The Performance of Stock-Price Driven Acquisitions

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Abstract

Existing literature has shown that periods of high merger activity are correlated with high market valuations: significantly more acquisitions occur when stock markets are booming than when markets are depressed. Since the market's valuation impacts the number of acquisitions, this paper investigates whether the market's valuation impacts the acquisition's performance. We find that acquirers buying during periods of high stock-market valuation have significantly lower long-run abnormal returns than those buying during periods of low stock-market valuation, even after controlling for the acquirer's valuation. We investigate three possible explanations for the underperformance of acquirers buying during periods of high stock-market valuations: managerial herding, overpayment and market-timing. Results suggest that the under-performance is attributable more so to herding by managers than overpayment or market-timing.

JEL Classification: G34

1. Introduction

The sizeable stream of theoretical and empirical research on mergers and acquisitions (M&A) has revealed that takeover activity comes in waves[1], announcement-day returns are significantly positive for target shareholders while bidder shareholders' returns vary depending on the mode of acquisition, method of payment and type of target, and post-acquisition returns to acquiring shareholders are higher for cash offers and tender offers than for stock offers and mergers[2]. More recent research explores the possible link between M&A activity and stock prices. Jovanovic and Rousseau (2001) have shown that periods of high merger activity are correlated with high market valuations[3]. Rhodes-Kropf and Viswanathan (2003) develop a model in which firm-specific and market-wide misvaluations can cause merger waves. Shleifer and Vishny (2003) model the impact of market valuations on the decision to acquire, the method of payment, the performance of acquirers, and the occurrence of merger waves. Moreover, there is plenty of anecdotal evidence, including the following quote, that acquisition decisions are influenced by stock market valuations.

> "Why did CEOs do so many deals in the six years we studied? The bull market was a big reason, of course. Executives were brimming with confidence and rich stocks." (*Business Week* Oct.14, 2002 p. 68)

If market valuations influence the acquisition decision, an interesting question arises: does the overall level of the stock market affect the performance of acquiring firms? The goal of this paper is to shed light on this question.

Using a sample of 1,121 acquisitions announced between January 1, 1979 and December 31, 1998, we examine the short-run and long-run performance of acquirers. Although we are primarily interested in the long-run performance of the acquirers, we also study the short-run performance of acquirers to determine if the market is able to anticipate the acquirer's long-run performance. We classify

[1] See, for example, Andrade, Mitchell and Stafford (2001), and Holmstrom and Kaplan (2001).
[2] See, for example, Bruner (2002), Loughran and Vijh (1997), Agrawal, Jaffe and Mandelkar (1992), Franks, Harris and Titman (1991), Rau and Vermaelen (1998), Asquith (1983), Jensen and Ruback (1983), Dennis and McConnell (1986), Bradley, Desai and Kim (1988), Jarrel and Poulsen (1989) and Fuller, Netter and Stegemoller (2002).
[3] The idea that stock prices influence merger activity is not new; see for example, Nelson (1959).

the market into high, neutral or low valuation periods based on the P/E ratio of the S&P 500 index. Since we are interested in examining overall market valuations, we use the S&P 500 P/E ratio as a proxy for market valuation just like a firm's P/E ratio is used by investors as a measure of firm valuation. Each month is defined as high (low)-valuation when it lies in the top (bottom) half of months with P/E ratios above (below) the past five-year average P/E. All other months are classified as neutral valuation. We will refer to acquirers initiating acquisitions during high-valuation, neutral-valuation and low-valuation markets as high-valuation, neutral and low-valuation acquirers, respectively.

For the entire sample, the three-day announcement returns are significantly negative. Similar to existing evidence, cash offers have insignificantly positive and stock offers have significantly negative announcement-day abnormal returns for acquirers. When we partition the sample by the market's valuation at the acquisition announcement, we find that announcement-day returns are insignificantly positive for acquisitions initiated in high-valuation periods but significantly negative for acquisitions initiated in low-valuation periods. The market seems to punish acquisitions during low-valuation periods but appears indifferent to acquisitions initiated during high-valuation periods.

Next, we turn our attention to the acquirers' long-run performance. Consistent with previous studies we find that acquirers on average have insignificant, negative long-run abnormal returns, cash acquisitions outperform stock acquisitions and tender offers outperform mergers. Noticeably however, we find that high-valuation acquirers underperform whether they pay with cash or stock, while low-valuation acquirers have no abnormal performance. Overall, low-valuation acquisitions perform significantly better than high-valuation acquisitions. Looking at the mode of acquisition we find that mergers undertaken by high-valuation acquirers significantly underperform while mergers undertaken by low-valuation acquirers experience no abnormal performance and the difference between the two is significant. In contrast, the performance of tender offers initiated in high-valuation markets is not significantly different from that of tender offers initiated in low-valuation markets. Further, the difference in the performance of high and low-valuation acquirers holds after controlling for the acquirer's market valuation. Finally, the results are robust to different methods of calculating long-run abnormal

performance and market classifications and after controlling for the method of payment and the mode of acquisition.

These findings suggest that low-valuation acquirers create significantly higher long-term shareholder wealth than high-valuation acquirers. The initial generally positive reaction of the market to high-valuation acquirers suggests that the market learns only gradually that many of the mergers undertaken during high-valuation periods were imprudent. In contrast, when stock prices are low, acquisitions earn significantly negative announcement returns, but, in the long run, these acquisitions earn insignificantly positive abnormal returns. This suggests that the market learns over time that, despite its initial skepticism, these acquisitions were worthwhile. For both high and low-valuation acquisitions the market's reaction upon announcement of an acquisition stands in stark contrast to the market's long-run view of the firm's performance.

The results beg the question why high-valuation acquirers underperform relative to low-valuation acquirers in the long run. We provide some preliminary answers by examining three possible explanations for the underperformance of high-valuation acquirers. First, managers may be engaging in herding behavior. Managers may choose to follow the herd during a merger wave and acquire a firm just so they are not "left behind". We find evidence consistent with herding: early-movers (defined as the earliest 10%, 20% or 30% of all acquisitions announced during a high-valuation wave) show no abnormal performance, while late-movers significantly underperform. Second, managers may be overpaying for the target during high-valuation periods. We do not find evidence consistent with overpayment in the observed bid premia: the bid premium is on average 49% in high-valuation markets and 78% in low-valuation markets.

Third, managers may be timing the market. During stock markets booms managers may wish to pay with overvalued stock and are less wary of economic gains from the acquisitions. We find there are significantly more stock acquisitions during high-valuation periods than during low-valuation periods. This is consistent with the notion that managers undertake more acquisitions during stock market booms in order to utilize overvalued stock. This behavior could influence long-run performance for two reasons.

First, if market-timing incentives make acquirers less prudent about synergy gains, then in the long-run, acquirer's stock price may decline to reflect the poorer quality of acquisitions made. Second, the acquirer's stock price may decline simply to reflect the fact that it was overvalued when the acquisition was made. We define an acquirer as a market-timer if it undertook a stock acquisition when its stock price was at least 85% of the highest price in the previous 12 months. By this definition 60% of acquirers buying during high-valuation periods were market-timers. We find that acquirers who time the market significantly underperform, while acquirers who do not time the market show no significant underperformance. These results could indicate that market-timing incentives drive acquirers to make unprofitable acquisitions. However, it is also possible that the negative abnormal returns of acquirers who time the market during high-valuation periods reflect the fact that stock acquirers were overvalued at the time of the acquisition. In order to prevent stock price corrections from clouding the results, we look at the operating performance of acquirers who time the market and find no evidence of underperformance. Thus, it is not obvious that market-timing causes acquirers to make unprofitable acquisitions. Moreover, we find that cash acquisitions undertaken in high-valuation periods also significantly underperform. Since market-timing incentives would not apply to acquirers who pay with cash we believe that market-timing is not sufficient to explain the underperformance of acquirers who buy during high-valuation periods.

Our paper is closely related to Loughran and Vijh (1997), Rau and Vermaelen (1998), Dong, Hirshleifer, Richardson, and Teoh (2003), and Rhodes-Kropf, Robinson, and Viswanathan (2003). Loughran and Vijh find that the long-run performance of acquirers using stock is worse than that of acquirers using cash and that tender offers have significantly positive long run returns while mergers have significantly negative long-run returns. Rau and Vermaelen find that the acquirer's market-to-book at the time of the acquisition affects its long-term stock performance; specifically, firms with low book-to-market ratios underperform in the long run. Our paper differs from both Loughran and Vijh and Rau and Vermaelen in that we examine the impact of market-wide sentiment on acquirer performance in the short and long run. Dong, Hirshleifer, Richardson, and Teoh provide evidence that market misvaluation impacts the volume of takeovers and the behavior of participants in takeover contests. Specifically Dong

et. al. examine how market *mis*valuations affect various facets of takeover activity, while we examine just one facet of takeover activity, short and long-run returns. Also market valuations are defined by Dong *et. al.* on a firm specific level (market-to-book ratios), whereas we define market valuations as the overall level of the stock market while controlling for firm specific valuations. Finally, Rhodes-Kropf, Robinson, and Viswanathan examine if firm specific and market-wide misvaluations cause merger waves. In this paper we are not concerned with the causes of merger waves.

The rest of the paper is organized as follows. Section 2 discusses related literature. Section 3 describes the data, Section 4 discusses our methodology, and Section 5 presents our results. Robustness issues are addressed in Section 6. Section 7 discusses explanations for our results. Section 8 summarizes and concludes.

2. Related Literature

Numerous papers have examined the announcement and post-acquisition stock performance of acquiring firms. In this section we briefly review previous empirical studies of stock performance of acquirers, and the nascent literature which examines the impact of firm-level valuations on managerial decision-making and firm performance.

2.1 Announcement Returns

There are numerous studies that examine bidder announcement returns to acquisitions. Survey articles include Jensen and Ruback (1983), Jarrell, Brickley and Netter (1988), Weston, Chung and Siu (1998), Andrade, Mitchell and Stafford (2001), and Bruner (2002). Jensen and Ruback provide an excellent overview of the results of various empirical studies that use data on mergers and acquisitions from the 1950s through the 1970s. On the whole the studies seem to find that announcement returns to bidders in acquisitions are approximately zero. Bradley, Desai, and Kim (1998) find that excess returns to bidders on the announcement of a takeover fall from about four percent in the 1960s to 1.3 percent in the 1970s and then to negative three percent in the 1980s (all statistically significant). However, they also find positive combined gains for bidders plus targets in takeovers for each period. Weston, Chung and Siu's review of the evidence on returns to acquirers in takeovers notes several reasons why the returns to

bidders may have decreased over time. The Williams Act (adopted in 1968) made the tender offer process more costly and time-consuming for bidders. In the 1980s takeover defenses adopted by firms, state antitakeover laws, and judicial decisions protecting targets all developed to further shift the bargaining power from bidders to targets.

More recently, Mulherin and Boone (2000) study the stock price reaction to the announcement of acquisitions during the 1990s of Value Line firms. They find that acquisitions create wealth – an average target return of 20.2 percent in the three-day window around the acquisition offsets a slightly negative but insignificant bidder return. Fuller, Netter and Stegemoller (2002) find that bidders that engaged in multiple acquisitions in 1990s earn statistically significant positive returns of 1.77 percent. However, this return is driven by the method of payment and target type (public, private or subsidiary target).

Numerous studies have established that the abnormal returns at the announcement of a takeover are higher for acquirers using cash than for acquirers using stock (see, for example, Travlos (1987), McCabe and Yook (1997), and Fuller, Netter and Stegemoller (2002)). There are also a multitude of studies that examine abnormal returns to acquirers engaging in mergers or tender offers (see, for example, Jensen and Ruback (1983), Jarrell and Poulsen (1989), Loderer and Martin (1990), and Schwert (1996)). Overall the abnormal returns for bidders in successful tender offers are positive and significant but evidence on the returns to bidders engaging in mergers is mixed.

