Difference	−0.305	−0.263	0.448	0.011			
	[−0.049]	[0.207]	[0.421][c]	[0.196][c]			
Panel C: *Public targets*							
All	−0.401[a]	−2.023[a]	0.364	−1.022[a]	1.622[a]	−2.387[a]	−0.765[c]
	[−0.583][a]	[−1.549][a]	[−0.036]	[−0.867][a]	[0.966][a]	[−1.513][a]	[−0.547][b]
	n=1,047	n=1,199	n=396	n=2,642			
1980-1997	0.067	−1.079[a]	−0.063[c]	−0.447[a]	1.146[a]	−1.016[b]	0.130
	[−0.337][b]	[−0.990][a]	[−0.179]	[−0.561][a]	[0.653][c]	[−0.811][a]	[−0.158]
1998-2001	−1.274[a]	−3.551[a]	1.795[a]	−2.109[a]	2.277[a]	−5.346[a]	−3.069[a]
	[−1.013][a]	[−2.644][a]	[1.024][c]	[−1.614][a]	[1.631][a]	[−3.668][a]	[−2.037][a]
Difference	1.341[b]	2.472[a]	−1.858[b]	1.662[a]			
	[0.676][c]	[1.654][a]	[−1.203][c]	[1.053][a]			

Table 2 – *Continued*

Panel D: *Subsidiary targets*

	Mixed	Equity	Cash	All	Difference		
	(1)	(2)	(3)	(4)	(1) – (2)	(2) – (3)	(1) – (3)
All	2.513[a]	2.721[a]	1.688[a]	2.002[a]	-0.207	1.033[c]	0.825[a]
	[0.978][a]	[0.981][a]	[0.717][a]	[0.798][a]	[–0.003]	[0.264]	[0.261]
	n=1,186	*n*=206	*n*=2,406	*n*=3,798			
1980-1997	2.556[a]	4.289[a]	1.852[a]	2.218[a]	–1.733	2.437[b]	0.705[c]
	[0.937][a]	[1.470][a]	[0.731][a]	[0.824][a]	[–0.533]	[0.739]	[0.206]
1998-2001	2.387[a]	–1.187	1.330[a]	1.483[a]	3.575[c]	–2.518	1.057[c]
	[1.231][a]	[–0.622]	[0.675][a]	[0.717][a]	[1.853]	[–1.297]	[0.556]
Difference	0.169	5.476[b]	0.522	0.735[b]			
	[–0.294]	[2.092]	[0.056]	[0.107]			

Table 3

Large loss deals sample distribution sorted by announcement year

The second column lists the number of acquisitions with a dollar return in 2001 dollars corresponding to a loss of at least $1 billon. The large loss deals are selected from the whole sample of successful acquirers for the period 1980-2001 from the SDC Merger and Acquisition Database. The third column lists the aggregate transaction value per year in 2001 millions of dollars for the sample of large loss deals. The fourth column lists the aggregate dollar return in million 2001 dollars ($Return$_{(\$2001)}$) for the large loss deals in each sample year. $Return$_{(\$2001)}$ is 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 aggregate $Return$_{(\$2001)}$ for a year is obtained by adding up the dollar returns within the year. Acquirers are U.S. publicly listed firms and are collected from the SDC Mergers and Acquisitions Database. Targets include private firms, public firms, and subsidiaries.

Announcement Year	n	Aggregate Transaction Value$_{(\$2001)}$	Aggregate $Return$_{(\$2001)}$
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

Table 4
Measures of shareholder wealth

Each mean [median] of the measures of shareholder wealth is based on cumulating the raw, CR, or abnormal returns, CAR, over the (−1,+1) event-window. The abnormal returns are calculated as market model residuals, where the parameters are estimated over the (−205, −6) period relative to the announcement date. The groups mixed, equity, and cash, are defined as transactions with a mix of cash, equity, and/or other considerations, all equity, and all cash respectively. Industry-adjusted returns, $CIAR_{(-1,+1)}$, are calculated as the difference between raw returns and returns on a portfolio of 4-digit SIC code (2-digit SIC if fewer than 10 matching firms are available) matched firms. The dollar return, $Return is 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 transaction value, TV, is the total value of consideration paid by the acquirer, excluding fees and expenses. $Return_{(\$2001)}$ is the inflation adjusted dollar return in 2001 dollars. Panel A reports acquirer shareholder wealth measures split on the form of payment. Panel B reports the raw and abnormal return measures for the sample split based on whether the acquirer and target are in the same 4-digit SIC code. Panel C reports wealth measures for the acquirer and target combined. CARC is defined as the (−1,+1) cumulative market model residuals of a weighted portfolio of the acquirer and target returns, where the parameters are estimated over the (−205, −6) period relative to the announcement date. $CARC is the change in capitalization of the acquirer and target firm over the event window (see Bradley, Desai, and Kim (1988)). The columns reporting *p*-values for differences in means and medians are based on *t*-tests (means) and Wilcoxon-tests (medians). Respectively, [a], [b], and [c] denote statistical significance at the 1%, 5%, and 10% level. All dollar values are in millions.

