

The Desire to Acquire and IPO Long-Run Underperformance

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Abstract

We analyze 3,547 IPOs from 1985 through 2003 to determine the impact of acquisition activity on long-run stock performance. The results show that IPOs that acquire within a year of going public significantly underperform for one- through five-year holding periods following the first year, whereas non-acquiring IPOs do not significantly underperform over these time frames. For example, the mean three-year style-adjusted abnormal return is -15.6% for acquirers and 5.9% for non-acquirers. Our cross-sectional and calendar-time results suggest that the acquisition activity of newly public firms plays an important and previously unrecognized role in the long-run underperformance of IPOs.

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I. Introduction

"...the buyer in M&A transactions must prepare to be disappointed. It is also true that most transactions are associated with results that are hardly consistent with optimistic expectations."

Bruner (2002)

Why do newly public firms perform poorly in the years following their initial public offerings (IPOs)? Since Ritter (1991) and Loughran and Ritter (1995) documented the long-run underperformance of IPOs, researchers have sought to explain this intriguing performance puzzle. In investigating factors that influence the long-run abnormal returns of IPOs, for example, prior studies find that prestigious underwriters and venture capital backing can act to at least partially ameliorate this poor performance (e.g., Brav and Gompers (1997) and Carter, Dark, and Singh (1998)). While these factors provide valuable insights into understanding IPO performance, we propose an additional factor that is an important driver of underperformance.

A potential explanation for the IPO performance puzzle stems from Brau and Fawcett's (2006) finding that newly public firms are active acquirers of other firms (see also a large sample study by Celikyurt, Sevilir, and Shivdasani (2010) and an early proposal of this hypothesis in Brau, Francis, and Kohers (2003)). In particular, through surveys of chief financial officers of 336 firms, Brau and Fawcett (2006) find that the most important stated motivation for going public is to create public shares for acquiring other firms. The revelation that newly public firms have a strong desire to acquire may be a new and important piece of the IPO performance puzzle. In this study, we investigate the connection between the merger and acquisition (M&A)

motivation for going public and IPO long-run performance by examining the extent to which post-IPO merger activity helps explain IPO underperformance.

An M&A explanation for IPO underperformance seems plausible since the long-run performance of acquiring firms tends to be lackluster. For example, Loughran and Vijh (1997) and Rau and Vermaelen (1998), among others, find that many acquirers significantly underperform in the long-run. One classic explanation for the poor performance of acquiring firms is the hubris hypothesis of Roll (1986). Roll argues that acquiring managers become overconfident in their ability to select targets and destroy wealth by overpaying for acquisitions. This wasting of acquiring-firm wealth translates into poor subsequent stock price performance.¹ Rau and Vermaelen (1998) also find poor bidder performance among glamour firms, or those with low book-to-market ratios. Consistent with the hubris hypothesis, Rau and Vermaelen's findings suggest that managers of glamour firms appear to be overconfident about their acquisition abilities, and investors seem to believe in management's inflated perception of their acquisition skills. Malmendier and Tate (2008) find similar evidence of the value-destroying effects of acquisitions made by bidders with a propensity towards overconfidence.² In addition, Kohers and Kohers (2001) show that investors tend to be overly optimistic about the future performance of acquirers in high-tech takeovers, especially if the acquirer is a glamour firm.

This type of enthusiasm may play a prominent role in IPOs, affecting both managers and investors. For example, Baker, Ruback, and Wurgler (2006) note that, based on their review of

¹ Other studies looking at the performance of acquiring firms include Franks, Harris, and Titman (1991), Agrawal, Jaffe and Mandelker (1992), and Loderer and Martin (1992), among others.

² CEO's who tend to be overconfident are classified as those with personal overinvestment in their companies, as measured by the voluntary holding of in-the-money stock options, and those described in the press as confident and/or optimistic.

previous studies, entrepreneurs of start-up firms seem to be particularly prone to overconfidence (see also Landier and Thesmar (2009), Camerer and Lovo (1999), and Cooper, Woo, and Dunkelberg (1988)). Furthermore, Loughran and Ritter (1995) argue that investor perception of IPOs seems to be “the triumph of hope over experience,” noting that investors appear to systematically overestimate the likelihood of finding the next Microsoft. Given the general market enthusiasm toward IPOs and the newly public firm's appetite for acquisitions, we hypothesize that investors have a tendency to be overly optimistic about the acquisition decisions of IPO firms. We expect that managers of newly public firms are susceptible to overconfidence in their acquisition decisions, and enthusiastic IPO investors tend to underestimate the likelihood that IPO firm managers will overinvest via acquisitions. This prediction would also be consistent with more general evidence from Titman, Wei, and Xie (2004), who note that increases in capital investment are associated with negative benchmark-adjusted returns, suggesting that investors do not fully recognize the empire building risks associated with increasing investment (see also Cooper, Gulen, and Schill (2008) and Lyandres, Sun, and Zhang (2008)). Titman et al. (2004) further point out that firms with higher levels of capital investments may be more likely to have managers with a tendency to overinvest.³ Newly public firms with strong motivation to acquire would fit into this category of firms at high risk of overinvestment.

Recent studies, such as Celikyurt et al. (2010), have highlighted the importance of the acquisition motivation for conducting an IPO but have not examined how these acquisition decisions impact the long-run performance of IPOs. This study contributes to the recent

³ The observed negative relationship between capital investment and abnormal returns still holds after excluding new issues, suggesting that the new issues effect does not drive the broader capital investment effect.

literature by examining whether the acquisition behavior of IPO firms helps to explain the long-run negative IPO performance anomaly documented by Ritter (1991) and Loughran and Ritter (1995).

Our results show that IPO firms are active participants in the takeover market, consistent with Brau and Fawcett (2006) and Celikyurt et al. (2010). Our long-run analysis indicates that the acquisition activity of IPOs is a contributing factor in the long-run underperformance of IPO firms. Newly public firms that acquire within the first year of going public experience significantly worse long-run performance after the first year than IPO firms that do not acquire in the first year. In particular, the mean three-year (five-year) abnormal buy-and-hold return is -15.6% (-23.1%) for first-year acquirers, compared to 5.9% (1.1%) for non-acquirers. Our findings are robust to different long-run methodologies including calendar-time factor model regressions using traditional and more recently discovered factors found to explain stock returns. More specifically, based on Fama-French regressions supplemented with an investment factor (e.g., Lyandres et al. (2008)) and an asset growth factor (e.g., Cooper et al. (2008)), acquiring IPOs experience significant negative abnormal monthly returns, whereas non-acquiring IPOs exhibit normal monthly returns. Thus, our findings show that the acquisition effect for IPOs that acquire within the first year has a distinct impact on long-run performance and is not encompassed by other important asset pricing factors. Whereas previous studies have highlighted the desire to acquire as a key motivation for going public, our findings suggest that newly public firms do not make value-enhancing acquisitions vis-à-vis long-run returns and that investors are slow to recognize this tendency to overinvest.