2.2 Long-run Performance

Evidence on the long-run performance of acquiring firms is also mixed. Asquith (1983), Agrawal, Jaffe and Mandelkar (1992), and Loughran and Vijh (1997) find that stockholders of acquiring firms experience a statistically significant wealth loss in the long-run, where the 'long-run' usually varies from a period of two to five years. In contrast, Franks, Harris and Titman (1991) find no evidence of abnormal post-acquisition performance. However, these papers do establish that tender offers significantly outperform while mergers significantly underperform and that acquirers who pay in cash earn positive long-run abnormal returns while acquirers who pay with stock suffer negative long-run abnormal returns. Rau and Vermaelen (1998) show that bidders in mergers underperform while bidders in tender offers

outperform during the three years following the acquisition. The long-run underperformance of acquiring firms in mergers is predominantly caused by the poor post-acquisition performance of "glamour" firms.

The recent literature has identified various problems that afflict the methodologies used in studies of long-run abnormal performance. Barber and Lyon (1997) document that test statistics based on abnormal returns calculated using reference portfolios are misspecified due to the rebalancing and new-listing bias. They also document positive skewness in cumulative abnormal returns (CARs) and in buy-and-hold returns (BHARs) that renders incorrect any inference based on the assumption of normality. Mitchell and Stafford (2000) argue that the bootstrapping methodology used in some recent papers to draw inference about skewed abnormal returns is not appropriate because the methodology assumes independence of abnormal returns even though major corporate actions are not independent events. This is particularly relevant for acquisitions which tend to cluster by industry (see Mitchell and Mulherin (1996)) and occur in waves (see Holmstrom and Kaplan (2001) and Jovanovic and Rousseau (2001)). We discuss these biases and how we control for them in more detail in Section 4.

2.3 The impact of firm-level valuation on managerial decision-making and firm performance

Several recent studies examine how firm-level valuations affect managers' decisions and firm performance. Studies find that firms tend to issue equity when their market values are high relative to book values and tend to repurchase equity when their market values are low[4]. This market timing appears to have a significant impact on long-term stock performance. Research has shown that equity issuers have low subsequent returns and that these returns are even lower for high market-to-book issuers[5]. Regarding stock repurchases, Ikenberry, Lakonishok and Vermaelen (1995) find that low market-to-book repurchasers experience positive abnormal returns in the four years following the repurchase while high market-to-book repurchasers experience no abnormal returns.

[4] Secondary equity offerings are related to market valuations in Taggart (1977), Marsh (1982), Asquith and Mullins (1986), Korajczyk, Lucas and McDonald (1991), Jung, Kim and Stultz (1996) and Hovakimian, Opler and Titman (2001). Initial public offerings coincide with high market valuations in Loughran, Ritter and Rydqvist (1994), Pagano, Panetta and Zingales (1998).

[5] See Ritter (1991), Loughran and Ritter (1995), Speiss and Affleck-Graves (1995), Brav and Gomper (1997), and Jegadeesh (2000).

Further, Rau and Vermaelen (1998) examine the relation between firm-level valuation and long-run performance of acquiring shareholders. They hypothesize that the market overextrapolates the past performance of the bidder when it assesses the value of an acquisition. It is argued that managers of companies with low book-to-market ratios are more likely to overestimate their own abilities to manage an acquisition, i.e., they are more likely to be infected by hubris. Moreover, other stakeholders in these firms, such as the board of directors and large shareholders, are more likely to give management the benefit of the doubt and approve its acquisition plans. Such hubris-driven acquisitions, if approved, will destroy shareholder value. On the other hand, in companies with high book-to-market ratios, managers, directors and large shareholders will be more prudent before approving a major transaction. Because these acquisitions are not motivated by hubris, they should create shareholder value rather than destroy it. Empirically Rau and Vermaelen find support for their hypothesis.

3. Data

3.1 Description

Our sample contains completed tender offers and mergers gathered from the Securities Data Corporation's (SDC) U.S. Mergers and Acquisitions Database that were announced between January 1, 1979 and December 31, 1998[6]. Acquisitions are included in our sample if the following conditions are met:

1. The acquirer is a non-financial U.S. firm listed on the NYSE, NASDAQ or AMEX.
2. The target is not a subsidiary[7].
3. If daily acquirer return data are available for one day before the announcement date till one day after the announcement date ***and*** if the following acquirer data are available for two years following the acquisition: market equity (as of June of each year), the book-to-market ratio (as of December of each year) and monthly return data.
4. The transaction value is USD 50 million or more.

[6] Due to commonly known errors in the SDC dataset, we use Dow Jones Interactive to confirm the data provided by SDC and correct any errors.
[7] Hansen and Lott (1996) and Fuller et al. (2002) make a case for the exclusion of acquisitions in which a subsidiary was purchased.

5. The acquirer obtains at least 50% of the shares of the target.
6. As in Loughran and Vijh (1997) we require that the closing share price of the acquirer for the month before the announcement is not less than 3. This eliminates firms that are very small or in distress.
7. The method of payment is cash, stock or a mixture of the two.

As in Fuller, Netter and Stegemoller (2002) and Heron and Lie (2002), we define a cash acquisition as any acquisition in which the total transaction value was paid in cash, non-convertible debt or non-convertible preferred stock. We define a stock acquisition as any acquisition in which the total transaction value was paid in common stock and options, warrants, rights or convertible debt. Acquisitions with some combination of cash and stock are defined as mixed payment acquisitions.

3.2 Classification of High Valuation and Low Valuation Markets

We classify each month into a high, neutral or low-valuation period. We use monthly S&P 500 P/E data from 1974 till 1998 to capture price levels that existed in each month from January 1979 till December 1998[8]. In order to classify each month into a valuation group we first detrend the market P/E by removing the best straight-line fit from the P/E of the month in question and the five preceding years[9]. Each month is classified into an above (below)-average group if the detrended P/E of that month was above (below) the past five-year average. Then the months are ranked in order of detrended P/E. The top half of the above-average months are classified as high-valuation months and the bottom half of the below-average months are classified as low-valuation months. All other months are classified as neutral-valuation months[10].

3.3 Description of Event Study Samples

During the period 1979 – 1998 we find 80 high-valuation periods, 40 low-valuation periods and 120 neutral-valuation periods. *Table 1 Panel A* shows that, as expected, there are about three times as

[8] P/E data were obtained from Shiller (2001).
[9] It is necessary to remove the trend from the market P/E ratio because P/E ratios have trended upwards so that not removing the trend would result in a systematic classification of more recent acquisitions as high-valuation acquisitions and older acquisitions as low-valuation acquisitions. Our results are robust to reasonable changes in the length of the historical data used in the detrending.
[10] In Section 6 we present results using an alternative classification of high- and low-valuation markets.

many acquisitions during high-valuation markets than during low-valuation markets. In terms of total deal value, 63% of all acquisition dollars are spent in high-valuation periods and 11% in low-valuation period. Moreover, about 45% of high-valuation acquisitions are for stock (corresponding to 69% of total deal value in high-valuation markets) but only about 31% of low-valuation acquisitions are for stock (corresponding to 33% of total deal value in low-valuation markets). This is consistent with the notion that acquirers avoid paying with possibly undervalued stock during low-valuation markets.

Panel B shows how the acquisitions in our sample are spread out over time. It is evident that many different clusters contribute to our sample of high, neutral and low valuation acquisitions.

4. Methodology

4.1 Announcement Effect Study Methodology

Following Brown and Warner (1985), we use the modified market model to estimate abnormal returns. We do not use the market model because the presence of frequent acquirers in our sample suggests a high probability of other acquisition announcements in the estimation period, and any abnormal returns caused by these announcements will bias our parameter estimates. We calculate daily abnormal returns for a firm by deducting the equally-weighted index return from the firm's return.

$$AR_{it} = R_{it} - R_{Mt} \qquad (1)$$

where R_{it} is firm *i*'s daily stock return on date *t* and R_{Mt} is the return for the equally-weighted CRSP index on date *t*. We calculate abnormal returns for a three-day event window around the announcement date (from one day prior to the announcement date till one day after the announcement date). The cumulative abnormal returns (CARs) are calculated by summing the abnormal returns over the three-day window.

4.2 Long Run Stock Performance Study Methodology

Our primary measure of abnormal performance is the buy-and-hold abnormal return[11]. Barber and Lyon (1997) and Lyon, Barber and Tsai (1999), hence forth LBT, highlight three biases that can cause test-statistics to be misspecified in tests of long-run abnormal performance: rebalancing bias, new-listing or survivor bias, and skewness bias.

[11] In Section 6 we demonstrate robustness to alternative measures of abnormal performance.

To control for the rebalancing bias and the new-listing bias we follow the methodology described in LBT to calculate the returns of the reference portfolio. The method of calculating long horizon returns on a reference portfolio involves first compounding the returns on securities constituting the portfolio and then summing across securities:

$$R_p = \sum_{j=1}^{n_s} \frac{\left[\prod_{t=s}^{s+\tau}(1+R_{jt})\right]-1}{n_s} \qquad (2)$$

where n_s is the number of securities traded in month *s*, the beginning period of the return calculation. The return on this portfolio represents a passive equally weighted investment in all securities constituting the reference portfolio in period *s*. There is no investment in firms newly listed subsequent to period *s*, nor is there monthly rebalancing of the portfolio. Consequently, the reference portfolio return calculated this way is free of the new listing and rebalancing biases[12]. As in LBT, we assume that the proceeds of delisted firms are invested in an equally-weighted reference portfolio, which is rebalanced monthly. Thus, missing monthly returns are filled in with the mean monthly return of firms comprising the reference portfolio.

[12] Although this method of creating reference portfolios eliminates the new listing and rebalancing biases, it introduces a different problem. A sample firm is assigned to an appropriate size and book-to-market portfolio at the time of announcement of the acquisition and subsequently, the abnormal returns of the sample firm are measured relative to this group of firms for the entire horizon of interest. Insofar as size and book-to-market characteristics of firms change over time, this method introduces inaccuracies in the size and book-to-market matching. We have repeated our analysis with abnormal returns calculated in the 'traditional' way which is susceptible to the new listing and rebalancing bias but allows the researcher to do a better job of matching firms to the appropriate size and book-to-market portfolio. In this method, in each month we first calculate the mean return for each portfolio and then compound this mean return over the horizon of interest. Specifically, the portfolio return is now calculated as $R_p = \prod_{t=s}^{s+\tau}\left[1+\frac{\sum_{i=1}^{n_t} R_{it}}{n_t}\right]-1$. Calculating portfolio returns this away allows sample firms to be reassigned to new portfolios if size and book-to-market characteristics change. We allow sample firms to change size and book-to-market portfolios once a year. Since we study post-announcement abnormal stock returns, we must allow for a change in the sample firm's size when the acquisition is completed. Therefore, in addition to allowing firms to change size and book-to-market portfolios once a year, we also allow sample firms to switch portfolios at the end of the month in which the merger is completed. Our results are robust to this alternative calculation of portfolio returns.

We calculate long-run abnormal returns as the long-run buy-and-hold return of a sample firm less the long-run buy-and-hold return of our reference portfolio. This long-run abnormal return is referred to as the buy and hold abnormal return (BHAR) and is calculated as:

$$BHAR_{it} = \prod_{t=1}^{T}[1 + R_{it}] - \prod_{t=1}^{T}[1 + R_{pt}] \quad (3)$$

where R_{it} as the month *t* simple return on a sample firm and R_{pt} is the month *t* reference portfolio return. The BHAR captures the value of investing in the average sample firm relative to an appropriate benchmark over the horizon of interest.

4.2.1 Creation of Reference Portfolios

To create the reference portfolios we calculate fifty size and book-to-market portfolios in the spirit of the Fama and French (1993) Market Equity and Book-to-Market Equity portfolios. Following Loughran and Ritter (2000), in the process of portfolio creation, we drop all firms that did an acquisition during the year the portfolio was created or at any time during the four years preceding the portfolio creation. This is because if the reference portfolios contain many firms from the sample of acquiring firms, then the test will be biased towards finding no abnormal returns.

