Analyst Coverage and the Glamour Discount

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Abstract

We find that the value premium documented in the literature is actually a glamour discount. The difference in average returns between high book-to-market (value) and low book-to-market (glamour) stocks is driven by unusually low returns to glamour stocks. There is no significant difference in returns between high book-to-market and medium book-to-market stocks. Furthermore, the return discount exists only for glamour stocks with low analyst coverage. These findings suggest that low coverage stocks whose prices are bid well above book value become overpriced because investors have little information to rationalize their pricing. This inference is further supported by tests based on accounting measures of firm performance and earnings announcement returns. The return on assets (ROA) of glamour stocks with low analyst coverage in the two-year period after portfolio formation is significantly lower than the ROA of glamour stocks with high analyst coverage, and earnings announcement returns of the former group are much more negative than the insignificant returns of the latter group. These results suggest the prices of glamour stocks with low coverage are high because investors are overly optimistic about future performance, and investors are subsequently surprised by performance when earnings are announced. In sharp contrast, no difference in ROA or announcement returns exist between value stocks that have low versus high analyst coverage. These findings present a serious challenge to risk based explanations of the difference in returns between high and low book-to-market stocks.

1. Introduction

Value investing, first advocated in 1930s by Benjamin Graham and David Dodd, remains a very popular investment strategy. Their assertion was that profit opportunities exist among stocks that are out of favor with market participants because such stocks are priced lower than their long run intrinsic value. Value investors who believe that the book value of a firm's equity is a useful gauge of intrinsic value would believe that high book-to-market (value) stocks are likely to be undervalued and low book-to-market (glamour) stocks are likely to be overvalued. By this reasoning, value stocks are expected to experience a return premium over glamour stocks as the misvaluation is corrected in the long run. Further prominence is given to the logic of value investing by the research of Fama and French (1992, 1993), which confirms that high book-to-market (henceforth BTM) stocks earn significantly higher average returns than low BTM stocks.

Intensive debate continues over whether the return premium to value stocks represents mispricing, or whether pricing is rational and the premium represents compensation for systematic risk. Fama and French (1992, 1996, 1998) argue that value stocks are riskier than glamour stocks because value stocks have greater distress risk. They demonstrate empirically that this risk is systematic (and priced) by showing that a factor constructed to mimic the return premium to high minus low BTM stocks explains time series variation in returns for a large set of portfolios. Zhang (2005) presents a theoretical model of the value premium that supports Fama and French's argument. In Zhang's model, value stocks are less flexible in scaling down capital in market downturns, and hence are riskier than growth firms. On the other side of the debate are Lakonishok, Shleifer and Vishny (1994) (henceforth LSV) who, in line with Graham and Dodd, argue that value stocks are underpriced because investors have extrapolated excessively the past declines in earning growth of out of favor stocks. In a similar vein, Daniel and Titman (1997) argue that a stock's "valueness" does not represent exposure to risk as Fama and French argue, but is a firm characteristic that is associated with high returns for whatever reason.

In this paper, we examine which of these two explanations of the value premium are more consistent with data. Our tests are based on the simple idea that if the value premium is mispricing, then the size of the premium should depend on whether information available to investors is scarce or plentiful. We use the number of analysts covering firms as a proxy for the availability of information. If the value premium represents mispricing, the premium for stocks with little or no analyst coverage should be larger than that of stocks with greater analyst coverage (assuming, of course, that the information that analysts provide is useful). On the other hand, if the value premium represents compensation for risk, then it should not vary with analyst coverage, especially if it is measured after adjusting for risk factors that others have identified as important to equity pricing. If BTM measures risk as envisioned by Fama and French (1992, 1996 and 1998), then stocks with the same BTM should have the same expected return irrespective of analyst coverage. In this case, the value premium derived from stocks with little or no analyst coverage should be similar to the value premium derived from stocks with greater coverage.

We find that that value premium is in fact a glamour discount. Low-BTM stocks earn unusually low returns, and there is no significant difference in returns between medium and high-BTM stocks. Furthermore, the glamour discount exists only among stocks with low analyst coverage (defined as stocks covered by fewer than three analysts). The returns to low-BTM stocks with "high" analyst coverage (three or more) are not different from the returns to other stocks. However, low BTM stocks with low analyst coverage earn much lower returns than other stocks, including low-BTM stocks with moderate analyst coverage. This is true in raw returns, and even stronger in returns adjusted for the Fama-French factors and momentum. These results suggest that the return difference between high- and low-BTM stocks exists because the high market values associated with low-BTM represent overpricing that occurs when information is relatively scarce. These results pose a challenge to risk-based explanations because it hard to imagine an asset pricing model that predicts (i) the same expected return for stocks with different BTM provided they have high analyst coverage, and (ii) expected returns (and hence risk) that are *lower* for stocks with low analyst coverage, but only low-BTM stocks with low coverage.