II. Data and Univariate Results

To obtain our initial sample of IPO firms, we use the Securities Data Company (SDC) *New Issues Database* to identify IPOs and the SDC *Mergers and Acquisitions Database* to determine whether these firms become acquirers. In screening the IPO sample, we exclude REITs, limited partnerships, foreign issuers, closed-end funds, penny stocks (less than \$5 offer prices), unit offers, and financial firms (i.e., firms with SIC code between 6000 and 6999).⁴ Using a sample period from 1985 through 2003 (to allow for the calculation of five-year returns), we obtain 3,547 IPO firms with available CRSP and Compustat data. We use Compustat to obtain the IPO firms' annual sales and book value of equity for the fiscal year-end following the IPO date, as reported on the first available annual statement after the IPO. In classifying first-year acquirers, we require that the merger effective date occurs before the first anniversary of the IPO. Of the 3,547 IPOs, 1,181 of them (33.3%) are involved in M&A activity within the first year.⁵

Table 1 provides a breakdown of the sample of 3,547 IPOs by year and industry. The fourth and fifth columns report the number of first-year acquirers and percent of first-year acquirers, respectively. The number and percentage of newly public firms that acquire within the first year after going public begin to increase in the early 1990's and peaked in 1999, when 55.3% of the firms that went public acquired another firm within one year. In Panel B, our industry distribution shows that manufacturing (including electronics and computer hardware)

⁴ Following Bradley, Cooney, Dolvin, and Jordan (2006) in their examination of penny stock IPOs, we do not adjust for inflation in using the \$5 penny stock screen in the results shown. However, we also used an inflation-adjusted penny stock screen and found similar results. Our results are robust to the inclusion of financial firms as well.

⁵ We exclude roll-up and shell IPOs. Our results are stronger with the inclusion of these special entity IPOs. We thank Jay Ritter for making the identity of these firms freely and conveniently available on his website.

and services (including computer software) are the two primary industry representatives in the sample, with 38.8% and 33.8% of the sample in these two industries, respectively. Due to the frequency distributions of IPO Year and Industry, we control for industry and time period effects in our subsequent multivariate analyses.

[INSERT TABLE 1 ABOUT HERE]

To compare our sample to previous long-run studies, we first measure underperformance as the abnormal buy-and-hold return for a firm from the day after the IPO to three, four, and five years after the IPO. Following prior research, such as discussed in Ritter and Welch (2002), we use a characteristic benchmark procedure by subtracting the return over the same horizon for a similar non-issuing firm:

$$(1) \quad AR_{0,3}^i = \prod_{t=1}^{36} (1 + r_t^i) - \prod_{t=1}^{36} (1 + r_t^b)$$

where

$AR_{0,3}^i$ is the abnormal buy-and-hold return for firm i for months 1 to 36 after going public,

r_t^i is the raw return for firm i in month t after going public (excluding the first day), and

r_t^b is the benchmark return in month t .

One-year, two-year, three-year, four-year and five-year abnormal returns are defined similarly with returns calculated for 1 to 12, 1 to 24, 1 to 36, 1 to 48 and 1 to 60 months after the firm goes public, respectively. The return calculations begin on the day after the IPO issue date. A month is defined as 21 trading days, with 252 trading days in a year. Following Loughran and Ritter

(1995), if an IPO delists, the abnormal return is truncated at the date of delisting and used for all longer-horizon returns for that IPO.

For the portfolio benchmarks, we first consider market-adjusted returns using the value-weighted CRSP index as a benchmark. Panel A of Table 2 shows that the mean market-adjusted return is significantly negative for three-, four-, and five-year returns. In particular, the mean three-year (five-year) market-adjusted return in our sample is -17.1% (-25.7%), which is comparable to the poor three- and five-year performance for IPOs relative to a market benchmark found in previous studies (e.g., Loughran and Ritter (1995) and Ritter and Welch (2002)).

[INSERT TABLE 2 ABOUT HERE]

We also consider a benchmark portfolio controlling for style effects (size and book-to-market) following the method of Lyon, Barber, and Tsai (1999). We first create a possible matching sample by choosing all firms that have been listed on CRSP for at least five years, have not issued equity within five years, and which are plus or minus 30% market capitalization of the IPO firm. Next, we choose the firm that has the closest market-to-book equity ratio that meets the size requirement. If a matching firm delists before the end of the estimation period, at the delist date, we splice in the next closest market-to-book matching firm, as of the original matching. Panel A of Table 2 shows that the mean three-year (five-year) style-adjusted return in our sample is -5.5% (-10.7%). This finding is consistent with previous studies such as Ritter and Welch (2002) that find the mean three-year style-adjusted return for a similar sample period to be -5.1% . These results are also in line with Brav and Gompers (1997) and others who find

that IPO underperformance is sensitive to the benchmark used and notably smaller after controlling for style effects.

In Panel B, we compare firms that engage in acquisition activity within their first year of going public with firms that do not. The first-year market-adjusted returns for acquirers are significantly higher than those for non-acquirers, suggesting that newly public firms that have been performing well are more inclined to become acquirers within the first year after going public. While the post-IPO returns tend to be lower for acquirers in the longer performance horizons, the differences are statistically significant at the 10% level only in the five-year post-IPO time frame based on style-adjusted returns.⁶ The good performance of acquirers within the first year, in conjunction with their poor performance over longer time frames in the post-IPO period, suggests that focusing on performance following the first year will provide a better understanding of how acquisition activity affects the performance of newly public firms. In addition, examining the performance following the first year is more relevant from a trading-rule perspective since investors would be able, prior to investing, to distinguish acquirers from non-acquirers.⁷ Thus, to see how acquirers perform subsequent to acquisition activity, we look at buy-and-hold returns that exclude the first year holding period. We calculate, for example, the three-year return for firm i as

$$(2) \quad AR_{1,4}^i = \prod_{t=13}^{48} (1 + r_t^i) - \prod_{t=13}^{48} (1 + r_t^b) .$$

⁶ All difference in means tests control for difference in variances.

⁷ We thank an anonymous reviewer for helpful comments on this point. If the sample of acquirers is truncated to include IPO firms that acquire *only* in the first year and do not acquire in subsequent years, then the negative abnormal two- and three-year returns in Panel B of Table 2 become statistically significant. However, because of the look-ahead bias implicit in such an approach, we do not focus on these results.

[INSERT TABLE 3 ABOUT HERE]

Statistics for abnormal returns excluding the first-year returns are shown in Table 3. As shown in Panel A, the mean market-adjusted (style-adjusted) return for years two through four (months 13 through 48) is -6.2% (-1.3%).⁸ In Panel B, we present the abnormal returns excluding the first-year returns based on whether IPO firms engage in acquisition activity or not within the first year after going public. The results show that, after the first post-IPO year, the abnormal returns for acquirers are significantly lower than the abnormal returns for non-acquirers in the three to five years following the IPO (excluding the first year), regardless of the benchmark used. For example, in years two through four (months 13 through 48) after the IPO, the mean style-adjusted return for acquirers is -15.6% , while the comparable return for non-acquirers is 5.9% . The difference in returns between acquirers and non-acquirers is significant under the 5% level. These findings, and those from Table 2, suggest that, whereas acquirers perform relatively well in the first year after the IPO, these firms show poor performance in the years following the acquisition.⁹

Panels C through E provide similar analysis for firms that acquire within two to four years following the IPO. While the abnormal returns are lower for acquirers than for non-

⁸ We examined the median buy-and-hold returns and found similar results. However, given that long-run buy-and-hold returns are right-skewed, the long-run market-adjusted returns will tend to be negative. Thus, we do not present a statistical analysis of the buy-and-hold median returns. We thank an anonymous referee for pointing this out.