The size and book-to-market portfolios are created in two steps following Fama and French (1993). In June of each year *t* from 1978 to 2001, we rank all NYSE firms on CRSP on the basis of their market value of equity. The market value of equity is calculated using the price and common shares outstanding as of end June. Size deciles are then created based on these rankings for all NYSE firms. Second, within each size decile, firms are sorted into quintiles based on their book-to-market ratios in year *t-1*[13]. Book value of equity is defined as the Compustat book value of stockholder's equity, plus balance sheet deferred taxes and investment tax credit, minus the book value of preferred stock. As in Fama and French (1993) we use the redemption, liquidation, or par value (in that order) to estimate the value of preferred stock. The book-to-market ratio in year *t-1* is calculated as the book value of equity for

[13] The time at which the market value of equity and book-to-market are calculated for ranking purposes is based on Fama and French (1993) and Barber and Lyon (1997).

fiscal year ending in calendar year *t-1*, divided by market equity at the end of December of *t-1*. We drop firms that have negative book-to-market when calculating breakpoints for book-to-market.

Once NYSE firms have been ranked as above, NASDAQ and AMEX firms are placed in the appropriate size/book-to-market portfolio based on their size in June of year *t* and book-to-market ratio in year *t-1*.

4.2.2 Inference Based on Bootstrapped Skewness Adjusted t-statistic

LBT argue that since BHARs are positively skewed inference should not be based on the normality assumption. Instead one must use the skewness-adjusted test statistic and bootstrap the critical values in order to draw inference. The skewness-adjusted t-statistic is as follows:

$$t = \sqrt{n}\left(S + \frac{1}{3}\hat{\gamma}S^2 + \frac{1}{6n}\hat{\gamma} \right) \tag{4}$$

where

$$S = \frac{\overline{BHAR}}{\sigma(BHAR)} \qquad \text{and} \qquad \hat{\gamma} = \frac{\sum_{i=1}^{n}\left(BHAR_i - \overline{BHAR}\right)^3}{n\sigma(BHAR)^3} \tag{5}$$

In the equations above, $\hat{\gamma}$ is an estimate of the coefficient of skewness, *n* is the sample size and $\sqrt{n}S$ is the conventional t-statistic. We follow this methodology albeit with one important distinction. Bootstrap sampling must be carried out in a way that suitably captures the dependence structure of the original sample. Independent sampling assumes that abnormal returns of event-firms are independent. As argued by Mitchell and Stafford (2000), major corporate actions are not independent events, and thus event samples are unlikely to consist of independent observations. To preserve the dependence structure of the original data we create bootstrap samples via the block bootstrap procedure outlined in Horowitz (2000). In the block bootstrap procedure, the original data are divided into blocks. The bootstrap sample is obtained by sampling overlapping blocks randomly with replacement and laying them end-to-end in the order sampled. The sampling of the blocks must be such that the block bootstrapped sample is at least of

length *n*, where *n* is the length of the original data. We draw 2,000 bootstrapped samples in this manner and calculate the critical values[14].

5. Results

5.1 Announcement Effect Study

As indicated in *Table II* Panel A, we find that all acquisitions in our sample are on average met with statistically significant negative returns of -0.08%. This result is driven by stock acquisitions, which experience significant abnormal performance of -1.05% over the three days surrounding the announcement of the acquisition. Cash acquisitions have an insignificant positive abnormal performance of 0.22% and mixed offers have a significant positive 1.31% return. These results are consistent with previous literature and with Myers-Majluf's (1984) asymmetric information theory that issuing stock signals overvaluation and leads to a price correction. Further we find that tender offers generally deliver insignificant positive returns to the bidder, while mergers provide significantly negative returns of -0.13%, driven by the underperformance of stock mergers.

Panel B shows that high-valuation acquirers experience insignificant abnormal returns of 0.27%, while in Panels C and D we see that neutral and low-valuation mergers suffer significantly negative abnormal returns of -0.43% and -0.45%, respectively. These results suggest that the market is less welcoming of acquisitions during low-valuation periods than during high-valuation periods. However, the difference between the three-day announcement CARs for high-valuation and low-valuation acquirers (0.73%) is not significant (Panel E).

When we partition the sample by the method of payment *and* market valuation, results indicate that cash offers have insignificant abnormal returns across all states of the market, while stock offers announced in high, neutral *and* low-valuation periods earn significantly negative returns. Mixed payment offers provide significantly positive returns in high and neutral-valuation periods, but insignificantly negative returns in low-valuation periods.

[14] We choose a block size equal to n/10 where n is the length of the original data. The bootstrapped critical values do not change significantly for small changes in the block size. In Section 6 we demonstrate robustness of the results to calendar-time portfolio returns advocated by Mitchell and Stafford (2000)

Finally, when we control for the mode of acquisition *and* market valuation, we find that high-valuation tender offers experience significantly positive abnormal returns of 1.47% while neutral- and low-valuation tender offers suffer significantly negative abnormal returns of -0.72% and -0.88%, respectively. High-valuation mergers experience insignificantly positive returns, neutral valuation mergers experience significantly negative returns and low-valuation mergers experience insignificantly negative returns. These results make it evident that, controlling for mode of acquisition, high-valuation acquirers fare better than low valuation acquirers immediately after announcement. The difference-in-means test in Panel E reinforces this finding: the three-day announcement CARs for high-valuation tender offers are 2.35% higher than those for low-valuation tender offers. Since tender offers are often hostile, these results suggest that when the stock market is low, it is particularly unwelcoming of hostile takeover efforts.

In summary, low-valuation and neutral-valuation acquisitions experience negative CARs while high-valuation acquisitions have insignificant CARs. We interpret this as evidence that the market welcomes, or at least tolerates, acquisitions during high-valuation periods but punishes acquirers on the announcement of an acquisition during low-valuation periods[15].

[15] We are, however cautious about this interpretation since it is possible that high (low)-valuation acquirers experienced high (low) pre-event returns and thus our announcement results may well be capturing short-term stock price persistence as in Jegadeesh and Titman (1993).

5.2 Long Run Study

5.2.1. Univariate analysis

Table III contains the two-year BHARs. Panel A of Table III shows that acquisitions on average have insignificant abnormal performance of -3.01%, tender offers outperform by 7.65% and mergers significantly underperform by -5.82%.

When we partition our sample based on the market valuation and method of payment, we find compelling evidence that market valuations do affect the acquirer's long-run performance. During high-valuation periods, acquirers have significant BHARs of -8.64% (Panel B), with both cash and stock acquisitions contributing to this underperformance. High-valuation cash acquisitions have significant BHARs of -4.76%, while high-valuation stock acquisitions have significant BHARs of -14.13%. High-valuation mixed payment acquisitions have insignificant abnormal returns of -2.22%. Neutral-valuation acquisitions as a whole (Panel C) have insignificantly negative abnormal performance. However, neutral-valuation stock offers significantly underperform while neutral-valuation cash acquisitions outperform. Tender offers outperform and stock mergers underperform. Low-valuation acquisitions (Panel D) have no abnormal performance nor is there any abnormal performance for any method of payment. It is evident from these results that high-valuation acquisitions, on average, destroy value for shareholders in the long-run, while low-valuation acquisitions do not.

Also notable is the finding that cash acquisitions do not necessarily outperform the benchmark; cash acquisitions undertaken in high-valuation periods actually underperform the control portfolio. This appears to be inconsistent with previous research, notably Loughran and Vijh (1997) and Rau and Vermaelen (1998), which found a pervasive positive abnormal performance of cash acquisitions. The sample of acquisitions in Loughran and Vijh ends in 1989, Rau and Vermaelen's sample ends in 1991, while our sample ends in 1998. To test whether the differences in results for cash acquisitions are driven by the different sample periods, we split our sample of acquisitions into those undertaken in the 1980s and those undertaken in the 1990s. Consistent with Loughran and Vijh and Rau and Vermaelen, we find

that in the 1980s, cash acquisitions significantly outperformed the control portfolio by 8.64%. Surprisingly however, during the 1990s cash acquisitions actually suffered insignificantly negative abnormal returns. This poor performance of cash acquisitions in the 1990s was driven by the significant underperformance of high-valuation cash acquisitions (BHAR of -9.76%) which accounted for 50% of all cash acquisitions in the 1990s. The experience of high-valuation cash acquirers in the 1990s leaves an important lesson – when stock prices are soaring, paying cash for possibly overvalued targets is a recipe for destroying shareholder value.

Finally, we partition the sample by the mode of acquisition and market valuation. Panel B of Table III shows that mergers undertaken in high-valuation periods have a significant BHAR of -10.69%, driven by stock mergers (-13.96%). In contrast, low-valuation mergers as a whole have insignificantly positive abnormal performance of 14.41% (Panel D). Our results show that the poor performance of mergers as whole is caused by mergers undertaken during high stock market valuation periods. Tender offers have insignificant returns for both high- and low-valuation periods but significant, positive BHARs for neutral-valuation periods.

The impact of market valuations is the most striking when we look at differences in the magnitude of abnormal performance of high and low-valuation acquisitions. Panel E of Table III shows that high-valuation acquisitions on average significantly underperform low-valuation acquisitions by -19.70%. This difference is driven by stock acquisitions; high-valuation stock acquisitions underperform low-valuation stock acquisitions by -45.00%. Note also that high-valuation mergers significantly underperform low-valuation mergers by -25.10%. In contrast, the performance of high and low-valuation tender offers is not significantly different.

It is interesting that the performance of acquirers in tender offers is unaffected by the state of the market in which the tender offer was initiated while the performance of acquirers in mergers is sensitive to the state of the market. One reason for this finding may be that tender offers are typically hostile and require overcoming resistance from incumbent management. Thus, tender offers may indicate greater

confidence in the acquirer's ability to realize efficiency gains from the acquisition[16]. Moreover, tender offers frequently result in a turnover of target managers (Martin and McConnell (1991)) which suggests that acquirers in tender offers attempt to create wealth gains by removing inefficient management. Operational synergies and disciplining of target managers are likely to be features of tender offers regardless of the state of the market and thus could account for the insignificant difference in the performance of high-valuation and low-valuation tender offers. Mergers, on the other hand, are usually friendly to the target management. Since there is no resistance to be overcome, mergers do not necessarily indicate greater confidence in the acquirer's ability to realize efficiency gains. Moreover, mergers do not typically involve the replacement of inefficient target management. In fact, since mergers tend to be for stock more often than for cash, they are susceptible to market timing whereby managers may undertake stock acquisitions because they wish to exploit overvalued stock and not necessarily because they perceive significant synergies from the merger.

In order to distinguish whether our findings are the result of the overall markets misvaluation or the misvaluation of the firm, we split the sample into high, medium and low market-to-book acquirers, and then split each category into acquisitions that were undertaken in high, medium and low-valuation periods. We examine the performance of acquirers buying during high and low-valuation periods for each of the three acquirer market-to-book categories. *Table IV* presents these results. We find that high, medium and low market-to-book acquirers *all* underperform when they buy during high-valuation periods (-8.51%, -9.49%, and -7.87% respectively). Moreover, we find that high market-to-book acquirers buying during low-valuation periods do not underperform (30.52%), while low market-to-book acquirers buying during low-valuation periods significantly outperform (11.74%). Further, high, medium and low market-to-book acquirers in high-valuation periods have significantly lower long-run returns than the high, medium, and low market-to-book acquiring in low-valuation periods. Thus, we conclude that

[16] See Loughran and Vijh (1997).

stock market valuations are an important determinant of acquirer performance over and above the firm's misvaluation.

5.2.2 Multivariate analysis

In this section we run multivariate regressions to control for other factors that may be relevant for abnormal performance of acquirers as well as address the small sample problems that can arise in the univariate analysis where the sample of acquisitions is split into many sub-groups. Mitchell and Mulherin (1996) and Andrade, Mitchell and Stafford (2001) argue that industry factors are an important determinant of takeover activity and should be controlled for in empirical research on acquisitions. Also, previous research has demonstrated that the size of an acquisition relative to the acquirer has an impact on the abnormal returns to the acquiring firm.