Nagel (2005) finds that short-sale constraints help explain cross-sectional stock return anomalies, including the value premium. He conjectures that the overpricing of glamour stocks cannot be arbitraged away due to short-sale constraints. Using low institutional holdings as a proxy for short-sale constraints, he shows convincingly that the underperformance of glamour stocks is most pronounced among stocks with low institutional holdings. In other words, short-sale constraints enable the overpricing to persist. We show that the source of the mispricing is low analyst coverage, but that short-sale constraints play a role in its magnitude. The glamour discount is largest at 0.71 percent per month for low coverage glamour stocks with no institutional holdings. As the short-sale constraints become less binding, the glamour discount decreases in magnitude at a rate of 1.10 basis points per month for every 1% increase in institutional holdings. This suggests that analysts and institutional investors play crucial but distinct roles. Analysts provide useful information that restrains investors from bidding prices too high, and institutional investors facilitate arbitrage activity by lending out stocks for short selling when overpricing occurs.

We also examine accounting return on assets (ROA) and the stock market reaction to earnings announcements to corroborate the mispricing interpretation of the glamour discount. In the two-year period following the grouping of stocks into growth and value portfolios, the ROA of glamour stocks with low analyst coverage is significantly lower than that of glamour stocks with moderate analyst coverage. Similarly, earnings announcement returns of low coverage glamour stocks are much more negative than the insignificant return of glamour stocks with moderate coverage. These results suggest that investors are overly optimistic about low coverage glamour stocks, and genuinely surprised when earnings are announced. In sharp contrast, no difference in return on asset or announcement returns can be found between value stocks that have low and high coverage. The fact that (no) significant difference in ROA and announcement returns coincides with (no) difference in stock returns between (value) glamour stocks that have high and low analyst coverage lends further support to the mispricing explanation of the glamour discount.

Our paper contributes to the literature on three fronts. First, we show that mispricing rather than compensation for risk is a more plausible explanation of the value premium. This suggests that further characterization of the profitability of value investing will be more fruitful if focused on transaction costs, liquidity and short-sale constraint rather than differences in risk between value and glamour stocks. Of course, this also implies that HML should not be used as a factor representing priced systematic risk. Second, we document that excessive optimism about glamour stocks rather than pessimism about value stocks [e.g., Graham and Dodd (1934), Lakonishok, Shleifer and Vishny (1994)] is responsible for the return differences between high and low-BTM stocks. Third, our results lend support to the view that analysts provide value-relevant information to investors.[1] Despite the possible biases in their forecasts, our results clearly indicate that analysts do provide important and useful information to investors—information that results in less mispricing for a large class of securities.

The rest of the paper is organized as follows. The next section describes our sample and methods. Section 3 describes the results. Section 4 concludes.

2. Data and Methods

The data consist of monthly prices, returns and other characteristics of all NYSE, AMEX and NASDAQ companies covered by CRSP from 1983 through 2003. Price and returns data are obtained from CRSP, financial information is obtained from Compustat. As in Fama and French (1992), we match the accounting data for all fiscal year ends in calendar *t-1* with returns for July of year *t* to June of year *t+1*, to ensure that accounting variables are publicly available before measuring the returns they are used to explain. The data on analyst coverage are obtained from the Summary History data set complied by Institutional Brokerage Estimation System (I/B/E/S.) In each month, each firm is classified as a low coverage firm if it is covered by fewer than three analysts.[2] For expositional simplicity, we refer to firms as "high coverage" if they are not classified as low coverage firms. Although I/B/E/S coverage

[1] Stickle (1995) and Womack (1996) find that positive (negative) changes in analysts' investment recommendations are accompanied by positive (negative) abnormal announcement returns. Barber et. al. (2001) document a profitable trading strategy by following analysts' recommendations. In contrast, Chan, Karceski and Lakonishok (2003) find that analysts' earning growth forecasts are overly optimistic and not predictive of realized future earnings. Rajan and Servaes (1997), Michaley and Womack (1999) and Dechow, Hutton and Sloan (2000) document evidence showing that analysts overestimate the future performance of firms.

started in 1976, we follow Diether, Malloy and Scherbina (2002) in limiting our sample period from January 1983 through December 2003. Until 1983, the I/B/E/S coverage is sparse and there is little cross sectional variation in BTM and size among firms with reported analyst coverage. To avoid the results being unduly influenced by low-price stocks, we exclude stocks with prices smaller than $5 from our sample.