⁹ The first-year returns likely reflect the endogenous acquisition decision since firms that are doing well are more inclined to acquire while firms that are doing poorly are not.

acquirers over most time frames, the results are generally not significantly different for the two groups in the five-year post-IPO period. Thus, it appears that firms that wait longer than a year to acquire do not show the same underperformance as newly public firms that acquire shortly after going public. These findings are consistent with the idea that newly public firms that become acquirers are more susceptible to over-optimism. If investor enthusiasm towards an IPO wears off after the firm becomes more seasoned, then firms that make acquisitions after a year or more may not be affected as much by excess optimism. Thus, these more seasoned firms would not experience the same degree of underperformance. Furthermore, as managers become more experienced running a publicly traded company, they may become more realistic about the benefits and costs of their investment decisions.

Next, we decompose the first-year abnormal returns of acquirers into returns accruing to investors before and after the first acquisition. The results are presented in Table 4. We find that returns for newly public firms are on average significantly positive before the first acquisition date, indicating that these firms were performing well prior to the acquisition. However, after the acquisition date, the abnormal returns for the acquirers are negative. In particular, as shown in Panel A of Table 4, the mean market-adjusted (style-adjusted) return for acquirers before the acquisition date is 10.84% (9.14%) compared to -6.15% (-8.33%) after the acquisition date, stopping at 12 months after the IPO date. As shown in Panel B of Table 4, measuring these returns around the announcement date of the first acquisition, rather than the acquisition date, slightly strengthens this before-versus-after effect.¹⁰ These findings provide further evidence

¹⁰ We use the acquisition date (i.e., effective date) instead of the announcement date in our other tables since not all announced acquisitions are executed, creating a look-ahead bias from a trading perspective. We have, however, checked our results using announcement instead of acquisition dates, and the results are practically the same.

that the underperformance of acquiring firms begins after acquisition activity begins. This finding also suggests a possible causal relation between positive abnormal performance and acquisition activity, as explored in Hovakimian and Hutton (2010).

[INSERT TABLE 4 ABOUT HERE]

These initial univariate comparisons demonstrate that acquirers perform worse than non-acquirers after the first year and that this effect can help explain IPO underperformance. In the next section we investigate the robustness of these findings by controlling for other IPO characteristics that may influence post-IPO performance.

III. Multivariate Results

In this section, we incorporate other factors that may influence post-IPO performance and control for these variables in a multivariate regression analysis. Subsequently, to further test the robustness of these findings, we use different calendar-time factor model regressions to examine the long-run performance of acquiring and non-acquiring IPOs.

A. Controlling for Other Sources of Underperformance

Prior research has documented that underwriter prestige and venture-capital backing can impact IPO long-run performance (e.g., Carter, Dark, and Singh (1998), and Brav and Gompers (1997)). Thus, we include variables indicating whether the IPO firm is venture-capital backed (*VC*) or uses a prestigious underwriter (*UW Rank*), using the rankings of Loughran and Ritter (2004). We also control for the owners' share retention and public float using *Overhang*, which equals shares retained divided by primary shares sold (Bradley and Jordan (2002)). Firm age is

captured by $\ln(1+Age)$, the log of one plus the number of years from firm founding to the IPO year using data from Loughran and Ritter (2004). Finally, following Purnanandam and Swaminathan (2004), we use the IPO firm's sales from Compustat to control for firm size, measured as the log of inflation-adjusted annual sales, as reported on the first available annual statement after the IPO. The descriptive statistics for these control variables are shown in Table 5.

[INSERT TABLE 5 ABOUT HERE]

The descriptive statistics for the control variables show that the average IPO employs a lead underwriter with an *UW Rank* of 7.56 on a 1 to 9 scale. We also find that 46% of our firms have *VC* backing. The median firm in the sample is about eight years old at the time of the IPO. The average *Overhang* for the sample is 3.8 (indicating a public float of nearly 26%). The average *Sales* for the IPO firms are \$246.75 million expressed in terms of 2003 purchasing power.¹¹

Looking at other characteristics of the two samples, we find that acquirers' underwriters are statistically more prestigious than non-acquirers (7.72 vs. 7.47 means, difference in means $p=0.0004$). At the same time, acquirer and non-acquirer IPO firms have similar incidence of *VC*-backing, tend to be around the same age at the time of going public, and have similar overhang.

¹¹ Since a few of these variables have a large difference between their mean and median values, we checked the sensitivity of our results to extreme observations but did not find significant differences in our results. Firms with zero sales are not included in the analysis.

The acquirer IPOs have higher levels of sales, on average, than the non-acquirer IPOs (\$330.10 million vs. \$196.83 million, $p=0.0138$).

Next we employ a multivariate cross-sectional regression analysis to determine if the acquisition activity of IPOs affects the long-run aftermarket returns of IPOs after controlling for the factors discussed above. The variable we use to measure underperformance is the abnormal return for the three-year holding period following the first year after the IPO. The abnormal returns are based on either a CRSP value-weighted market index benchmark or size and book-to-market matched benchmarks described earlier. The base benchmark holding period return regression model can be written as:

$$(3) \quad AR_{i, 1,4} = \alpha + \beta_1 Acquire_i + \beta_2 UWRank_i + \beta_3 VC_i + \beta_4 \ln(1+Age)_i + \beta_5 Overhang_i \\ + \beta_6 \ln Sales_i + \beta_{7-24} YearDummies_i + \beta_{25-32} IndustryDummies_i + \varepsilon_i .$$

Our primary variable of interest is the acquisition indicator, *Acquire*, which equals one for firms that acquire at least one firm in the first year after going public. In addition to the control variables discussed earlier, we include industry and calendar year dummies to control for influential industries and time periods as demonstrated in the Table 1 frequency distributions.

As shown in Panel A of Table 6, whether the firm makes an acquisition in the first year after the IPO is a key factor associated with long-run underperformance, consistent with our earlier univariate findings. Specifically, making an acquisition within the first year (*Acquire*) lowers the abnormal returns by almost 30% over years two through four after going public, based on the market-adjusted return. This relationship between acquisition activity and long-run underperformance is significant at a p-value of 0.0014. Using style-adjusted returns based on size and book-to-market benchmarks shows that the abnormal returns are almost 23% lower for first-year acquirers, with a p-value of 0.0402. These findings suggest that, while acquisition

activity seems to be an important motivation for going public, quick acquisitions end up being destructive to long-term shareholder wealth on average.¹²

[INSERT TABLE 6 ABOUT HERE]

In examining the influence of IPO-related characteristics, we find the prestige of the underwriter (*UWRank*) is positively and significantly related to performance in the style-adjusted model, consistent with Carter, Dark, and Singh (1998) and Chan, Cooney, Kim, and Singh (2008). Also, in this model, the coefficient for *Age* has a significant negative relationship, at the 10% level, with the IPO's long-run abnormal returns. The amount of share retention by owners (*Overhang*) does not significantly affect performance in the post-IPO period examined. In the market-adjusted returns model, venture-capital backing (*VC*) is associated with better long-run performance, consistent with Brav and Gompers (1997) and Chan, Cooney, Kim, and Singh (2008).¹³

A potential concern in the examination of performance of newly public firms is the effect of the stock market bubble in the late 1990s. Thus, as a robustness test, we re-estimate the regressions excluding firms that went public during the bubble years (i.e., 1999 and 2000). The results are shown in Panel B of Table 6. The findings are largely the same as our previous findings for the full sample. The *Acquire* indicator variable shows that newly public firms that

¹² We also employed an alternative dependent variable, which began measuring long-run returns immediately after the first acquisition, as in Table 4. Our regression results are robust to the use of this alternate dependent variable.