We estimate the following model:

$$\begin{aligned} AR = {} & a_0 + a_1 CashDummy + a_2 MixedPaymentDummy + a_3 TenderDummy + a_4 HighValMktDummy \\ & + a_5 NeutralValMktDummy + a_6 Log\ RelSize + a_7 1990sDummy + a_8 HighMktToBkDummy \\ & + a_9 MediumMktToBkDummy + a_{10-11} Log\ RelSize * PaymentDummy + a_{12} Log\ RelSize * TenderDummy \\ & + a_{13} Log\ RelSize * MktDummy + a_{14-17} MktDummy * PaymentDummy \\ & + a_{18-19} MktDummy * TenderDummy + a_{20-28} IndustryDummy \end{aligned} \quad (6)$$

where CashDummy (MixedPaymentDummy) is a dummy which equals one if the acquisition was paid in cash (a combination of cash and stock) and zero otherwise. TenderDummy is a dummy which equals one if the acquisition was a tender offer and zero otherwise. HighValMktDummy (NeutralValMktDummy) equals one if the acquisition was announced in a high-valuation (neutral-valuation) market, and zero otherwise. LogRelSize captures the relative importance of the acquisition and is defined as the log of the transaction value at the time of the acquisition announcement over the acquirer's market value of equity 30 days prior to the announcement date. 1990sDummy is a dummy that equals one if the acquisition was announced in the 1990s and zero otherwise. We include 1990sDummy since we find that cash acquisitions outperformed in the 1980s but not in the 1990s. HighMktToBkDummy (MediumMktToBkDummy) equals one if the acquirer belongs to the high (medium) market-to-book class and zero otherwise. We follow Rau and Vermaelen (1998) and calculate the market-to-book ratios of all

firms in our sample one month prior to the acquisition announcement and split acquirers into equal subsamples of high, medium and low market-to-book firms.

We also include various interaction terms. Since the literature suggests that there may be a link between the relative importance of the acquirer and the bidder's method of payment choice (see, e.g., Fuller et al., 2002), we interact the relative size dummy with the method of payment dummies. Similarly, we interact the relative importance of the acquisition with the mode of acquisition (tender dummy). We also include interaction terms to capture any interaction between the state of the market (high-valuation or neutral-valuation) and the acquirer's method of payment and mode of acquisition. Finally, we account for industry effects by including industry dummies based on 1-digit SIC codes.

The multivariate results confirm our previous findings. As shown in *Table V* Panel A, announcement-day CARs of low market-to-book, stock-financed mergers that were announced in a low-valuation market in the 1980s are insignificantly negative (-3.63%). The CARs are significantly higher if the merger was paid for in cash or a mix of cash and stock (+5.59% and +4.46, respectively), and if it was announced in the 1990s (+0.93%). CARs were significantly lower in a tender offer (-2.65%), and if the target was large relative to the acquirer (-0.77%). Interestingly, the state of the market does not significantly impact announcement CARs. Also, the acquirer's market-to-book ratio at the time of the acquisition announcement does not seem to matter for short-run returns. In Panel B, the 2-year BHARs of low market-to-book stock-financed mergers that were announced in a low-valuation period in the 1980s are insignificantly negative (-23.53%). They are significantly lower if the merger was announced in a high-valuation market (-34.28%) and if the target was relatively large (-17.46%). Acquirers with medium market-to-book ratios do not seem to fare significantly worse (-3.56%), while high market-to-book acquirers are insignificantly *better* off (+6.26)[17]. The size and significance of these coefficients seem

[17] This finding seems to contradict Rau and Vermaelen's (1998) result that long-run underperformance of acquirers is driven by high market-to-book acquirers. However, if we restrict our sample to the time period covered by Rau and Vermaelen (acquisitions announced between January 1, 1980 and December 31, 1991) then our two-year BHARs for high and low market-to-book acquirers are similar to the bias-adjusted two year returns of Rau and Vermaelen's public-targets-only sample. In this shorter sample, regressing 2-year BHARs on our two market-to-book dummies confirms the Rau and Vermaelen result that high market-to-book firms are the worst performers.

to suggest that market-wide valuations are an important determinant of acquirer performance even after controlling for acquirer market-to-book.

In summary, the results described so far indicate that the state of the market in which a merger is initiated affects the long-run performance of the acquirer over and above the method of payment used and the firm's misvaluation. In so far as better stock performance reflects smarter business strategies, we find that acquirers who make cash or stock acquisitions in low-valuation periods make better decisions than acquirers who make cash or stock acquisitions in high-valuation periods.

6. Robustness Issues

In this section we demonstrate the robustness of our results to the following: classification of high, neutral and low-valuation markets, calendar-time returns, operating performance, and price reversals.

6.1 Classification of high, neutral and low valuation markets

The analysis presented so far uses the P/E ratio based on the S&P 500 in order to classify months as high or low valuation months. Henceforth, we refer to this P/E ratio classification as the PE Classification. In this section we show that our results are robust to a reasonable alternative to the PE Classification.

Our alternative classification of high, neutral and low-valuation acquisitions is based on the S&P index level itself rather than the P/E ratio of the S&P index. The index level in each month is classified as above or below the past five-year average S&P index level[18]. The top half of S&P levels in the above-average group are classified as high valuation months, the bottom half of S&P levels in the below-average group are classified as low valuation months. All other months are classified as neutral-valuation months. We call this the S&P Classification. The two-year BHARs for this classification are presented in *Table VI Panels A-D*. In Panel B of Table IV we see that high-valuation acquisitions on average have a significant underperformance of -9.22%. In fact, both cash and stock acquisitions undertaken during high-

[18] We remove the best straight-line fit linear trend from the S&P index level before classifying each month as above or below the past average. The detrending procedure used is the same as described for the P/E ratio on page 10. Since the S&P index level has trended upwards, failing to remove the trend would result in a systematic classification of more recent acquisitions as high-valuation and older acquisitions as low-valuation.

valuation periods underperform – cash acquisitions underperform by -3.31% and stock acquisitions underperform by -17.18%. In contrast, acquisitions undertaken during low-valuation periods on average have no abnormal performance. However, cash acquisitions undertaken during low-valuation periods outperform by 7.79%. If we look across the mode of acquisition, we see that mergers undertaken during high-valuation periods underperform by -11.47%, driven by stock mergers. In contrast, mergers undertaken during low-valuation periods experience insignificantly positive abnormal returns. However, cash mergers undertaken in low-valuation periods experience significantly positive abnormal returns of 13.07%. In summary, the S&P 500 classification also shows that high-valuation acquirers suffer negative abnormal returns while low-valuation acquirers experience either zero or significantly positive abnormal returns.

6.2 Calendar-Time Returns

Thus far we have relied on BHARs to capture long-run performance of acquirers. However, Mitchell and Stafford (2000) show there exists a cross-sectional correlation of event-firm abnormal returns. They suggest an alternative method of measuring long-term stock price performance: track the performance of an event portfolio in calendar time relative to an explicit asset-pricing model. The event portfolio is formed each period to include companies that have completed the event in the prior n periods. By forming event portfolios, any cross-sectional correlations of the individual event firms will be automatically accounted for in the portfolio variance at each point in calendar time.

For each month from January 1982 till December 1998, we form value-weighted portfolios of all sample firms that announced an acquisition within the previous two years[19]. We also create high and low-valuation event portfolios for each month as follows: the high-valuation event portfolio consists of all sample firms that announced an acquisition during any high-valuation period within the previous two years. Likewise the low-valuation event portfolio consists of all sample firms that announced an acquisition during any low-valuation period within the previous two years[20]. Portfolios are rebalanced monthly to drop all companies that reach the end of their 2-year period and add all companies that have

[19] The results are qualitatively the same if we use a three-year event horizon as in Mitchell and Stafford (2000)
[20] As in Mitchell and Stafford (2000) we exclude multiple observations on the same firm that appear within 2 years of the initial observation.

just announced a transaction. The portfolio excess returns are regressed on the Fama-French (1993) factors as follows:

$$R_{p,t} - R_{f,t} = a_p + b_p(R_{m,t} - R_{f,t}) + s_p\, SMB + h_p\, HML + e_{p,t} \qquad (7)$$

where $(R_{m,t} - R_{f,t})$ represents excess return on the market, SMB is the difference between a portfolio of "small" stocks and "big" stocks, and HML is the difference between a portfolio of "high" book-to-market stocks and "low" book-to-market stocks.

Table VII shows the regression results for the event portfolios. The intercept in the first column indicates that acquirers as a whole experience insignificant abnormal returns of 0.12% per month which corresponds to 2.88% over a period of two years (0.12% * 24). The intercept in column two of Table VII shows that high-valuation acquirers experience insignificant abnormal returns of 0.03% per month which corresponds to 0.72% over a two-year period. Noticeably however, low-valuation acquirers (column three) experience significantly positive abnormal returns of 1.15% per month which corresponds to an abnormal return of 27.6% over a two-year period.

For completeness, we check whether the abnormal return of low-valuation acquirers is significantly different from that of high-valuation acquirers. To do this we run a full model which includes both high-valuation and low-valuation event returns. The difference in the abnormal performance of high and low-valuation portfolios is captured by a dummy which equals one if the event portfolio return is a high-valuation return and zero otherwise. The last column of Table VII contains the results of this regression. The coefficient on the high valuation dummy, -1.11, is the difference in the intercepts of the high and low-valuation event portfolios. The coefficient is significant (t-statistic =-3.20) suggesting that low-valuation acquirers experience significantly higher long-run abnormal returns than high-valuation acquirers.

These results, which account for the cross-correlation of event firm returns, provide support for the hypothesis that acquirers who buy during low-valuation periods create significantly more shareholder wealth than acquirers who buy during high-valuation periods. It is noticeable however that the magnitude of calendar-time abnormal returns is quite different from the BHARs. This difference is not surprising. It

is evident from previous studies that the magnitude of abnormal return varies depending on the method used to calculate abnormal returns. Loughran and Ritter (2000) argue that since different methods have different powers of detecting abnormal performance, as long as there are true abnormal returns, there should be differences in abnormal return estimates across different methodologies.

6.3 Operating Performance

Since studies of long-run abnormal stock returns are fraught with numerous confounding issues (e.g., skewed abnormal returns, new-listing bias, rebalancing bias, etc.), we examine the operating performance of high- and low-valuation acquirers for the two years following the completion date of the acquisition. Once again we divide the sample based on whether the acquisition announcement occurred in high or low-market valuation periods. We collect the necessary accounting data from Compustat[21]. To measure the operating performance of our sample firms, we compute the ratio of operating income to total assets (ROOI). We follow Loughran and Ritter (1997) and define operating income as operating income before depreciation, amortization, and taxes, plus interest income[22]. To ensure that our results are compared to the proper benchmark, and are not simply capturing the mean reversion in operating ratios that has been widely documented in the accounting literature, we match each firm in our sample with a control firm following the methodology outlined in Barber and Lyon (1996). The control firm must be listed on AMEX, NYSE or NASDAQ and must not have been involved in a takeover (either as a target or an acquirer) during the three years after the acquisition completion date. From that set of firms, we find firms with the same two-digit SIC code as the sample firm that have total assets between 25 percent and 200 percent of the sample firm. If no firms meet the above criteria, control firms are selected from the set of firms with total assets between 90 and 110 percent of the sample firm without regard to industry. From the resulting set of firms, we select the control firm with the closest operating performance to that of the sample firm in the year of the merger completion.

Our operating performance results are consistent with our long-run stock-return results as well as with evidence of Healy, Palepu, and Rubak (1992). *Table VIII* Panels A-D provide the two-year

[21] We access all Compustat files (including the research file) for 1979 to 2000.
[22] The ratio of operating income to total assets is computed as: (Compustat item #13 + Compustat item #62)/ (Compustat item #6).

abnormal ROOI under the PE Classification. In Table VIII, Panel A we see that the ROOI for the sample was 2.20% significantly higher than the benchmark. In fact, it is evident from Panels A-C of Table VIII that the ROOI of tender offer, mergers, cash acquisitions, stock acquisitions, high-valuation acquisitions and low-valuation acquisitions are all significantly higher than the benchmark following completion of the acquisition. The difference between high and low-valuation acquisitions becomes evident when we look at the differences in the magnitude of the abnormal operating performance. The differences-in-medians tests are shown in Panel D. The abnormal ROOI is a significant 1.75% higher for low-valuation acquisitions than for high-valuation acquisitions. As in the long-run stock return study, there is no significant difference in the operating performance of high and low-valuation tenders. However, the abnormal ROOI of low-valuation mergers is a significant 1.83% higher than that of high-valuation mergers.