Panel A: *Acquirer wealth measures sorted by form of payment*

	All	Mixed	Equity	Cash	*p*-values for difference tests		
		(1)	(2)	(3)	(1) − (2)	(2) − (3)	(1) − (3)
$CR_{(-1,+1)}$	−10.983	−10.844	−12.312	−7.375	*0.494*	*0.061*	*0.135*
	[−7.642]	[−7.263]	[−8.591]	[−6.179]	*0.435*	*0.076*	*0.268*
$CAR_{(-1,+1)}$	−10.089	−10.053	−11.341	−6.488	*0.538*	*0.052*	*0.145*
	[−7.474]	[−7.229]	[−8.775]	[−6.788]	*0.386*	*0.055*	*0.223*
$CIAR_{(-1,+1)}$	−9.991	−10.017	−11.151	−6.524	*0.586*	*0.016*	*0.097*
	[−7.500]	[−7.336]	[−8.411]	[−5.068]	*0.242*	*0.143*	*0.384*
$Return/TV	−2.312	−3.322	−2.471	−1.633	*0.194*	*0.441*	*0.066*
	[−0.733]	[−1.958]	[−0.620]	[−0.673]	*0.595*	*0.138*	*0.078*
$Return	−$3,969	−$2,277	−$4,831	−$3,628	*0.198*	*0.025*	*0.109*
	[−$2,158]	[−$1,834]	[−$2,270]	[−$1,873]	*0.311*	*0.176*	*0.557*
$Return_{(\$2001)}$	−$4,134	−$3,766	−$4,999	−$2,387	*0.198*	*0.032*	*0.133*
	[−$2,289]	[−$2,180]	[−$2,324]	[−$1,917]	*0.332*	*0.379*	*0.860*
n	104	37	50	17			

Table 4 – *Continued*

Panel B: *Acquirer return measures sorted by relatedness of acquirer and target*			
	Acquirer and target in same industry	Acquirer and target in different Industry	*p*-values for difference test
$CR_{(-1,+1)}$	−0.127	−0.099	*0.176*
	[−0.087]	[−0.073]	*0.545*
$CAR_{(-1,+1)}$	−0.124	−0.087	*0.085*
	[−0.081]	[−0.072]	*0.545*
$CIAR_{(-1,+1)}$	−0.121	−0.088	*0.114*
	[−0.080]	[−0.074]	*0.545*
n	39	65	
Panel C: *Combined acquirer and target return measures*			
$CARC_{(-1,+1)}$	−0.069[a]		
	[−0.054][a]		
$\$CARC_{(-1,+1)}$	−$2,909[a]		
	[−$1,641][a]		
n	73		

Table 5

Firm and deal characteristics: Large loss deals versus other deals

Large loss deals lose more than $1 billion shareholder wealth measured as the market value of publicly traded equity at the close of event day +1 minus the market value on the close of event day –2. The transaction value ($ 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 two-digit SIC code divided by the total book value of assets of firms in the two-digit SIC code for that year (see Schlingemann, Stulz, and Walkling (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 is defined as in Fama and French (1992). Industry-adjusted q and book-to-market are defined as the raw value minus the yearly 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, [a], [b], and [c] denote statistical significance between large loss and other deals at the 1%, 5%, and 10% level.