¹³ In robustness tests, we also included the IPO firm's debt ratio, market-to-book equity ratio, investment-to-assets (Lyandres et al. (2008)), and growth in assets (Cooper et al. (2008)). These variables were insignificant and did not affect our results. When we use abnormal returns beginning at the IPO date, as in Table 2 and in traditional IPO research, many of the control variables are significant.

acquire shortly after going public underperform non-acquirers by 34%, significant with a p-value of 0.0018, based on market-adjusted returns. Using the size and book-to-market benchmarks, we find that first-year acquirers underperform non-acquirers by almost 28% (p-value = 0.0347). The findings for the control variables are similar to those in Panel A. The results in Panel B provide evidence that our primary findings are not driven by bubble effects. Overall, the cross-sectional regression results show a strong negative influence of first-year acquisitions on IPO performance, after controlling for other relevant factors.

B. Calendar-Time Factor Model Regressions

As an alternative method for examining long-run returns, we use different calendar-time factor model regressions. We start with the Fama-French three-factor model, using the IPO/SEO purged factors provided on Jay Ritter's website through 2003 (Loughran and Ritter (2000)). To extend the period of analysis through the end of 2007, we compute the factors, purged of IPO and SEO firms, from 2004 through 2007. The model is as follows:

$$(4) \quad R_{pt} - r_{ft} = AR_t + \alpha_1(R_{mt} - r_{ft}) + \alpha_2SMB_t + \alpha_3HML_t + \varepsilon_t,$$

where:

R_{pt} = the monthly return on an equally-weighted calendar-time portfolio of IPOs;

r_{ft} = the monthly return on the three-month T-bill;

AR_t = the intercept term, Alpha, which provides the mean monthly abnormal return on the calendar-time portfolio;

R_{mt} = the monthly return on the value-weighted market index; thus, $R_{mt} - r_{ft}$ is the market risk premium (*MRP*);

SMB_t = the difference, each month, between the returns of a value-weighted portfolio of

small and big stocks, purged of IPO and SEO firms;

HML_t = the difference, each month, between the returns of a value-weighted portfolio of high book-to-market stocks and low book-to-market stocks, purged of IPO and SEO firms.

We use the traditional Fama-French three-factor model as our base case (Table 7, Panel A) of acquiring and non-acquiring IPOs to determine the interplay of acquisition activity and IPO long-run returns. We then add other factors that studies have recently shown to be potentially important asset pricing factors. The factor models are run separately for acquiring and non-acquiring IPO firms. The returns for the portfolio of acquiring IPO firms are an equal-weighted average of returns for firms that went public between 12 and 48 months prior to the current month and engaged in acquisition activity within the first 12 months of going public. The returns for the portfolio of non-acquiring IPO firms are an equal-weighted average of returns of firms that went public between 12 and 48 months prior to the current month and did not engage in acquisition activity within the first 12 months of going public.¹⁴ We also report our Fama-French regression results excluding firms that went public during the bubble years of 1999 and 2000, in Panel B. In Panel C, we use a four-factor model that includes the investment factor of Lyandres et al. (2008), who find that adding this factor into the standard three-factor model helps to explain the underperformance of new issues. In Panel D, we incorporate the asset growth factor documented in Cooper et al. (2008), who find that firms' asset growth helps to explain the cross-section of stock returns. Both the investment factor and the asset growth factor are purged of IPO and SEO firms. We include all five factors in Panel E.

¹⁴ We begin our sample in 1986 since the monthly returns over the first year after going public are excluded. This leaves us with 264 monthly return observations.

Table 7, Panel A reports that for the group of acquirers, the intercept term of monthly abnormal returns is -0.56% with a t-statistic of -2.10 , while the non-acquirer abnormal return is -0.05% and insignificant. The three factors all have their expected signs. These findings confirm that IPO firms that make acquisitions within the first year after the IPO experience significant, negative mean monthly abnormal returns after their first year of being public, whereas IPO firms that do not engage in acquisition activity within the first year do not.

[INSERT TABLE 7 ABOUT HERE]

We conduct further robustness tests of the influence of the bubble period using our Fama-French regressions. Specifically, in Panel B, we examine the abnormal returns for the acquirer and non-acquirer subsamples, excluding firms that went public from 1999 through 2000. Our findings show that acquirers still perform worse than non-acquirers, with a significant average monthly abnormal return of -0.44% for acquirers and an insignificant -0.01% for non-acquirers.

In Panel C, following Lyandres et al. (2008), we add an investment factor to the three-factor regressions for acquirers and non-acquirers.¹⁵ Similar to the previous results, the average monthly abnormal return for acquirers is -0.57% , as compared to 0.05% for non-acquirers. These findings indicate that the IPO decision to acquire shortly after going public has a significantly negative impact on long-run shareholder wealth, separate and distinct from the investment factor's influence on abnormal returns. Furthermore, after controlling for the Cooper et al. (2008) asset growth factor in Panel D, we find a similar significant negative abnormal monthly return of -0.56% for acquirers and an insignificant monthly return for non-acquirers. In

¹⁵ We follow Chen, Novy-Marx, and Zhang (2010) in constructing the investment factor.

Panel E, we include all five factors in the same model and find results that are consistent with the previous findings. Thus, the newly public acquirer effect does not appear to be subsumed by other relevant asset pricing factors.¹⁶

Given these results, it is of interest to test an investment strategy using the newly public acquirers and non-acquirers. Following Massa, Rehman, and Vermaelen (2007), we construct a hedged portfolio that goes short in an equally-weighted portfolio of IPO firms that acquired within the first post-IPO year and long in an equally-weighted portfolio of IPO firms that did not acquire within the first year after the IPO. Stocks are added 12 months after the IPO and deleted 48 months after the IPO. The mean (median) monthly return on the hedged portfolio is 1.2% (1.5%), with a p-value <0.0001.

In examining the performance of newly public firms that acquire in the first year, we find that the poor performance of acquirers is more pronounced among acquirers that make acquisitions in the first year only and not in the subsequent years in the five-year post IPO period. In particular, this group of acquirers experiences an average monthly abnormal return of -1.37% (p-value 0.0028) in the calendar-time factor model regressions. The magnitude of this poor performance is robust to the inclusion of different factors in the model. While focusing on this subset of acquirers does not provide a testable trading strategy, the dramatic underperformance of this group of newly public acquirers provides important evidence in understanding the IPO long-run performance anomaly.

¹⁶ The results shown are based on factors that are purged of IPO and SEO firms. We also examine our findings using non-purged factors. These robustness tests show that purging the factors decreases the investment factor loading (INV) and its significance but does not materially affect the intercepts in our factor model regressions.

IV. Conclusion

Our study provides evidence that the takeover activity of IPO firms helps to explain the long-run underperformance for IPOs. IPO firms that become acquirers within the first year after going public experience significantly negative excess returns in the following three years. Univariate results show that for a sample of IPOs issuing between 1985 and 2003, IPOs that acquire in the first year experience a style-adjusted three-year buy-and-hold return of -15.6% , as compared to 5.9% for non-acquirers (difference in means p -value = 0.0193).