The operating performance results provide strong indication that low-valuation acquirers outperform high-valuation acquirers.

6.4 Price Reversals

In this section we show that our stock return results are not just a manifestation of long-term reversals as suggested by Jegadeesh and Titman (1993). Arguably, our finding that high (low)-valuation acquirers experience positive (negative) abnormal returns around the announcement date but earn negative (positive) abnormal returns in the long-run can be attributed to short-run persistence followed by long-term reversals. If the firms carrying out acquisitions in high (low)-valuation periods experienced positive (negative) returns in the few months before the announcement of the acquisition, then the stock prices of these acquirers may be subject to a brief period of persistence followed by long-term negative (positive) returns.

In order to demonstrate that our results are not just capturing long-run stock-price reversals we do the following analysis. First, the pre-event (i.e. pre-announcement) performance of each acquirer in the high and low-valuation acquirer groups is calculated. Specifically, for each acquirer, we determine the buy-and-hold returns for the six months preceding announcement of the acquisition. High-valuation

acquirers are ranked in order of their pre-event buy-and-hold returns and placed into quintiles. The same is done for low-valuation acquirers. We then focus on acquirers that lie in the top and bottom quintiles of pre-event buy-and-hold returns. That is, we examine four different categories of acquirers: (i) high-valuation acquirers who experienced the highest pre-event returns, (ii) high-valuation acquirers who experienced the lowest pre-event returns, (iii) low-valuation acquirers who experienced the highest pre-event returns, and (iv) low-valuation acquirers who experienced the lowest pre-event returns. The reason we focus on these extreme quintiles is that if our results are simply a manifestation of momentum and reversals and have nothing to do with the quality of the acquisition decisions as we have claimed, then any support or contradiction of our interpretation will be the most obvious for acquirers that have experienced extremely high or low pre-event returns.

Results for this analysis are provided in *Table IX*. We observe that high-valuation acquirers who earned high pre-event returns have two-year post-announcement BHARs of -4.01%. Low-valuation acquirers who earned extremely low pre-event returns experience positive two-year BHARs of 30.45%. These findings are consistent with long-term reversals and it is not possible to determine whether the long-term abnormal performance is solely due to reversals or whether the quality of the acquisition is a contributing factor. Noticeably however, high-valuation acquirers who earned negative pre-event returns also do poorly in the long-run with BHARs of -4.5%. The negative BHARs cannot be attributed to long-term reversals of stock returns since the acquirers had negative returns prior to the merger announcement. Moreover, low-valuation acquirers who earned positive pre-event returns have two-year BHARs of 12.60%. This outperformance also cannot be attributed to price reversals. We argue that high-valuation acquirers are underperforming relative to low-valuation acquirers because managers are making poorer acquisition decisions during high-valuation periods.

Furthermore, the finding in Section 6.3 that the operating performance of low-valuation acquirers is significantly better than that of high-valuation acquirers validates our claim that the stock-return study does not just capture momentum and reversals but actually provides evidence of differences in the quality of acquisitions made during high and low valuation periods.

7. Possible explanations

Our findings warrant further research on why acquirers who buy during high-valuation periods underperform relative to those who buy during low-valuation periods. In this section we provide some preliminary answers.

One possible explanation for the underperformance is that acquirers who buy during high-valuation periods overpay. We compare the bid premia paid in high and low-valuation periods to see if acquirers who buy in high-valuation periods do relatively poorly because they pay more for their purchases. We calculate the premium paid as (Net Transaction Value – Target Market Value of Equity)/Target Market Value of Equity. Here, Net Transaction Value is the Transaction Value as of merger completion minus liabilities assumed by the acquirer. Both data are available in SDC Platinum. Market value of equity for the target is calculated as of 30 days prior to merger announcement in order to exclude any wealth effects of the merger announcement or information leakage prior to announcement. We find that 310 acquirers who bought during high-valuation periods paid an average premium of 49.8% while 96 acquirers who bought during low-valuation periods paid an average premium of 78%[23]. This is a surprising result. Acquirers buying during high-valuation periods pay significantly lower premia and still perform worse than those who buy during low-valuation periods. Thus, the observed premia do not support the notion that the relative underperformance of acquirers buying during high valuation periods is due to overpayment.

Since the bid premium captures the amount paid in excess of the target's market value, an implicit assumption underlying this bid premium approach is that targets on average are valued correctly. If targets tend to be overvalued during high-valuation periods and undervalued during low-valuation periods, high-valuation acquirers are paying a 'hidden' premium which we do not capture. To check this possibility, we use acquirer and target market-to-book ratios as misvaluation proxies as in Dong *et al.*

[23] This is consistent with the difference in target announcement returns: the average announcement return is 18.5% for targets bought during high valuation periods and 26.9% for targets bought during low-valuation periods. Target announcement returns can be used as an alternative method to establish the bid premium although they are not as clean a measure of the premium paid because target announcement returns reflect both the premium offered and the market's perception of the likelihood of the acquirer being successful in acquiring the target. Note that the sample sizes are smaller in this study because we require that target market value data be available

(2003). We calculate the relative market-to-book, which we define as the acquirer's market-to-book divided by the target's market-to-book, and find that it is lower in high-valuation periods than in low-valuation periods (1.43 versus 1.63). Although this indicates that targets (relative to acquirers) are valued higher in high-valuation periods than in low-valuation periods, the difference is not significant. Thus, we believe it is unlikely that acquirers are paying a hidden premium in high-valuation periods.

Next we examine whether the underperformance of high-valuation acquisitions is due to managers timing the market and utilizing overvalued stock. We define an acquirer as a market-timer if it undertook a stock acquisition when its stock price was at least 85% of the highest price in the previous 12 months[24]. By this definition 60% of acquirers buying during high-valuation periods were market-timers. We find that acquirers who time the market have significantly negative two-year BHARs of 20.89%. Stock acquirers who, by our definition, are not timing the market have insignificant BHARs of -3.92%. These results could be an indication that market-timing incentives drive acquirers to make unprofitable acquisitions. However, it is also possible that the negative abnormal returns of market timers reflect overvaluation of acquirer stock at the time of the acquisition and a subsequent price correction. In order to prevent stock price corrections from clouding the results, we examine the return on operating income of acquirers who time the market and find no evidence of underperformance. Thus, it is not clear that market-timing causes acquirers to underperform. Moreover, cash acquisitions undertaken in high-valuation periods significantly underperform by -4.76%. Since market-timing incentives do not apply to acquirers who pay with cash we conclude that market-timing is not sufficient to explain the underperformance of acquirers who buy during high-valuation periods.

Finally, we explore the possibility of herding behavior during merger waves. Scharfstein and Stein (1990) argue that fund managers may mimic the investment decisions of other managers, ignoring substantive private information. They acknowledge that the same principle can apply in corporate investment when a number of companies are investing in similar assets. With this in mind we investigate the possibility that during a merger wave, managers observe a spate of acquisitions and decide to jump on

[24] Results are qualitatively the same if we define market-timers as those who bought when their price was at least 80% or 90% of the previous year's high.

the bandwagon in order to not be the only ones left out and in the process ignore important signals about insufficient synergies.

To test for herding behavior, we divide our sample of acquirers who buy during high-valuation periods into those who acquired early in a merger wave and those who acquired later. If herding behavior is the explanation for the underperformance of acquirers buying in high valuation periods, then the underperformance should be caused by the late-movers, that is, the firms who acquire after observing an increase in acquisition activity. We use three different definitions of early movers – the first 10%, 20% or 30% of acquirers in any high-valuation period. All other acquirers are classified as late movers. *Table X* presents two-year BHARs for early and late acquirers in the high-valuation periods. For all definitions, early movers show no abnormal performance while late movers have highly significantly negative abnormal performance. This finding is consistent with the notion that acquirers who buy later in an acquisition wave are less mindful of synergies possibly because they are following the herd.

8. Conclusion

Motivated by the recent theoretical models that explain how stock market levels may influence managerial acquisition decisions, anecdotal and empirical evidence that merger activity is correlated with stock market valuation, and empirical evidence that security issuance decisions and capital structure are influenced by stock prices, we ask the question: does the overall level of the stock market affect the performance of acquiring firms?

Our main finding is that the market valuation at the time the acquisition is initiated affects both the announcement returns and long-run performance of the acquirer. Specifically, announcement-day returns are insignificantly positive for acquisitions undertaken in high-valuation markets and significantly negative for acquisitions undertaken in low-valuation markets. The market appears indifferent to acquisitions during high-valuation periods but punishes acquisitions during low-valuation periods. Strikingly, this finding is reversed for long-run. Acquirers buying in high-valuation markets significantly underperform in the two years following the acquisition, whereas those buying in low-valuation markets have insignificantly positive abnormal returns. This result still holds after controlling for the acquirer's

valuation at the time of the acquisition. Thus, the overall market's valuation at the time of the merger announcement impacts the firm's post merger performance. The long-run underperformance of high-valuation acquirers relative to low-valuation acquirers is present in buy-and-hold shareholder returns, calendar-time portfolio returns and in the operating performance of the acquirer. These findings are independent of the method of payment and are robust to the system used to classify high- and low-valuation markets and the measure of abnormal performance used. Finally, we demonstrate that the reversal of fortunes for the acquirers is not simply a manifestation of short-term persistence and long-term reversals.

Our overall conclusion that acquirer performance is correlated with the state of the market is consistent with recent evidence that stock prices affect corporate decisions. Our results strongly suggest that, viewed through an ex-post-performance lens, acquirers buying during periods of high stock-market-valuation make worse acquisitions than those buying during low stock-market-valuation periods. We find evidence that the underperformance of acquirers buying in high-valuation periods is consistent with herding behavior by managers and not market timing or overpayment.

Table I: Sample Statistics

Panel A: Acquirer Market Equity and Transaction Value by Form of Payment and Acquisition Type

This table shows the mean and median market value of equity of the acquirer and the mean and median transaction value of the acquisition. The summary statistics are based on the sample of 1,121 acquiring firms. Acquirers are included in this sample if they are U.S. firms listed on the NYSE, AMEX or NASDAQ and acquired a publicly traded target. Using monthly data from 1974 till 1998, each month from 1979 till 1998 is classified as a high (low) valuation month if the detrended market P/E of that month belongs to the top (bottom) half of all detrended P/Es above (below) the past five-year average. An acquisition is defined as a cash acquisition if the total transaction value was paid in cash, non-convertible debt and/or non-convertible preferred stock. An acquisition is defined as stock if the total transaction value was paid in common stock and options, warrants or rights.