We follow the Fama-MacBeth (1973) style regression approach taken in George and Hwang (2004) and Grinblatt and Moskowitz (2004) to measure and compare the returns to portfolios formed by different investment strategies. This approach has the advantage of using all firms and isolating the return to a particular portfolio by hedging (zeroing out) the impact of other variables known to affect returns.

If an investor forms portfolios of high and low BTM stocks with high and low analyst coverage every month, and holds these portfolios for the next T months, the return to this strategy in a given month t is the equal-weighted average of the returns to T portfolios, each formed in one of the T past months $t\text{-}j$ (for $j=1$ to $j=T$). The contribution of the portfolio formed in month $t\text{-}j$ to the strategy's month-t return can be obtained by running a cross sectional regression of the form:

$$R_{it} = b_{ojt} + b_{1jt}\, HBTM_{i,t-j} + b_{2jt}\, LMB_{i,t-j} + b_{3jt}\, LCOV_{i,t-j}{*}HBTM_{i,t-j} + b_{4jt}\, LCOV_{i,t-j}{*}LBTM_{i,t-j} + e_{ijt} \quad (1)$$

where R_{it} is the return to stock i in month t, and $LBTM_{i,t-j}$ ($HBTM_{i,t-j}$) equals one if stock i is among the bottom (top) 20% of stocks in month $t\text{-}j$ when ranked by BTM. $LCOV_{i,t-j}$ takes the value of one if stock i has no more than two analysts covering it in month $t\text{-}j$ as reported in the I/B/E/S Summary History file.

Though not shown in equation (1), most of our tests include equity market capitalization and trading volume in month $t\text{-}1$ to control for the size and liquidity effects on returns. These variables are included as deviations from cross sectional means to facilitate interpretation of the intercept. We also include winner and loser dummies based on the 52-week high price in

[2] We choose two analysts as cutoff to balance the number of firms between low and high coverage subsamples.

month *t-j* [see George and Hwang (2004)] and the average return from *t-j-36* to *t-j-13* as controls for momentum and long term return reversals, respectively.

In light of these additional control variables, the coefficient b_{0jt} can be interpreted as the return in month *t* to a "neutral" portfolio that was formed in month *t-j* having neither high nor low BTM (i.e. the portfolio includes stocks in the middle three BTM quintiles) and that has hedged (zeroed out) the effects of deviations from average size, and average trading volume, and also the effects of the momentum and reversals in predicting returns [see Fama (1976)]. The sum of the coefficient estimates $b_{0jt}+b_{2jt}$ ($b_{0jt}+b_{2jt}+b_{4jt}$) is the month-*t* return to a portfolio formed in month *t-j* that is long low BTM stocks with high (low) analyst coverage, that has hedged out all other effects. Consequently, b_{2jt} ($b_{2jt}+b_{4jt}$) is the return in month *t* in *excess* of the neutral portfolio's return, b_{0jt}, associated with taking a long position *j* months ago in a low BTM portfolio with high (low) analyst coverage. We refer to these excess returns as "pure" returns to low-BTM-high-coverage (low-BTM-low-coverage) portfolios. Thus, b_{4jt} is the incremental return to a pure low-BTM-low-coverage portfolio over that of a pure low-BTM-high-coverage portfolio. The remaining coefficients have similar interpretations.

The coefficients in equation (1) are obtained from estimating *T* cross sectional regressions in each month—one regression for each *t-j* where *j=1,...,T*. The *total* returns in month-*t* involve portfolios formed over the prior *T* months. For a the various portfolios, the total month-*t* return is given by sums such as $S_{1t} = \frac{1}{T}\sum_{j=1}^{T} b_{1jt}$ and $S_{4t} = \frac{1}{T}\sum_{j=1}^{T} b_{4jt}$, where the individual coefficients are computed from separate cross sectional regressions *j* = 1,…,*T* that are estimated in month *t*. Dividing by *T* rescales the sums to be monthly returns. The time series means of the month-by-month estimates of these sums (e.g., $\overline{S}_1$ and $\overline{S}_4$), and associated *t*-statistics computed from the temporal distribution of sums, are reported in the tables. Results for a horizon of *T* = 12 months are presented in the tables.