Panel A: *Deal Characteristics for whole sample*

	Large loss deals (n=104)	Other deals (n=11,919)	Difference	p-value
Transaction value (TV)	8,762.10	183.50	8,578.6[a]	*0.001*
	[3,050.50]	[30.20]	[3,020.3][a]	*0.001*
TV/ Assets (market)	0.192	0.185	0.007	*0.969*
	[0.079]	[0.063]	[0.016]	*0.248*
TV/ Equity (market)	0.268	0.335	–0.067	*0.516*
	[0.107]	[0.118]	[–0.011]	*0.315*
Days to completion	122.8	81.1	41.7[a]	*0.001*
	[91.5]	[52.0]	[39.5][a]	*0.001*
Cash in payment (%)	28.28	54.18	–25.90[a]	*0.001*
Equity in payment (%)	65.79	31.94	33.85[a]	*0.001*
Pure cash deal (%)	16.35	40.65	–24.30[a]	*0.001*
Pure equity deal (%)	48.08	24.40	23.68[a]	*0.001*
Tender-offer (%)	14.42	3.85	10.57[a]	*0.001*
Hostile deal (%)	1.92	0.44	1.48[b]	*0.026*
Same industry (%)	37.50	32.65	4.85	*0.294*
Private target (%)	12.50	46.73	–34.23[a]	*0.001*
Public target (%)	77.88	21.49	56.29[a]	*0.001*
Subsidiary target (%)	9.62	31.78	–22.16[a]	*0.001*
Competed deal (%)	7.69	1.16	6.53[a]	*0.001*
Liquidity index	0.107	0.116	–0.009	*0.871*
	[0.074]	[0.045]	[0.029][a]	*0.001*

Table 5 – *Continued*

Panel B: *Acquirer Characteristics for whole sample*

	Large loss deals (n=104)	Other deals (n=11,919)	Difference	p-value
Assets (book)	37,457.80	2,298.70	35,159.1[a]	*0.001*
	[14,541.00]	[296.30]	[14,244.7][a]	*0.001*
Market Capitalization	44,817.70	1,332.30	43,485.4[a]	*0.001*
	[24,039.10]	[258.50]	[23,780.6][a]	*0.001*
Cash / Assets (book)	0.170	0.152	0.018	*0.327*
	[0.065]	[0.069]	[−0.004]	*0.386*
Debt / Assets (book)	0.450	0.467	−0.017	*0.575*
	[0.474]	[0.455]	[0.019]	*0.809*
Debt / Assets (market)	0.191	0.310	−0.119[a]	*0.001*
	[0.173]	[0.279]	[−0.106][a]	*0.001*
Tobin's q	6.029	2.183	3.846[a]	*0.001*
	[2.745]	[1.438]	[1.307][a]	*0.001*
Industry-adjusted Tobin's q	4.412	0.712	3.700[a]	*0.001*
	[1.174]	[0.081]	[1.093][a]	*0.001*
Book-to-market (equity)	0.259	0.554	−0.295[a]	*0.001*
	[0.194]	[0.479]	[−0.285][a]	*0.001*
Industry-adjusted book-to market	−0.216	0.007	−0.223[a]	*0.001*
	[−0.216]	[−0.056]	[−0.160][a]	*0.001*
OCF / Assets (book)	0.092	0.213	−0.121[a]	*0.001*
	[0.093]	[0.111]	[−0.018]	*0.224*

Table 6

Logistic regression results: Large loss deals versus other deals

The dependent variable in each logistic regression takes on a value of one if the transaction is categorized as a large loss deal and zero otherwise. Definitions of the independent variables are listed in the legend of Table 5. For each independent variable we list respectively the coefficient, the *p*-value (in italics) and the marginal (slope) coefficient in brackets, defined as $\partial E[y]/\partial \mathbf{x}$, for the binary model $y_{(0,1)}=\beta'\mathbf{x}+\varepsilon$, evaluated at the mean of **x**. For each regression we report the pseudo-R^2 and the percent of correct predictions. Year and one-digit main industry classification dummies are included but not reported in all models. Respectively, [a], [b], and [c] denote statistical significance at the 1%, 5%, and 10% level.