	Number of Acquisitions	Mean Market Equity ($ mln)	Mean Transaction Value ($ mln)	Median Market Equity ($ mln)	Median Transaction Value ($ mln)	Total Deal Value ($ mln)	% of Total Deal Value	% of Total Number of Acquisitions
ALL Acquisitions	1,121	5,147	949	1,663	170	1,064,220	100.0%	100.0%
High-Valuation Acquisitions	566	6,301	1,185	2,036	193	670,985	63.0%	50.5%
Neutral-Valuation Acquisitions	384	3,690	722	1,263	149	277,359	26.1%	34.3%
Low-Valuation Acquisitions	171	4,596	678	1,353	164	115,876	10.9%	15.3%
Cash Acquisitions	488	5,105	437	1,663	133	213,265	20.0%	43.5%
Stock Acquisitions	435	6,009	1,435	2,188	234	624,396	58.7%	38.8%
Mixed Payment Acquisitions	198	3,354	1,144	1,010	161	226,559	21.3%	17.7%
High-Valuation Cash Acquisitions	231	5,903	405	1,814	134	93,572	13.9%	40.8%
High-Valuation Stock Acquisitions	256	7,537	1,794	2,706	288	459,294	68.5%	45.2%
High-Valuation Mix Acquisitions	79	3,458	1,495	1,050	178	118,119	17.6%	14.0%
Neutral-Valuation Cash Acquisitions	173	3,724	442	1,385	123	76,419	27.6%	45.1%
Neutral-Valuation Stock Acquisitions	126	3,928	1,009	1,431	201	127,127	45.8%	32.8%
Neutral-Valuation Mix Acquisitions	85	3,271	868	677	159	73,813	26.6%	22.1%
Low-Valuation Cash Acquisitions	84	5,755	515	1,577	146	43,274	37.3%	49.1%
Low-Valuation Stock Acquisitions	53	3,580	717	1,100	194	37,975	32.8%	31.0%
Low-Valuation Mix Acquisitions	34	3,317	1,018	1,290	159	34,627	29.9%	19.9%

Table I: Sample Statistics

Panel B: Acquisitions announced in high-valuation, neutral-valuation and low- valuation periods over time

This graph shows the distribution of acquisitions announced in high-valuation, neutral-valuation and low-valuation markets over time. The sample includes 1,121 acquisitions. Acquirers are included in this sample if they are U.S. firms listed on the NYSE, AMEX or NASDAQ and acquired a publicly traded target. Using monthly data from 1974 till 1998, each month from 1979 till 1998 is classified as a high (low) valuation month if the detrended market P/E of that month belongs to the top (bottom) half of all detrended P/Es above (below) the past five-year average. All other months are classified as neutral-valuation periods.

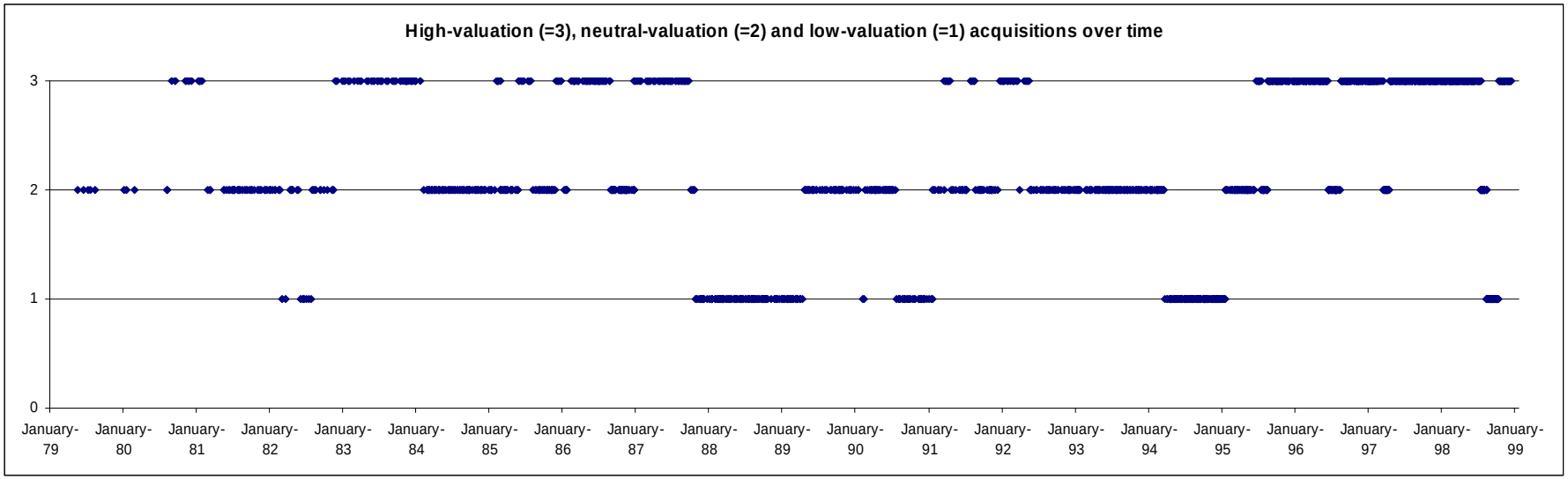

Table II: Short-Run Cumulative Abnormal Return

This table contains short-run cumulative abnormal returns (CARs) for all acquisitions undertaken during high, neutral and low valuation months. Using monthly data from 1974 till 1998, each month from 1979 till 1998 is classified as a high (low) valuation month if the detrended market P/E of that month belongs to the top (bottom) half of all detrended P/Es above (below) the past five-year average. All remaining months are classified as neutral valuation months. CARs for each firm are calculated for one window: (-1, +1), where day 0 is the announcement day of an acquisition. Z-statistics are provided in parenthesis. Bold font indicates significance at least at the 10% level.

Panel A: ALL Acquisitions

	ALL		**Cash**		**Stock**		**Mixed Payment**	
	Number	***CAR***	***Number***	***CAR***	***Number***	***CAR***	***Number***	***CAR***
All	1,121	-0.08%	488	0.22%	435	-1.05%	198	1.31%
		(-2.88)		*(0.58)*		***(-7.79)***		***(3.78)***
Tender Offers	234	0.14%	193	0.36%	5	0.18%	36	-1.06%
		(-0.47)		*(0.70)*		*(0.31)*		***(-2.94)***
Mergers	887	-0.13%	295	0.13%	430	-1.06%	162	1.83%
		(-3.00)		*(0.17)*		***(-7.87)***		***(5.56)***

Panel B: High-Valuation Acquisitions

	ALL		**Cash**		**Stock**		**Mixed Payment**	
	Number	***CAR***	***Number***	***CAR***	***Number***	***CAR***	***Number***	***CAR***
All	566	0.27%	231	0.53%	256	-0.57%	79	2.25%
		(0.35)		*(1.61)*		***(-3.40)***		***(4.29)***
Tender Offers	95	1.47%	81	1.50%	3	0.25%	11	1.58%
		(3.47)		***(3.14)***		*(0.25)*		*(1.55)*
Mergers	471	0.03%	150	0.00%	253	-0.58%	68	2.36%
		(-1.18)		*(-0.31)*		***(-3.45)***		***(4.01)***

Panel C: Neutral-Valuation Acquisitions

	ALL		**Cash**		**Stock**		**Mixed Payment**	
	Number	***CAR***	***Number***	***CAR***	***Number***	***CAR***	***Number***	***CAR***
All	384	-0.43%	173	-0.22%	126	-1.73%	85	1.08%
		(-3.87)		*(-0.88)*		***(-7.32)***		***(1.94)***
Tender Offers	90	-0.72%	75	-0.54%	1	4.50%	14	-2.01%
		(-2.33)		*(-1.13)*		*(1.64)*		***(-3.73)***
Mergers	294	-0.34%	98	0.02%	125	-1.78%	71	1.68%
		(-3.13)		*(-0.18)*		***(-7.50)***		***(3.78)***

Panel D: Low-Valuation Acquisitions

	ALL		**Cash**		**Stock**		**Mixed Payment**	
	Number	***CAR***	***Number***	***CAR***	***Number***	***CAR***	***Number***	***CAR***
All	171	-0.45%	84	0.31%	53	-1.74%	34	-0.32%
		(-2.22)		*(-0.03)*		***(-3.55)***		*(-0.50)*
Tender Offers	49	-0.88%	37	-0.30%	1	-4.35%	11	-2.51%
		(-2.70)		*(-1.44)*		*(-1.38)*		***(-2.66)***
Mergers	122	-0.28%	47	0.79%	52	-1.69%	23	0.72%
		(-0.92)		*(1.24)*		***(-3.39)***		*(1.22)*

Panel E: Differences in mean short-run CARs

High-Valuation minus Low-Valuation	0.73%
	(1.29)
Cash Acquisitions minus Stock Acquisitions	1.27%
	(3.21)
High-Valuation Cash minus Low-Valuation Cash	0.22%
	(0.30)
High-Valuation Stock minus Low-Valuation Stock	1.18%
	(1.07)
Tender Offers minus Mergers	0.27%
	(0.57)
High-Valuation Tenders minus Low-Valuation Tenders	2.35%
	(2.01)
High-Valuation Mergers minus Low-Valuation Mergers	0.31%
	(0.48)

Table III: 2-Year Buy-and-Hold Abnormal Returns

This table provides post-announcement buy-and-hold abnormal returns (BHARs) for all acquisitions undertaken during high, neutral and low valuation months. Using monthly data from 1974 till 1998, each month from 1979 till 1998 is classified as a high (low) valuation month if the detrended market P/E of that month belongs to the top (bottom) half of all detrended P/Es above (below) the past five-year average. All remaining months are classified as neutral valuation months. Skewness adjusted t-statistics are provided in parenthesis. Inference is based on block-bootstrapped critical values. Bold font indicates significance at least at the 10% level.

Panel A: ALL Acquisitions

	ALL		**Cash**		**Stock**		**Mixed Payment**	
	Number	***BHAR***	***Number***	***BHAR***	***Number***	***BHAR***	***Number***	***BHAR***
All	1,121	-3.01%	488	2.80%	435	-10.03%	198	-1.90%
		(-1.19)		*(0.89)*		***(-1.91)***		*(-0.44)*
Tender Offers	234	7.65	193	7.05%	5	-20.92%	36	14.79%
		(1.80)		*(1.48)*		-		*(1.44)*
Mergers	887	-5.82%	295	0.02%	430	-9.91%	162	-5.61%
		(-1.93)		*(0.02)*		***(-1.87)***		***(-1.19)***

Panel B: High-Valuation Acquisitions

	ALL		**Cash**		**Stock**		**Mixed Payment**	
	Number	***BHAR***	***Number***	***BHAR***	***Number***	***BHAR***	***Number***	***BHAR***
All	566	-8.64%	231	-4.76%	256	-14.13%	79	-2.22%
		(-2.24)		***(-0.92)***		***(-2.00)***		*(-0.32)*
Tender Offers	95	1.53%	81	-1.28%	3	-28.02%	11	30.22%
		(0.25)		*(-0.15)*		-		-
Mergers	471	-10.69%	150	-6.64%	253	-13.96%	68	-7.47%
		(-2.38)		*(-0.95)*		***(-1.96)***		*(-1.03)*

Panel C: Neutral-Valuation Acquisitions

	ALL		**Cash**		**Stock**		**Mixed Payment**	
	Number	***BHAR***	***Number***	***BHAR***	***Number***	***BHAR***	***Number***	***BHAR***
All	384	-0.97%	173	11.82%	126	-18.93%	85	-0.41%
		(-0.27)		***(2.38)***		***(-4.15)***		*(-0.05)*
Tender Offers	90	16.79%	75	17.43%	1	-50.41%	14	18.15%
		(2.35)		***(2.15)***		-		*(1.18)*
Mergers	294	-6.41%	98	7.54%	125	-18.68%	71	-4.07%
		(-1.79)		*(1.24)*		***(-4.07)***		(-0.62)

Panel D: Low-Valuation Acquisitions

	ALL		**Cash**		**Stock**		**Mixed Payment**	
	Number	***BHAR***	***Number***	***BHAR***	***Number***	***BHAR***	***Number***	***BHAR***
All	171	11.06%	84	5.01%	53	30.87%	34	-4.89%
		(1.62)		*(0.76)*		*(1.76)*		*(-0.38)*
Tender Offers	49	2.73%	37	4.27%	1	29.89%	11	-4.93
		(0.34)		*(0.48)*		-		-
Mergers	122	14.41%	47	5.60%	52	30.89%	23	-4.86
		(1.60)		*(0.59)*		*(1.73)*		*(-0.29)*

Panel E: Differences in mean two-year buy-and-hold abnormal returns.