Next, we use buy-and-hold multivariate regressions to control for factors such as underwriter reputation and venture capital-backing, which previous literature has shown affects the long-run performance of IPOs. After controlling for these other relevant influences, a dummy variable indicating the IPO made an acquisition in the first year shows that acquirers underperform non-acquirers by over 29% in the subsequent three years.

Continuing the analysis, we conduct a series of calendar-time series regressions using different factor models to determine whether the acquisition effect is accounted for in previously documented asset pricing factors. Using a traditional Fama-French three-factor model, the results show a monthly alpha of -0.56% ($p=0.0342$) for acquiring IPOs, compared to a monthly alpha of 0.05% ($p=0.8347$) for non-acquiring IPOs. Supplementing the three-factor model with the investment factor of Lyandres et al. (2008) provides similar evidence that newly public acquirers significantly underperform while non-acquirer IPOs do not. Thus, the newly public acquisition effect appears to be separate and distinct from the investment factor that influences IPO long-run performance.

Having separated the acquisition effect from the investment factor, we next incorporate the asset growth effect of Cooper et al. (2008) and find that the underperformance of first-year

acquirers is robust in this model as well. Based on these findings, we test a trading strategy that goes short in IPO firms that acquired within the first post-IPO year and long in IPO firms that did not acquire within the first year after the IPO. The mean monthly return on this hedged portfolio is a significant 1.2%. Given the poor long-run performance of newly public acquirers, our findings suggest that investors tend to underestimate the overinvestment potential of acquisitions made by newly public firms. Overall, these results provide new empirical evidence on the importance of the acquisition decision in affecting the long-run stock price performance of IPO firms.

References

- Agrawal, A.; J. F. Jaffe; and G. N. Mandelker. "The Post-Merger Performance of Acquiring Firms: A Re-examination of an Anomaly." *Journal of Finance*, 47 (1992), 1605–1621.
- Baker, M.; R. Ruback; and R. Wurgler. "Behavioral Corporate Finance: A Survey." In *The Handbook of Corporate Finance: Empirical Corporate Finance*, E. Eckbo, eds. New York: Elsevier/North Holland (2006).
- Bradley, D.; J. Cooney; S. Dolvin; and B. Jordan. "Penny Stock IPOs." *Financial Management*, 35 (2006), 5–29.
- Bradley, D., and B. Jordan. "Partial Adjustment to Public Information and IPO Underpricing." *Journal of Financial and Quantitative Analysis*, 37 (2002), 595–616.
- Brau, J., and S. Fawcett. "Initial Public Offerings: An Analysis of Theory and Practice." *Journal of Finance*, 61 (2006), 399–436.
- Brau, J.; B. Francis; and N. Kohers (Sutton). "The Choice of IPO Versus Takeover: Empirical Evidence," *Journal of Business*, 76 (2003), 583–612.
- Brav, A., and P. Gompers. "Myth or Reality? The Long-Run Underperformance of Initial Public Offerings: Evidence from Venture and Nonventure Capital-Backed Companies." *Journal of Finance*, 52 (1997), 1791–1821.
- Bruner, R. "Does M&A Pay? A Survey of Evidence for the Decision-Maker." *Journal of Applied Finance*, 12 (2002), 48–68.
- Camerer, C., and D. Lovallo. "Optimism and Excess Entry: An Experimental Approach." *American Economic Review*, 89 (1999), 306–318.
- Carter, R.; F. Dark; and A. Singh. "Underwriter Reputation, Initial Returns, and the Long-Run Performance of IPO Stocks." *Journal of Finance*, 53 (1998), 285–311.

- Celikyurt, U.; M. Sevilir; and A. Shivdasani. "Going Public to Acquire: The Acquisition Motive for IPOs." *Journal of Financial Economics*, 96 (2010), 345–363.
- Chan, K.; J. Cooney; J. Kim; and A. Singh. "The IPO Derby: Are There Consistent Winners and Losers on this Track?" *Financial Management*, 37 (2008), 45–79.
- Chen, L.; R. Novy-Marx; and L. Zhang. "An Alternative Three-Factor Model." (April 1, 2010). Available at SSRN: <http://ssrn.com/abstract=1418117>.
- Cooper, A.; C. Woo; and W. Dunkelberg. "Entrepreneurs' Perceived Chances for Success." *Journal of Business Venturing*, 3 (1988), 97–108.
- Cooper, M.; H. Gulen; and M. Schill. "Asset Growth and the Cross-section of Stock Returns." *Journal of Finance*, 63 (2008), 1609–1651.
- Franks, J.; R. Harris; and S. Titman. "The Post-Merger Share Price Performance of Acquiring Firms." *Journal of Financial Economics*, 29 (1991), 81–96.
- Hovakimian, A., and I. Hutton. "Merger-motivated IPOs." *Financial Management*, 39 (2010), 1547–1573.
- Kahle, K. M., and R. A. Walkling. "The Impact of Industry Classifications on Financial Research." *Journal of Financial and Quantitative Analysis*, 31 (1996), 309–336.
- Kohers, N., and T. Kohers. "Takeovers of Technology Firms: Expectations Versus Reality." *Financial Management*, 20 (2001), 5–30.
- Landier, A., and D. Thesmar. "Financial Contracting with Optimistic Entrepreneurs." *Review of Financial Studies*, 22 (2009), 117–150.
- Loderer, C., and K. Martin. "Postacquisition Performance of Acquiring Firms." *Financial Management*, 21 (1992), 69–79.
- Loughran, T., and J. Ritter. "The New Issues Puzzle." *Journal of Finance*, 50 (1995), 23–51.

- Loughran, T., and J. Ritter. "Uniformly Least Powerful Tests of Market Efficiency." *Journal of Financial Economics*, 55 (2000), 361–389.
- Loughran, T., and J. Ritter. "Why Has IPO Underpricing Changed Over Time?" *Financial Management*, 33 (2004), 5–37.
- Loughran, T., and A. Vijh. "Do Long-Term Shareholders Benefit from Corporate Acquisitions?" *Journal of Finance*, 52 (1997), 1765–1790.
- Lyandres, E.; L. Sun; and L. Zhang. "The New Issues Puzzle: Testing the Investment-Based Explanation." *Review of Financial Studies*, 21 (2008), 2825–2855.
- Lyon, J.; B. Barber; and C. Tsai. "Improved Methods for Tests of Long-Run Abnormal Stock Returns." *Journal of Finance*, 54 (1999), 165–201.
- Malmendier, U., and G. Tate. "Who Makes Acquisitions? CEO Overconfidence and the Market's Reaction." *Journal of Financial Economics*, 89 (2008), 20–43.
- Massa, M.; Z. Rehman; and T. Vermaelen. "Mimicking Repurchases." *Journal of Financial Economics*, 84 (2007), 624–666.
- Purnanandam, A., and B. Swaminathan. "Are IPO's Really Underpriced?" *Review of Financial Studies*, 17 (2004), 811–848.
- Rau, P. R., and T. Vermaelen. "Glamour, Value and the Post-Acquisition Performance of Acquiring Firms." *Journal of Financial Economics*, 49 (1998), 223–253.
- Ritter, J. R. "The Long-Run Performance of Initial Public Offerings." *Journal of Finance*, 46 (1991), 3–27.
- Ritter, J. R., and I. Welch. "A Review of IPO Activity, Pricing, and Allocations." *Journal of Finance*, 57 (2002), 1795–1828.
- Roll, R. "The Hubris Hypothesis of Corporate Takeovers." *Journal of Business*, 59 (1986), 197–

216.