	(1)	(2)	(3)	(4)
Debt / Assets (market)	−8.552[a]	−9.076[a]	−8.038[a]	−8.670[a]
	0.000	*0.000*	*0.000*	*0.000*
	[−0.051]	[−0.058]	[−0.030]	[−0.034]
Book to market (equity)	−2.663[a]		−2.643[a]	
	0.001		*0.001*	
	[−0.016]		[−0.010]	
Tobin's *q*		0.076[a]		0.077[a]
		0.000		*0.000*
		[0.000]		[0.000]
Private target			−0.001	−0.169
			0.999	*0.767*
			[−0.000]	[−0.000]
Public target			1.105[b]	1.053[b]
			0.029	*0.045*
			[0.006]	[0.006]
Same industry			0.374	0.324
			0.213	*0.277*
			[0.002]	[0.001]
Tender-offer			0.260	0.176
			0.627	*0.755*
			[0.001]	[0.000]
Hostile deal			0.574	0.478
			0.540	*0.587*
			[0.003]	[0.002]
Competed deal			0.475	0.485
			0.437	*0.447*
			[0.002]	[0.002]
Equity in payment			0.540	0.488
			0.207	*0.292*
			[0.002]	[0.002]
TV / Equity (market)			0.350[a]	0.365[a]
			0.000	*0.000*
			[0.001]	[0.001]
Liquidity Index			−0.882	−1.028
			0.239	*0.214*
			[−0.003]	[−0.004]

Table 6 – *Continued*

	(1)	(2)	(3)	(4)
OCF / Assets $_{(book)}$	−1.946[a]	−1.475[a]	−1.862[a]	−1.436[a]
	0.000	*0.009*	*0.000*	*0.009*
	[-0.012]	[-0.009]	[-0.007]	[-0.006]
ln[Assets] $_{(book)}$	1.781[a]	1.860[a]	1.726[a]	1.805[a]
	0.000	*0.000*	*0.000*	*0.000*
	[0.011]	[0.012]	[0.006]	[0.007]
Constant	−46.397[a]	−46.584[a]	−46.072[a]	−48.191[a]
	0.000	*0.000*	*0.000*	*0.000*
Pseudo-R^2	0.581	0.587	0.626	0.619
% Predicted	91.72	91.98	92.57	92.88

Table 7
Change in acquirer equity value OLS regression results

The dependent variable is the (−1,+1) market-model based abnormal return of the transaction of the acquirer. The large loss sample is a dummy variable that takes on a value of 1 if the transaction is in our large loss sample and zero otherwise. Premium is defined as the aggregate value of cash, stock, and other securities offered by the bidder to the target shareholders divided by the market value of the equity of the target 50 days prior to announcement. Premium values less than zero or larger than 2 are eliminated. Premium data is available only for public targets. Definitions of the other independent variables are listed in the legend of Table 5. The large loss residual is the average residual for each regression for the subsample of large loss deals. For each variable we list the coefficient and the heteroscedasticity-consistent *p*-value (in italics). 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. Respectively, [a], [b], and [c] denote statistical significance at the 1%, 5%, and 10% level.

	(1)	(2)	(3)	(4)	(5)	(6)
Constant	0.0256	0.0364[b]	0.0252	0.0316[c]	0.0182	0.0408
	0.165	*0.050*	*0.147*	*0.070*	*0.611*	*0.219*
Debt / Assets (market)	0.0328[a]	0.0304[a]	0.0183[a]	0.0156[a]	0.0178[a]	0.0012[a]
	0.001	*0.001*	*0.002*	*0.008*	*0.222*	*0.943*
Book to market (equity)	0.008[b]		0.0036		0.0100	
	0.030		*0.311*		*0.293*	
Tobin's *q*		−0.0019[a]		−0.0013[a]		−0.0052[a]
		0.005		*0.052*		*0.022*
Private target			−0.0045[b]	−0.0045[b]		
			0.038	*0.036*		
Public target			−0.0276[a]	−0.0279[a]		
			0.001	*0.001*		
Same industry			0.001	0.001	−0.0004	−0.0009
			0.613	*0.604*	*0.933*	*0.869*
Tender-offer			0.0132[a]	0.0136[a]	−0.0017	−0.0016
			0.004	*0.003*	*0.783*	*0.791*
Hostile deal			−0.0074	−0.0074	−0.0028	−0.0023
			0.397	*0.398*	*0.785*	*0.825*
Competed deal			−0.0078	−0.0076	−0.0138	−0.0124
			0.227	*0.236*	*0.117*	*0.151*
Equity in payment			−0.0038	−0.0027	−0.0429[a]	−0.0399[a]
			0.181	*0.349*	*0.001*	*0.001*
TV / Equity (market)			0.0110[a]	0.0111[a]	−0.0012	−0.0011
			0.001	*0.001*	*0.802*	*0.828*
Liquidity Index			−0.0071[b]	−0.0072[b]	0.0081	0.0068
			0.030	*0.026*	*0.208*	*0.300*
OCF / Assets (book)	−0.0001	−0.0003	−0.0001	−0.0001	0.0015	0.0024
	0.912	*0.838*	*0.957*	*0.926*	*0.873*	*0.798*