High-Valuation minus Low-Valuation	-19.70%
	(-2.31)
Cash Acquisitions minus Stock Acquisitions	-12.84%
	(-2.25)
High-Valuation Cash minus Low-Valuation Cash	-9.77%
	(-1.19)
High-Valuation Stock minus Low-Valuation Stock	-45.00%
	(-2.05)
Tender Offers minus Mergers	13.47%
	(2.49)
High-Valuation Tenders minus Low-Valuation Tenders	-1.20%
	(-0.11)
High-Valuation Mergers minus Low-Valuation Mergers	-25.10%
	(-2.26)

Table IV: Effect of Market-Wide Valuations Controlling for Acquirer Market-to-Book

In this table we examine the impact of the state of the market by controlling for acquirer market-to-book. We split the sample into high, medium and low market-to-book acquirers, and examine the performance of acquirers buying during high and low valuation periods for each market-to-book category.

Using monthly data from 1974 till 1998, each month from 1979 till 1998 is classified as a high (low) valuation month if the detrended market P/E of that month belongs to the top (bottom) half of all detrended P/Es above (below) the past five-year average. All other months are classified as neutral-valuation acquisitions. Acquirers are divided into equal subsamples of high, medium and low market-to-book firms based on their market-to-book ratio one month prior to the acquisition announcement.

Skewness adjusted t-statistics are provided in parenthesis. Inference is based on block-bootstrapped t-statistics. Bold font indicates significance at least at the 10% level

	High-valuation acquisitions		**Low-valuation acquisitions**	
	Number	***BHAR***	***Number***	***BHAR***
High market-to-book	235	-8.51%	51	30.52%
		(-1.08)		*(1.63)*
Medium market-to-book	177	-9.49%	56	-7.44%
		(-2.14)		***(-0.85)***
Low market-to-book	154	-7.87%	64	11.74%
		(-1.60)		***(1.58)***
All	566	-8.64%	171	11.06%
		(-2.24)		*(1.09)*

Table V: Regression Analysis of Short-Run and Long-Run Abnormal Returns

This table contains ordinary least squares regressions of the acquirer's 3-day CARs and the acquirer's 2-year BHARs on the following variables. The cash dummy equals one if the total transaction value was paid in cash, non-convertible debt and/or non-convertible preferred stock and zero otherwise. The mixed payment dummy equals one if the total transaction value was paid with a combination of cash and stock and zero otherwise. Using monthly data from 1974 till 1998, each month from 1979 till 1998 is classified as a high (low) valuation month if the detrended market P/E of that month belongs to the top (bottom) half of all detrended P/Es above (below) the past five-year average. All other months are classified as neutral-valuation acquisitions. The tender dummy is one if the acquisition was a tender offer and zero otherwise. Log relative size is the log of the transaction value at the time of the acquisition announcement over the acquirer's market value of equity 30 days prior to the announcement. The 1990s dummy equals one if the acquisition was announced in the 1990s and zero otherwise. Acquirers are divided into equal subsamples of high, medium and low market-to-book firms based on their market-to-book ratio one month prior to the acquisition announcement. The high (medium) market-to-book dummy equals one if the acquirer belongs to the high (medium) firm-valuation category. State of the market comprises two dummies (a high-valuation and a neutral-valuation market dummy), which indicate the state of the market at the time of the acquisition announcement. The sample firms are from nine industries based on their 1-digit SIC code which we control for in columns 3 and 6. In Panels A and B, the intercept represents a low market-to-book, stock-financed merger announced in a low-valuation market in the 1980s. T-statistics are provided in parenthesis. Bold font indicates significance at least at the 10% level.

	Panel A: Dependent variable = 3-day CAR	**Panel B: Dependent variable = 2-year BHAR**
	Estimate (t-value)	**Estimate (t-value)**
Intercept	-3.63%	-23.53%
	(-1.10)	*(-0.55)*
Cash dummy	5.59%	-26.69%
	(4.07)	*(-1.50)*
Mixed payment dummy	4.46%	-21.44%
	(2.88)	*(-1.07)*
High-valuation market dummy	1.49%	-34.28%
	(1.32)	***(-2.36)***
Neutral-valuation market dummy	-0.19%	-21.83%
	(-0.16)	*(-1.39)*
Tender dummy	*-2.65%*	*12.99%*
	(-2.03)	*(0.77)*
Log relative size	*-0.77%*	*-17.46%*
	(-2.25)	***(-3.92)***
1990s dummy	*0.93%*	*-1.99%*
	(2.08)	*(-0.34)*
High market-to-book dummy	0.45%	6.26%
	(0.86)	*(0.92)*
Medium market-to-book dummy	0.59%	-3.56%
	(1.25)	*(-0.58)*
Other variables:		
Interaction term = Log relative size * payment method	Yes	Yes
Interaction term = Log relative size * tender dummy	Yes	Yes
Interaction term = Log relative size * state of the market	Yes	Yes
Interaction term = State of the market * payment method	Yes	Yes
Interaction term = State of the market * tender dummy	Yes	Yes
Industry dummies	Yes	Yes
F-statistic	***(2.35)***	***(3.59)***
Adjusted R^2	3.06%	6.09%

Table VI: 2-Year Buy-and-Hold Abnormal Returns
(*S&P Classification)*

This table provides post-announcement buy-and-hold abnormal returns (BHARs) for all acquisitions undertaken during high, neutral and low valuation months. Using monthly data from 1974 till 1998, each month from 1979 till 1998 is classified as a high (low) valuation month if the detrended S&P index level of that month belongs to the top (bottom) half of all detrended S&P levels above (below) the past five-year average. All remaining months are classified as neutral valuation months. Skewness adjusted t-statistics are provided in parenthesis. Inference is based on block-bootstrapped critical values. When sample size is very small, the t-statistic is not provided to indicate that inference is meaningless. Bold font indicates significance at least at the 10% level.

Panel A: ALL Acquisitions

	ALL		**Cash**		**Stock**	
	Number	***BHAR***	***Number***	***BHAR***	***Number***	***BHAR***
All	1,121	-3.01%	488	2.80%	435	-10.03%
		(-1.19)		*(0.89)*		***(-1.91)***
Tender Offers	234	7.65	193	7.05%	5	-20.92%
		(1.80)		*(1.48)*		-
Mergers	887	-5.82%	295	0.02%	430	-9.91%
		(-1.93)		*(0.02)*		***(-1.87)***

Panel B: High-Valuation Acquisitions

	ALL		**Cash**		**Stock**	
	Number	***BHAR***	***Number***	***BHAR***	***Number***	***BHAR***
All	613	-9.22%	246	-3.31%	290	-17.18%
		(-2.50)		***(-0.67)***		***(-2.59)***
Tender Offers	96	2.93%	83	0.90%	3	-28.02%
		(0.48)		*(0.15)*		-
Mergers	517	-11.47%	163	-5.46%	287	-17.07%
		(-2.70)		*(-0.82)*		***(-2.56)***

Panel C: Low-Valuation Acquisitions

	ALL		**Cash**		**Stock**	
	Number	***BHAR***	***Number***	***BHAR***	***Number***	***BHAR***
All	176	7.24%	86	7.79%	55	20.56%
		(1.03)		***(1.04)***		*(1.19)*
Tender Offers	48	-0.16%	36	0.45%	1	29.89%
		(0.02)		*(0.09)*		-
Mergers	128	10.02%	50	13.07%	54	20.39%
		(1.11)		***(1.25)***		*(1.16)*

Panel D: Differences in mean three year buy-and-hold abnormal returns

High-Valuation minus Low-Valuation	-16.46%
	(-1.93)
Cash Acquisitions minus Stock Acquisitions	-12.84%
	(-2.25)
High-Valuation Cash minus Low-Valuation Cash	-11.10%
	(-1.19)
High-Valuation Stock minus Low-Valuation Stock	-37.75%
	(-1.78)
Tender Offers minus Mergers	13.47%
	(2.49)
High-Valuation Tenders minus Low-Valuation Tenders	3.09%
	(0.27)
High-Valuation Mergers minus Low-Valuation Mergers	-21.49%
	(-1.98)

Table VII: Calendar-Time Fama and French Three-Factor Model Portfolio Regressions

This table presents the results of the Fama-French Three-Factor Model portfolio regressions. Using monthly data from 1974 till 1998, each month from 1979 till 1998 is classified as a high (low) valuation month if the detrended market P/E of that month belongs to the top (bottom) half of all detrended P/Es above (below) the past five-year average. All other months are classified as neutral-valuation acquisitions. For each month from 1982 till 1998 we form value weighted portfolios of (i) all sample firms that announced an acquisition in the previous two years (column 1); (ii) sample firms that announced acquisitions during any high-valuation period within the previous two years (column 2); and (iii) sample firms that announced acquisitions during any low-valuation period within the previous two years (column 3). The portfolio excess returns are regressed on the Fama French Factors as follows: $R_{p,t} - R_{f,t} = a_p + b_p(R_{m,t} - R_{f,t}) + s_p\ SMB + h_p\ HML + e_{p,t}$

The three factors are zero-investment portfolios representing excess return on the market, $(R_{mt} - R_{ft})$, the difference between a portfolio of "small" stocks and "big" stocks, SMB, and the difference between a portfolio of "high" book-to-market stocks and "low" book-to-market stocks, HML.

Abnormal return is captured by the intercept of each regression. Bold font indicates significance at least at the 10% level.

	Full Sample Event Portfolio	**High-Valuation Event Portfolio**	**Low-Valuation Event Portfolio**	
	Estimate (t-value)	**Estimate (t-value)**	**Estimate (t-value)**	**Estimate (t-value)**
Intercept	0.12	0.03	1.15	1.15
	(1.12)	***(0.15)***	***(4.11)***	***(4.34)***
(R_{mt} –R_{ft})	0.99	1.08	1.00	1.00
	(37.59)	***(19.91)***	***(12.40)***	***(13.07)***
SMB	-0.23	-0.06	-0.46	-0.46
	(-5.55)	*(-0.75)*	***(-4.46)***	***(-4.70)***
HML	-0.21	-0.04	-0.46	-0.46
	(-4.39)	*(-0.44)*	***(-3.78)***	***(-3.98)***
High-Valuation Acquisition Dummy				-1.11
				(-3.20)
(R_{mt} –R_{ft}) * High-Valuation Acquisition Dummy				0.08
				(0.88)
SMB * High-Valuation Acquisition Dummy				0.40
				(2.99)
HML * High-Valuation Acquisition Dummy				0.42
				(2.72)
Adjusted R^2	0.91	0.74	0.64	0.70

Table VIII: Operating Performance
2-Year Abnormal Return On Operating Income (PE Classification)

This table shows acquirers' median abnormal return on operating income (ROOI) two years after the completion date of the acquisition. Abnormal ROOI are shown for acquisitions undertaken during high and low valuation months. Using monthly data from 1974 till 1998, each month from 1979 till 1998 is classified as a high (low) valuation month if the detrended market P/E of that month belongs to the top (bottom) half of all detrended P/Es above (below) the past five-year average. ROOI is the ratio of operating income to total assets. It is calculated as (Compustat Item # 13 + Compustat Item #62)/Compustat Item #6). Abnormal ROOI is determined relative to a control firm based on industry and size. Z-statistics for the medians are provided in parenthesis. The Z-statistics for the difference in medians in Panel D are based on the Wilcoxon-Mann-Whitney test and are shown in parenthesis.
Bold font indicates significance at least at the 10% level.