Titman, S.; K. Wei; and F. Xie. "Capital Investment and Stock Returns." *Journal of Financial and Quantitative Analysis*, 39 (2004), 677–700.

Table 1: Frequency Distribution by IPO Year and Industry

This table shows the frequency distribution of 3,547 IPO firms in our sample by year and industry. Industry classifications are from Kahle and Walkling (1996). The sample excludes REITs, limited partnerships, foreign issuers, closed-end funds, penny stocks, unit offers, and financial firms.

Panel A: Frequency distribution by IPO year

IPO Year	Frequency	Percent of total sample	Number of first-year acquirers	Percent of first-year acquirers
1985	86	1.8%	5	5.8%
1986	203	4.2%	20	9.9%
1987	178	3.7%	15	8.4%
1988	68	1.4%	6	8.8%
1989	60	1.3%	12	20.0%
1990	81	1.7%	32	39.5%
1991	177	3.7%	43	24.3%
1992	261	5.4%	74	28.4%
1993	333	6.9%	106	31.8%
1994	266	5.5%	86	32.3%
1995	275	5.7%	105	38.2%
1996	400	8.3%	146	36.5%
1997	274	5.7%	129	47.1%
1998	180	3.8%	91	50.6%
1999	329	6.9%	182	55.3%
2000	252	5.3%	89	35.3%
2001	47	1.0%	17	36.2%
2002	41	0.9%	11	26.8%
2003	36	0.8%	12	33.3%
Total	3,547	100.0%	1,181	33.3%

Panel B: Frequency distribution by industry

Industry	Two-digit		
	SIC	Frequency	Percent
Agriculture, Forestry, & Fishing	01-09	8	0.2%
Mining and Oil & Gas Production	10-14	80	2.3%
Construction	15-17	41	1.2%
Manufacturing, including electronics and computer hardware	20-39	1,378	38.8%
Transportation, Communication, Electric, Gas, & Sanitary Services	40-49	317	8.9%
Wholesale Trade	50-51	201	5.7%
Retail Trade	52-59	322	9.1%
Finance, Insurance, and Real Estate	60-67	0	0.0%
Services, including computer software	70-89	1,200	33.8%
Public Administration	91-97	0	0.0%

Table 2: Abnormal Returns for the Full Sample

Panel A shows the means of buy-and-hold abnormal returns for 1- through 5-year holding periods. The benchmark returns are either the CRSP value-weighted index (“market adj.”) or style-matched firms based on size and book-to-market ratio (“size-BM adj.”). If an IPO delists, the abnormal return is truncated at the date of delisting and used for all longer-horizon returns for that IPO. If a matching firm delists, the next closest market-to-book matching firm is used at the delist date. The cluster-adjusted p-value statistics account for year effects. In Panel B, abnormal returns are calculated based on whether the firm acquired within the first year of going public.

Panel A: Abnormal returns (N = 3,547)

Variable	Mean	Unadjusted p-value	Cluster- adjusted p-value
AR _{0,1} (market adj.)	-5.51%	0.0001	0.1760
AR _{0,1} (size-BM adj.)	-3.80%	0.0494	0.3967
AR _{0,2} (market adj.)	-9.16%	0.0030	0.2937
AR _{0,2} (size-BM adj.)	-2.56%	0.4892	0.7771
AR _{0,3} (market adj.)	-17.09%	<.0001	0.0170
AR _{0,3} (size-BM adj.)	-5.50%	0.2882	0.4912
AR _{0,4} (market adj.)	-21.84%	<.0001	0.0010
AR _{0,4} (size-BM adj.)	-7.08%	0.2344	0.5209
AR _{0,5} (market adj.)	-25.69%	0.0002	0.0002
AR _{0,5} (size-BM adj.)	-10.69%	0.2065	0.4943

Panel B: Abnormal returns for 1-year acquirers and non-acquirers

Variable	<i>Acquirers</i> (N= 1,181)			<i>Non-acquirers</i> (N= 2,366)			<i>Difference</i> <i>tests</i>
	Mean	p-value	adj. p-value	Mean	p-value	adj. p-value	
AR _{0,1} (market adj.)	4.63%	0.1450	0.4011	-10.58%	<.0001	0.0084	<.0001
AR _{0,1} (size-BM adj.)	2.53%	0.5349	0.7420	-6.95%	0.0007	0.0861	0.0379
AR _{0,2} (market adj.)	-1.47%	0.8230	0.8998	-13.01%	<.0001	0.1198	0.1154
AR _{0,2} (size-BM adj.)	0.13%	0.9857	0.9940	-3.90%	0.3493	0.5335	0.6327
AR _{0,3} (market adj.)	-16.53%	0.0096	0.0568	-17.37%	<.0001	0.0187	0.9133
AR _{0,3} (size-BM adj.)	-15.18%	0.1474	0.3273	-0.66%	0.9078	0.9197	0.2242
AR _{0,4} (market adj.)	-29.17%	<.0001	0.0006	-18.19%	0.0021	0.0152	0.1765
AR _{0,4} (size-BM adj.)	-20.50%	0.0431	0.2537	-0.37%	0.9595	0.9703	0.1108
AR _{0,5} (market adj.)	-34.25%	<.0001	<.0001	-21.42%	0.0299	0.0198	0.2847
AR _{0,5} (size-BM adj.)	-30.26%	0.0111	0.1196	-0.92%	0.9344	0.9560	0.0727

Table 3: Mean Abnormal Returns for Acquirers and Non-Acquirers

Panel A reports aggregate mean buy-and-hold abnormal returns excluding the first year of being public. Panels B–E compare abnormal returns for firms that acquire within a specific time frame after their IPO date versus firms that do not acquire within this time frame. So, for example, in Panel C the variable $AR_{2,5}$ represents the three-year buy-and-hold abnormal returns starting the second year after IPO through the fifth year after IPO for *acquirers* who acquire within two years of going public compared to *non-acquirers* who do not acquire within two years of going public. The benchmark return adjustments are based on either the CRSP value-weighted index (“market-adj.”) or style-matched firms according to size and book-to-market ratio (“size-BM adj.”). The cluster-adjusted p-values account for year effects. The p-values for t-tests of significant differences in means are also shown in Panels B–E.