Table 7 – *Continued*

	(1)	(2)	(3)	(4)	(5)	(6)
ln[Assets] $_{(book)}$	−0.0070[a]	−0.0072[a]	−0.0047[a]	−0.0048[a]	−0.0041[a]	−0.0044[a]
	0.000	*0.000*	*0.000*	*0.000*	*0.009*	*0.006*
Premium					−0.0065	−0.0061
					0.213	*0.240*
Large Loss Residual	−0.0822[a]	−0.0801[a]	−0.0774[a]	−0.0758[a]	−0.0524[a]	−0.0482[a]
Adjusted-R^2	0.029	0.030	0.055	0.055	0.103	0.111
n	10,242	10,242	10,221	10,221	1,231	1,231

Table 8
Abnormal 3-day returns for other deals by valuation

In Panel A, the sample of acquisitions, excluding the large loss deals, from 1998 through 2001 is divided into acquisitions made by firms that are valued more (using either Tobin's *q* or the equity book-to-market (BM) ratio) than the average of the valuation measure for our large loss deals sample. In Panel B, we use the same split as in Panel A, but for the subsample of transactions involving a public target and paid for with 100% equity. In Panel C, we use the subsample of firms in Panel B that make acquisitions whose value relative to the value of their equity exceeds the average for the large loss deals. Respectively, [a], [b], and [c] denote statistical significance between high versus low at the 1%, 5%, and 10% level.

	n	% $CAR_{(-1,+1)}$	Difference	*p*-value
Panel A: *All acquisitions*				
Low *q*	3,560	0.818	−0.970[c]	*0.076*
High *q*	489	1.787		
Low industry-adjusted *q*	3,598	0.874	−0.542	*0.326*
High industry-adjusted *q*	451	1.416		
High BM	2,942	0.861	−0.271	*0.468*
Low BM	1,107	1.131		
High industry-adjusted BM	2,680	1.222	0.850[a]	*0.006*
Low industry-adjusted BM	1,369	0.372		
Panel B: *Acquisitions for public firms paid for with 100% equity*				
Low *q*	359	−3.019	−0.712	*0.546*
High *q*	64	−2.307		
Low industry-adjusted *q*	362	−3.037	−0.867	*0.527*
High industry-adjusted *q*	61	−2.170		
High BM	282	−2.807	0.314	*0.741*
Low BM	141	−3.121		
High industry-adjusted BM	220	−3.595	−1.424[c]	*0.086*
Low industry-adjusted BM	203	−2.171		
Panel C: *Acquisitions for public firms paid for with 100% equity with relative size>large loss deal mean*				
Low *q*	142	−5.052	1.203	*0.704*
High *q*	12	−6.255		
Low industry-adjusted *q*	142	−5.016	1.666	*0.599*
High industry-adjusted *q*	12	−6.682		
High BM	116	−4.389	3.070	*0.205*
Low BM	38	−7.458		
High industry-adjusted BM	105	−5.419	−0.857	*0.591*
Low industry-adjusted BM	49	−4.562		

Table 9
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 day before (after) the announcement for the pre- (post-) announcement windows. In Panel A, information on acquisitions in two-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 dollar return, $\$Return_{(\$2001)}$, is 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.

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 two 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

Table 10
Fama-French OLS regression results for large loss deal firms portfolio minus industry portfolio

The dependent variable is the monthly buy-and-hold return on a long position in the large loss deal portfolio and a short position in the matching-firm portfolios The large loss deal portfolio is an equally-weighted portfolio of firms that have 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 and held until December 2002. The industry portfolios are constructed for each firm in our large loss deal sample and consists 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. See Fama and French (1993) for a complete description of the factor definitions. Respectively, [a], [b], and [c] denote statistical significance at the 1%, 5%, and 10% level.

	(1)	(2)
Intercept	−0.0085[b]	−0.077[b]
	0.022	*0.041*
MKT−RF	−0.1062	−0.1365
	0.196	*0.118*
SMB	−0.3218[a]	−0.3065[a]
	0.000	*0.000*
HML	−0.2111[b]	−0.2280[b]
	0.042	*0.030*
MOMENTUM		−0.0555
		0.289
Adj-R^2	19.68%	19.89%
F-statistic	5.74[a]	4.60[a]
n	58	58