Table 1 reports summary statistics for the variables used in our tests. The figures reported are time series averages of the cross-sectional mean, median, maximum, and minimum of each variable, and the correlations among the variables. The low coverage dummy is a key variable in our tests. It has a mean of 0.51, which indicates that, on average, 51% of the sample stocks have no more than two analysts covering them. The correlations indicate, not surprisingly, that low coverage stocks are more likely to be smaller firms with lower institutional holdings. The significant correlations between *Ret(-36,-13)*—the cumulative monthly return from three years to one year prior to the month of portfolio formation—and the high and low BTM dummies indicate that glamour stocks have histories of long run gains, and value stocks long run losses. We control for long term returns and January in our tests to abstract from the effects of return reversals and tax loss selling [see Roll (1983), D'Mello, Ferris and Hwang (2003)].

3. Results

A. Value Premium or Glamour Discount?

Panel A in Table 2 reports, via regression, the baseline results in the value premium literature. High BTM stocks earn higher returns than low BTM stocks. We include only low BTM and high BTM dummies as independent variables in the regression in panel A. Consequently, the intercept is the return to a benchmark portfolio that consists of stocks in the middle three BTM quintiles. The coefficients on the low BTM and high BTM dummies are the respective returns to portfolios of stocks in the bottom BTM and top BTM quintile in excess of the benchmark portfolio return. As shown in the first column, in the 12-month period after portfolio formation, top BTM quintile stocks earn a return of 0.13% per month in excess of the benchmark portfolio, but this difference is not statistically significant. The bottom BTM quintile stocks earn a statistically significant 0.58% per month *less* than the benchmark portfolio. A zero-investment strategy of buying top BTM quintile and selling bottom BTM quintile stocks earns a very significant 0.71% per month, which is comparable to figures reported in LSV (1994). We report results that exclude January returns in the second column. The returns to both high BTM and low BTM stocks are lower relative to middle BTM stocks when January is excluded, but the pattern of statistical significance is the same as before.

Columns three through six of the table report risk-adjusted returns. Each is defined as the intercept from a times series regression of the total month-*t* portfolio return (e.g., $S_{1t} = \frac{1}{T}\sum_{j=1}^{T} b_{1jt}$ as defined in the previous section) on the contemporaneous Fama-French (FF) factors. Columns three and four are intercepts from regressions involving only two of the FF factors—MKT and SML. Columns five and six include all three factors—MKT, SML and HML.

After adjusting for MKT and SMB, stocks in the top (bottom) BTM quintile outperform (underperform) stocks in the middle three quintiles, and both differences are statistically significant. The "value premium" as measured by the risk-adjusted profit from a zero investment strategy of buying top BTM quintile and selling bottom BTM quintile stocks is larger than without risk adjustment—it stands at a very significant 1.12% (0.18%+0.84%) per month with January and 1.02% (0.14%+0.88%) when January is excluded. When we also include HML in the risk adjustment, the top BTM quintile is no longer significantly different from the middle three quintiles. The value premium as measured by the long-short strategy is greatly reduced, but still significant and greater than 0.50% per month with or without January. Thus, including HML as a risk factor captures about half of the cross-sectional return difference associated with high versus low BTM.

In panel B, we report the results after adding the control variables discussed earlier—momentum (52 week high), return reversal (*Ret(-36,-12)*), market cap (size) and liquidity (NASDAQ volume, NYSE/AMEX volume). Trading volume reported by NASDAQ includes inter-dealer trading, and may not be comparable to NYSE/AMEX volume. To address this, we follow Brennan, Chordia and Subrahmanyam (1998) and include volume for NASAQ and NSYE/AMEX separately in the regression. The NASDAQ volume variable is the average daily turnover during the 12-month period prior to the portfolio formation month for NASDAQ stocks, and is zero for NYSE/AMEX stocks. The NYSE/AMEX volume variable is defined similarly. Results in panel B clearly show that value premium is heavily influenced by the effects for which we control. In raw returns, the value premium is only 0.37% per month compared with 0.71% before control (including January returns). Similar to the risk-adjusted results in panel A, the value premium is larger when MKT and SMB are included as risk factors, and smaller when MKT, SMB and HML are included.

In all Panel B regressions, low BTM stocks have average returns that are significantly less than stocks in the middle three quintiles, and high BTM stocks' returns are not significantly different form those in the middle three quintiles. This indicates that high BTM stocks do not earn higher returns than medium BTM stocks in either raw or risk-adjusted returns after controlling for momentum, reversals, size and liquidity differences. The return differential between the high and low BTM stocks that is normally referred to as the "value premium" in the literature is better termed a "glamour discount" because it is driven by unusually low returns earned by stocks in the bottom BTM quintile, and not by high returns to stocks in top BTM quintile.