Panel A: Abnormal returns excluding 1st year, (N = 3,547)

Variable	Mean	Unadjusted	Cluster-adjusted
		p-value	p-value
$AR_{1,2}$ (market adj.)	-5.31%	0.0010	0.1966
$AR_{1,2}$ (size-BM adj.)	-4.18%	0.0404	0.3212
$AR_{1,3}$ (market adj.)	-5.35%	0.0647	0.2939
$AR_{1,3}$ (size-BM adj.)	-0.89%	0.8062	0.8982
$AR_{1,4}$ (market adj.)	-6.21%	0.1077	0.4302
$AR_{1,4}$ (size-BM adj.)	-1.26%	0.7910	0.8854
$AR_{1,5}$ (market adj.)	-15.38%	<.0001	0.0113
$AR_{1,5}$ (size-BM adj.)	-6.95%	0.1797	0.4549

Panel B: Abnormal returns for acquirers within 1 year and non-acquirers

Variable	<i>Acquirers</i>			<i>Non-acquirers</i>			<i>Difference</i>
	<i>(N= 1,181)</i>		<i>adj.</i>	<i>(N= 2,366)</i>		<i>adj.</i>	<i>tests</i>
	Mean	p-value	p-value	Mean	p-value	p-value	p-value
$AR_{1,2}$ (market-adj.)	-11.13%	<.0001	0.0228	-2.41%	0.2441	0.6040	0.0074
$AR_{1,2}$ (size-BM-adj.)	-13.97%	0.0001	0.0883	0.71%	0.7738	0.8535	0.0007
$AR_{1,3}$ (market-adj.)	-16.32%	0.0008	0.0090	0.12%	0.9727	0.9838	0.0067
$AR_{1,3}$ (size-BM-adj.)	-17.73%	0.0068	0.2210	7.52%	0.0826	0.1593	0.0013
$AR_{1,4}$ (market-adj.)	-20.14%	<.0001	0.0145	0.74%	0.8879	0.9341	0.0039
$AR_{1,4}$ (size-BM-adj.)	-15.56%	0.0197	0.2167	5.88%	0.3493	0.4659	0.0193
$AR_{1,5}$ (market-adj.)	-26.49%	<.0001	0.0032	-9.83%	0.0506	0.0852	0.0364
$AR_{1,5}$ (size-BM-adj.)	-23.06%	0.0090	0.0533	1.10%	0.8635	0.9075	0.0278

Table 3 (Continued)**Panel C: Abnormal returns for acquirers within 2 years and non-acquirers**

Variable	<i>Acquirers</i> (<i>N</i> = 1,680)			<i>Non-acquirers</i> (<i>N</i> = 1,867)			<i>Difference tests</i> p-value
	Mean	p-value	adj. p-value	Mean	p-value	adj. p-value	
AR _{2,3} (market-adj.)	-2.68%	0.1684	0.3597	4.18%	0.0796	0.3881	0.0258
AR _{2,3} (size-BM adj.)	-2.95%	0.3501	0.6373	1.86%	0.6081	0.5482	0.3173
AR _{2,4} (market-adj.)	-0.12%	0.9734	0.9848	4.87%	0.1061	0.4709	0.2769
AR _{2,4} (size-BM-adj.)	1.43%	0.7541	0.8356	-1.38%	0.7997	0.8231	0.6924
AR _{2,5} (market-adj.)	-2.76%	0.5639	0.7234	-0.51%	0.8857	0.9444	0.7066
AR _{2,5} (size-BM-adj.)	-0.85%	0.9043	0.9100	-1.33%	0.8184	0.8635	0.9584

Panel D: Abnormal returns for acquirers within 3 years and non-acquirers

Variable	<i>Acquirers</i> (<i>N</i> = 1,946)			<i>Non-acquirers</i> (<i>N</i> = 1,601)			<i>Difference tests</i> p-value
	Mean	p-value	adj. p-value	Mean	p-value	adj. p-value	
AR _{3,4} (market-adj.)	4.59%	0.0232	0.3989	9.35%	<.0001	0.1159	0.1227
AR _{3,4} (size-BM adj.)	0.14%	0.9524	0.9693	6.31%	0.0388	0.0940	0.1136
AR _{3,5} (market-adj.)	3.89%	0.2623	0.5863	8.92%	0.0054	0.2131	0.2866
AR _{3,5} (size-BM-adj.)	0.16%	0.9710	0.9454	10.28%	0.0067	0.0080	0.0772

Panel E: Abnormal returns for acquirers within 4 years and non-acquirers

Variable	<i>Acquirers</i> (<i>N</i> = 2,103)			<i>Non-acquirers</i> (<i>N</i> = 1,444)			<i>Difference tests</i> p-value
	Mean	p-value	adj. p-value	Mean	p-value	adj. p-value	
AR _{4,5} (market-adj.)	4.11%	0.0301	0.3095	2.65%	0.1947	0.3479	0.5993
AR _{4,5} (size-BM-adj.)	2.82%	0.2256	0.0971	2.85%	0.2513	0.1697	0.9917

Table 4: Decomposition of First-Year Returns

This table shows the means of buy-and-hold abnormal returns for firms that acquire within the first year after going public. The variable $AR_{0,t}$ represents the holding period abnormal returns from the IPO date to the acquisition date of the first acquisition in Panel A and from the IPO date to the announcement date of the first acquisition in Panel B. The variable $AR_{t,1}$ represents the holding period abnormal returns after the acquisition date in Panel A and after the announcement date in Panel B, to the end of the first year after going public. The benchmark returns are either the CRSP value-weighted index (“market adj.”) or style-matched firms based on size and book-to-market ratio (“size-BM adj.”). Cluster-adjusted p-value statistics account for year effects.

Panel A: By acquisition date

Variable	Mean	Unadjusted p-value	Cluster-adjusted p-value
$AR_{0,t}$ (market adj.)	10.84%	<.0001	0.1239
$AR_{0,t}$ (size-BM adj.)	9.14%	0.0052	0.0583
$AR_{t,1}$ (market adj.)	-6.15%	0.0099	0.1743
$AR_{t,1}$ (size-BM adj.)	-8.33%	0.0177	0.4557

Panel B: By announcement date

Variable	Mean	Unadjusted p-value	Cluster-adjusted p-value
$AR_{0,t}$ (market adj.)	12.60%	<.0001	0.0939
$AR_{0,t}$ (size-BM adj.)	10.75%	0.0006	0.0251
$AR_{t,1}$ (market adj.)	-7.13%	0.0058	0.2069
$AR_{t,1}$ (size-BM adj.)	-9.50%	0.0088	0.4438

Table 5: Descriptive Statistics of Control Variables

This table presents the statistics for acquirer IPOs and non-acquirer IPOs. Difference tests are calculated using a t-test for the difference in means. The sample is composed of 3,547 IPOs from 1985–2003. *UWRank* refers to the underwriter rank, based on the rankings of Loughran and Ritter (2004). *VC* equals one if the IPO is venture capital-backed. The age of the firm at the time of the IPO (*Age*) is also obtained from Loughran and Ritter (2004). *Overhang*, a proxy for share retention, is defined as shares retained divided by primary shares sold, following Bradley and Jordan (2002). *Sales* are annual firm sales for the fiscal year-end following the IPO date, as reported on the first available annual statement after the IPO.