Panel A: ALL Acquisitions

	ALL		Cash		Stock	
	Number	***ROOI***	***Number***	***ROOI***	***Number***	***ROOI***
All	1,121	2.20%	488	2.40%	435	2.84%
		(9.51)		***(7.40)***		***(6.76)***
Tender Offers	234	1.65%	193	1.89%	5	5.50%
		(4.13)		***(4.06)***		-
Mergers	887	2.48%	295	2.84%	430	2.84%
		(8.57)		***(6.26)***		***(6.71)***

Panel B: High-Valuation Acquisitions

	ALL		Cash		Stock	
	Number	***ROOI***	***Number***	***ROOI***	***Number***	***ROOI***
All	566	1.41%	231	1.77%	256	1.77%
		(4.94)		***(4.32)***		***(3.36)***
Tender Offers	95	1.41%	81	1.63%	3	1.96%
		(2.25)		***(2.13)***		-
Mergers	471	1.40%	150	1.97%	253	1.77%
		(4.40)		***(3.82)***		***(3.38)***

Panel C: Low-Valuation Acquisitions

	ALL		Cash		Stock	
	Number	***ROOI***	***Number***	***ROOI***	***Number***	***ROOI***
All	171	3.16%	84	3.23%	53	3.18%
		(5.63)		***(5.06)***		***(2.63)***
Tender Offers	49	2.35%	37	2.03%	1	4.91%
		(2.77)		***(2.72)***		-
Mergers	122	3.23%	47	3.97%	52	2.87%
		(4.91)		***(4.34)***		***(2.52)***

Panel D: Differences in median two-year ROOI

High-Valuation minus Low-Valuation	-1.75%
	(-2.59)
Cash Acquisitions minus Stock Acquisitions	-0.44%
	(-0.81)
High-Valuation Cash minus Low-Valuation Cash	-1.46%
	(-1.87)
High-Valuation Stock minus Low-Valuation Stock	-1.41%
	(-1.43)
Tender Offers minus Mergers	-0.83%
	(-0.79)
High-Valuation Tenders minus Low-Valuation Tenders	-0.94%
	(-1.02)
High-Valuation Mergers minus Low-Valuation Mergers	-1.83%
	(-2.45)

Table IX: 2-year BHARs of acquirers with the best and worst pre-event performance

In this table we present pre-announcement buy-and-hold returns as well as two-year post-announcement buy-and-hold *abnormal* returns of four categories of acquirers. Acquirers are first divided into two groups – high-valuation acquirers and low-valuation acquirers. The former (latter) are acquirers who bought firms during periods of high (low) stock-market valuations. The classification of the stock-market into high and low valuation is done using the *PE Classification* (see below for description of PE classification). The two groups created above are subdivided into four categories: (i) High-valuation acquirers who had the highest six-month pre-announcement buy-and-hold returns (ii) High-valuation acquirers who had the lowest six-month pre-announcement buy-and-hold returns, (iii) Low-valuation acquirers who had the highest six-month pre-announcement buy-and-hold returns and (iv) Low-valuation acquirers who had the lowest six-month pre-announcement buy-and-hold returns.

PE Classification: Using monthly data from 1974 till 1998, each month from 1979 till 1998 is classified as a high (low) valuation month if the detrended market P/E of that month belongs to the top (bottom) half of all detrended P/Es above (below) the past five-year average.

	High-Valuation Acquirers		**Low-Valuation Acquirers**	
	Top quintile in terms of pre-event returns	Bottom quintile in terms of pre-event returns	Top quintile in terms of pre-event returns	Bottom quintile in terms of pre-event returns
Average 6-month ***pre-event*** buy-and-hold return	69.91%	-13.83%	27.25%	-27.33%
Average 2-year ***post event*** buy-and-hold ***abnormal*** return	-4.01%	-4.49%	12.60%	30.45%

Table X: 2-year BHARs of Early and Late Acquirers during High-Valuation Periods

In this table we present average two-year buy-and-hold returns for all early and late acquisitions made during high-valuation periods. The *PE Classification* is used to identify periods of high stock market valuation. See above for an explanation of the *PE Classification.* Early movers are assumed to be the first 10%, 20% or 30% of acquirers in each high-valuation period. All remaining acquirers are classified as late acquirers. Skewness-adjusted t-statistics are provided in parenthesis. Inference is based on block-bootstrapped critical values. Bold font indicates significance at least at the 10% level.

The first x % of acquirers in each high-valuation period assumed to be early movers	**Early Movers**		**Late Movers**	
	Number	***BHAR***	***Number***	***BHAR***
10%	50	-3.94%	483	-9.78%
		(-0.44)		***(-2.22)***
20%	103	-4.43%	430	10.38%
		(-0.72)		***(-2.14)***
30%	156	-5.07%	377	-10.96%
		(-0.99)		***(-2.03)***

References

Agrawal, A., J. Jaffe, G.N. Mandelker, 1992, The post-merger performance of acquiring firms: A re-examination of an anomaly, *Journal of Finance* 47, 1605-1621.

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

Asquith, P., 1983, Merger bids, market uncertainty, and stockholder returns, *Journal of Financial Economics* 11, 51-83.

Asquith, P., and D. Mullins, 1986, Equity issues and offering dilution, *Journal of Financial Economics* 15, 61-89.

Barber B.M., and J.D. Lyon, 1996, Detecting abnormal operating performance: The empirical power and specification of test statistics, *Journal of Financial Economics* 41, 359-399.

Barber B.M., and J.D. Lyon, 1997, Detecting long-run abnormal stock returns: The empirical power and specification of test statistics, *Journal of Financial Economics* 43, 341-372.

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.

Brav, A, and P. Gompers, 1997, Myth or reality? The long-run underperformance of initial public offerings: Evidence from venture capital and non-venture capital backed companies, *Journal of Finance* 52, 1791-1822.

Brown, S., J. Warner, 1985, Using daily stock returns: The case of event studies, *Journal of Financial Economics*, 14, 3-31

Bruner, R.F., 2002, Does M&A pay? A survey of evidence for the decision-maker, *Journal of Applied Finance*, 7-27

Dennis, D.K., and J.J. McConnell, 1986, Corporate mergers and security returns, *Journal of Financial Economics* 16, 143-187.

Dong, M., D. Hirshleifer, S. Richardson and S.H. Teoh, Does investor misvaluation drive the takeover market?, Working paper, 2002.

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

Franks, J., R. Harris and S. Titman, 1991, The postmerger share-price performance of acquiring firms, *Journal of Financial Economics* 29, 81-96.

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, 1763-1793.

Hansen, R.G., and J. Lott, 1996, Externalities and corporate objectives in a world with diversified shareholders/consumers, *Journal of Financial and Qualitative Analysis* 31, 43-68.

Healy, P., K. Palepu and R. Ruback, 1992, Does corporate performance improve after acquisitions? *Journal of Financial Economics* 31, 135-175

Heron, R. and E. Lie, 2002, Operating performance and the method of payment in takeovers, *Journal of Financial and Quantitative Analysis* 37, 137-155.

Holmstrom, B., and S.N Kaplan, 2001, Corporate governance and merger activity in the United States: Making sense of the 1980s and 1990s, *Journal of Economic Perspectives* 15, 121-144

Horowitz, J. L., The Bootstrap, Working Paper, 2002, University of Iowa.

Hovakimian, A., T. Opler and S. Titman, 2001, The debt-equity choice, Journal *of Financial and Quantitative Analysis* 36, 1-24.

Ikenberry, D, J. Lakonishok, and T. Vermaelen, 1995, Market underreaction to open market share repurchases, *Journal of Financial Economics*, 39, 181-208.

Jarrel, G.A., J.A. Brickley, and J.M. Netter, 1988, The market for corporate control: the empirical evidence since 1980, *The Journal of Economic Perspectives* 2(1), 49-68.

Jarrel G.A., and Poulsen, 1989, The returns to acquiring firms in tender offers: evidence from three decades, *Financial Management* 18, 12-19.

Jegadeesh, N., 2000, Long-term performance of seasoned equity offerings: Benchmark errors and biases in expectations, *Financial Management* 9, 5-30.

Jegadeesh, N. and S. Titman, 1993, Returns to buying winners and selling losers, *Journal of Finance* 48, 65-91.

Jensen M.C. and R.S. Ruback, 1983, The market for corporate control: the scientific evidence, *Journal of Financial Economics* 11, 5-50.

Jovanovic, B., and P. Rousseau, Mergers and technological change: 1885:2001, Working paper, 2001, New York University.
Jung, K., Y.C. Kim and R. Stultz, 1996, Timing, investment opportunities, managerial discretion, and the security issuance decision, *Journal of Financial Economics* 42, 159-185.
Korajczyk, R., D. Lucas and R. McDonald, 1991, The effect of information releases on the pricing and timing of equity issues, *Review of Financial Studies* 4, 685-708.
Loderer, C., and K. Martin, 1990, Corporate acquisitions by listed firms: the experience of a comprehensive sample, *Financial Management* 19(4), 17-33.
Loughran, T, J.R. Ritter, 1995, The new issues puzzle, *Journal of Finance* 50, 23-51.
Loughran, T, J.R. Ritter, 1997, The operating performance of firms conducting seasoned equity offerings, *Journal of Finance* 52, 1823-1850.
Loughran, T, J.R. Ritter, 2000, Uniformly least powerful tests of market efficiency, *Journal of Financial Economics* 55, 361-389.
Loughran. T, J.R. Ritter and K. Rydqvist, 1994, Initial public offerings: International insights, *Pacific-Basin Finance Journal* 2, 165-199.
Loughran, T. and A.M Vijh, 1997, Do long-term shareholders benefit from corporate acquisitions, *Journal of Finance* 52, 1765-1790
Lyon J.D., B.M Barber, and C. Tsai, 1999, Improved methods for tests of long-run abnormal stock returns, *Journal of Finance* 54(1), 165-201.
Marsh, P., 1982, The choice between equity and debt: An empirical study, *Journal of Finance* 37, 121-144.
Martin, K., J. McConnell, 1991, Corporate performance, corporate takeovers, and management turnover, *Journal of Finance* 46, 671-687.
McCabe, G.M., K.C. Yook, 1997, Jensen, Myers-Majluf, Free Cash Flow and the Returns to Bidders, *Quarterly Review of Economics and Finance* 37, 697-707.
Mitchell, M.L., J.H. Mulherin, 1996, The impact of industry shocks on takeover and restructuring activity, *Journal of Financial Economics* 41, 193-229.
Mitchell, M.L., E. Stafford, 2000, Managerial Decisions and Long-Term Stock Price Performance, *Journal of Business* 73, 287-329
Mulherin, J.H, A.L. Boone, Comparing Acquisitions and Divestitures, Working Paper, 2000, Pennsylvania State University.
Myers, S.C., and N.S. Majluf, 1984, Corporate financing and investment decisions when firms have information that investors do not have, *Journal of Financial Economics* 13, 187-221.
Nelson, R., 1959, Merger Movements in American Industry: 1895-1956, Princeton University Press, Princeton, NJ.
Pagano, M., F. Panetta and L. Zingales, 1998, Why do companies go public? An empirical analysis, *Journal of Finance* 53, 27-64.
Rau, P.R., and T. Vermaelen, 1998, Glamour, value and the post-acquisition performance of acquiring firms, *Journal of Financial Economics* 49, 223-253.
Rhodes-Kropf, M. and S. Viswanathan, Market valuations and merger waves, *Journal of Finance*, forthcoming.
Rhodes-Kropf, M., D.T. Robinson, S. Viswanathan, Valuation waves and merger activity: The empirical evidence, Working Paper, March 2003.
Ritter, J., 1991, The long-run performance of initial public offerings, *Journal of Finance* 42, 365-394.
Scharfstein, D.S. and J.C. Stein, 1990, Herd behavior and investment, *American Economic Review* 80-3, 465-479.
Schwert, G., 1996, Markup Pricing in Mergers and Acquisitions, *Journal of Financial Economics* 41(2), 153-162.
Shiller, R., *Irrational Exuberance*, Princeton University Press (2000) and Broadway Books (2001).
Shleifer, A., and R.W. Vishny, 2003, Stock Market Driven Acquisitions, *Journal of Financial Economics* 72, 295-311.
Speiss, K., and J. Affleck-Graves, 1995, Underperformance in long-run stock returns following seasoned equity offerings, *Journal of Financial Economics* 38, 243-267
Taggart, R.A., 1977, A model of corporate financing decisions, *Journal of Finance* 32, 1467-1484.
Travlos, N. G., 1987, Corporate takeover bids, methods of payment, and bidding firms' stock returns, *Journal of Finance* 42(4), 943-963.
Weston, J., K. Chung, and J. Siu, 1998, *Takeovers, Restructuring, and Corporate Governance* 2nd edition (Prentice Hall: N.J.).