Control variables

Variable	<i>Full sample</i>		<i>Acquirers</i>		<i>Non-Acquirers</i>		<i>Difference tests</i>
	Mean	Median	Mean	Median	Mean	Median	p-value
UW Rank	7.56	8.10	7.72	8.10	7.47	8.10	0.0004
VC	0.46	0.00	0.46	0.00	0.46	0.00	0.7658
Age (years)	15.16	8.00	14.96	8.00	15.23	8.00	0.6959
Overhang	3.78	2.88	3.66	2.71	3.84	2.94	0.1319
Sales (\$ millions)	246.75	56.03	330.10	63.07	196.83	52.32	0.0138

Table 6: Multivariate Regressions Explaining Post-IPO Performance

This table shows the coefficients and heteroscedasticity consistent p-values for the independent variables used to explain the buy-and-hold abnormal returns for IPOs in the three-year period following the first year after going public (i.e., the dependent variable is $AR_{1,4}$). Panel A shows results for the full sample ($n=3,165$), based on market-adjusted returns and style-adjusted returns (i.e., using size and book-to-market benchmarks). Panel B shows results excluding firms that went public during the bubble years from 1999–2000. *Acquire* is a dummy variable equal to one if the IPO firm made an acquisition within one year after going public and is zero otherwise. *UWRank* refers to the underwriter rank, based on the rankings of Loughran and Ritter (2004). *VC* equals one if the IPO is venture capital-backed. $\ln(1+Age)$ is the natural logarithm of the age of the firm at the time of the IPO plus 1 and is also obtained from Loughran and Ritter (2004). *Overhang*, a proxy for share retention, is defined as shares retained divided by primary shares sold, following Bradley and Jordan (2002). *LnSales* is the natural logarithm of inflation-adjusted annual firm sales from the Compustat database, as reported on the first available annual statement after the IPO. *Year* and *Industry dummies* are defined according to the year the IPO went public and the IPO firm's industry according to the definitions in Table 1, Panel B. The year 2003 dummy and the industry dummy with SIC code 70–89 are omitted in the regressions.

Panel A: Full Sample ($n=3,165$)	<i>Dependent variable = 1-4 year abnormal return</i>			
	<i>Market-adjusted</i>		<i>Style-adjusted</i>	
Variable	Coefficient	p-value	Coefficient	p-value
Acquire	-29.40	0.0014	-22.61	0.0402
UWRank	4.05	0.0196	9.77	0.0008
VC	30.78	<.0001	10.22	0.3280
$\ln(1+Age)$	-5.39	0.1280	-7.77	0.0969
Overhang	1.60	0.1327	1.22	0.3216
$\ln(Sales)$	2.33	0.2252	1.25	0.6647
Year dummies	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes
Intercept	-40.73	0.1518	-55.84	0.1149
Adjusted R^2 (%)	2.11	<0.0001	1.57	<0.0001

Panel B: Without Bubble Year IPOs ($n=2,653$)	<i>Dependent variable = 1-4 year abnormal return</i>			
	<i>Market-adjusted</i>		<i>Style-adjusted</i>	
Variable	Coefficient	p-value	Coefficient	p-value
Acquire	-34.01	0.0018	-27.59	0.0347
UWRank	5.29	0.0054	9.74	0.0016
VC	35.28	0.0001	14.26	0.2337
$\ln(1+Age)$	-7.06	0.0711	-8.85	0.0812
Overhang	2.98	0.0378	1.55	0.3268
$\ln(Sales)$	0.90	0.6888	1.73	0.6035
Year dummies	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes
Intercept	-42.22	0.1506	-52.78	0.1521
Adjusted R^2 (%)	2.36	<0.0001	1.33	0.0002

Table 7: Calendar-Time Factor Model Regressions, January 1986–December 2007

This table shows estimates from Fama-French three-factor model regressions, along with t-statistics and p-values. The base model is $R_{pt} - r_{ft} = AR_t + \alpha_1(R_{mt} - r_{ft}) + \alpha_2SMB_t + \alpha_3HML_t$ where: R_t = the monthly return on an equally weighted calendar-time portfolio; r_{ft} = the monthly return on the three-month T-bill; AR_t = the intercept term, the mean monthly abnormal return on the calendar-time portfolio; R_{mt} = the monthly return on the value-weighted market index; SMB_t = the difference, each month, between the returns of a value-weighted portfolio of small and big stocks purged of IPO and SEO firms; and HML_t = the difference, each month, between the returns of a value-weighted portfolio of high book-to-market stocks and low book-to-market stocks purged of IPO and SEO firms. All panels include 264 monthly observations, from 1986 through 2007. Panel B excludes firms that went public during the bubble years of 1999 and 2000. In Panel C, we add an IPO/SEO purged investment factor, INV, constructed following Chen, Novy-Marx, and Zhang (2010). The returns for the portfolio of acquiring IPO firms are an equal-weighted average of returns for firms that went public between 12 and 48 months prior to the current month and engaged in acquisition activity within the first 12 months of going public. The returns for the portfolio of non-acquiring IPO firms are an equal-weighted average of returns of firms that went public between 12 and 48 months prior to the current month and did *not* engage in acquisition activity within the first 12 months of going public. Panel D includes an IPO/SEO purged asset growth factor (see Cooper, Gulen, and Schill (2008)), and Panel E includes all five factors.

Panel A: Full Sample (n = 264)

Variable	Acquirers			Non-acquirers		
	Estimate	t-value	p-value	Estimate	t-value	p-value
Intercept	-0.56%	-2.1	0.0342	0.05%	0.2	0.8347
MRP	1.35%	20.0	<.0001	1.30%	19.8	<.0001
SMB	1.11%	12.1	<.0001	1.30%	14.5	<.0001
HML	-0.30%	-2.7	0.0079	-0.43%	-4.0	<.0001

Panel B: Excluding Bubble Year IPOs

Variable	Acquirers			Non-acquirers		
	Estimate	t-value	p-value	Estimate	t-value	p-value
Intercept	-0.44%	-2.1	0.0347	-0.01%	0.0	0.9812
MRP	1.19%	22.6	<.0001	1.28%	20.2	<.0001
SMB	1.07%	15.0	<.0001	1.26%	14.6	<.0001
HML	-0.15%	-1.8	0.0818	-0.34%	-3.3	0.0012

Table 7: Calendar-Time Factor Model Regressions (Continued)**Panel C: Including INV factor (full sample)**

Variable	Acquirers			Non-acquirers		
	Estimate	t-value	p-value	Estimate	t-value	p-value
Intercept	-0.57%	-2.1	0.0330	0.05%	0.2	0.8455
MRP	1.34%	19.8	<.0001	1.29%	19.5	<.0001
SMB	1.09%	11.7	<.0001	1.28%	14.1	<.0001
HML	-0.26%	-2.2	0.0270	-0.39%	-3.4	0.0007
INV	-0.20%	-1.2	0.2330	-0.22%	-1.3	0.1817

Panel D: Including ASSET factor (full sample)

Variable	Acquirers			Non-acquirers		
	Estimate	t-value	p-value	Estimate	t-value	p-value
Intercept	-0.56%	-2.1	0.0338	0.06%	0.2	0.8284
MRP	1.36%	20.3	<.0001	1.31%	19.9	<.0001
SMB	1.10%	12.2	<.0001	1.30%	14.6	<.0001
HML	-0.42%	-3.4	0.0008	-0.52%	-4.3	<.0001
ASSET	0.42%	2.2	0.0295	0.29%	1.6	0.1162

Panel E: Including INV and ASSET factors (full sample)

Variable	Acquirers			Non-acquirers		
	Estimate	t-value	p-value	Estimate	t-value	p-value
Intercept	-0.57%	-2.2	0.0310	0.05%	0.2	0.8425
MRP	1.35%	20.2	<.0001	1.30%	19.8	<.0001
SMB	1.07%	11.7	<.0001	1.27%	14.1	<.0001
HML	-0.38%	-3.1	0.0019	-0.49%	-4.0	<.0001
INV	-0.38%	-2.1	0.0335	-0.36%	-2.1	0.0414
ASSET	0.57%	2.8	0.0051	0.44%	2.2	0.0278