This is much more than a simple semantic distinction. Recognizing this as a glamour discount is more descriptive of the economics behind the effect—low BTM stocks underperform most other stocks, high BTM stocks do not. Thus, the effect cannot be explained by value stocks being underpriced [e.g., LSV (1994)] or having greater exposure to systematic risk [e.g., Zhang (2005)] than other stocks. Instead, the possible explanations are that glamour stocks have lower risk than most other stocks, or glamour stocks are overpriced. The results that follow are more consistent with a mispricing explanation than a risk based explanation.

B. Does the Glamour Discount Reflect Risk or Mispricing?

As mentioned in the introduction, we assess whether the glamour discount is related to risk or mispricing by examining the relation between the discount and the scarcity or availability of information about the stock. Assuming that financial analysts provide useful information to investors, we proxy for the availability of information about the stock by the number of analysts covering the firm. If the glamour discount reflects mispricing, then the degree of mispricing should be larger (smaller or nonexistent) if these stocks have low (high) analyst coverage. In addition, since there is no value premium, returns should be unrelated to analyst coverage among stocks in the high-BTM decile because there is no evidence that they are mispriced. On the other hand, if the glamour discount exists because glamour stocks are less risky than middle- and high-BTM stocks, the discount should not depend on analyst coverage. This interpretation of the possible results seems unambiguous to us. It is hard to imagine that analysts choose which firms to cover in a manner that coverage is low for glamour stocks with low systematic risk, yet coverage is independent of risk for stocks in the middle and top BTM quartiles.

We examine these relations by estimating a regression as described in equation (1) with the addition of two interactive terms—the product of the low coverage and high BTM dummies, and the product of the low coverage and low BTM dummies. The coefficients on these variables capture the impact of low analyst coverage on the return of glamour and value stocks, respectively. The results are reported in Table 3. As in Panel B of Table 2, the coefficient on the high BTM dummy remains insignificant. In addition, the coefficient of the interaction between high BTM and low coverage is also insignificant. The returns of top-BTM quintile stocks are not different from those in middle quintiles regardless of whether analyst coverage is high or low. Thus, analyst coverage does not appear to be associated either with mispricing or risk differences among value stocks.

The results for low-BTM stocks lead to a strikingly different conclusion. First, the coefficient on the low BTM dummy that was significantly negative in Table 2 is insignificant here. In addition, the coefficient on the interaction between low BTM and low coverage is significantly negative in all columns. For example, low BTM stocks with low analyst coverage earn 0.62 % per month *less* than low BTM stocks with high coverage outside of January. These results indicate that the glamour discount documented in Table 2 is attributable to the subset of low BTM stocks with low analyst coverage. Returns to low BTM stocks with high analyst coverage are not different from those of stocks in the other BTM deciles.

These findings are inconsistent with a risk based explanation of the glamour discount for three reasons. First, if value stocks are riskier than glamour stocks as hypothesized in by Fama and French (1992, 1996, 1998) and Zhang (2005), then stocks in the top BTM decile should earn higher returns than those in the middle deciles. Second, the discount should exist among glamour stocks regardless of the level of analyst coverage. Third, a risk-based explanation would interpret the significant negative coefficient of the interaction between low BTM and low coverage to mean that the systematic risk of glamour stocks is *lower* when analyst coverage is low than when analyst coverage is high. It is hard to imagine that this could be true. If there is a relation between analyst coverage and risk, one would expect it to be inverse—that lower analyst coverage would be associated with *greater* risk because information is scarce.

The inference that the discount to low BTM low coverage stocks reflects mispricing implies that analysts serve an important function in financial markets. High prices (relative to book value) for stocks with low analyst coverage seem to occur because investors have bid prices beyond these stocks' fundamental values. For these stocks, it appears that investors over-extrapolate from good past performance [see LSV (1994)], which results in negative future returns. However, for stocks that are covered by more than the average number of analysts, high prices relative to book value appear not to reflect overpricing because these stocks do not systematically experience price declines in the future. Evidence in the next two sections based on accounting information also support the mispricing explanation.

C. Evidence from Earning Announcement Return

In this section, we examine returns around earnings announcements to determine whether earnings surprises are significantly negative for the stocks the regression tests indicate are overpriced, and insignificant for the rest. We follow the approach of Chopra et. al. (1992), La Porta (1996) and La Porta et. al.(1997). They hypothesize that investors mistakenly extrapolate past success of low BTM firms into the future, and realize this mistake when earnings are announced. The implication is that low BTM stocks have large negative earnings announcement returns reflecting investors' correction of prior excessive optimism about earnings. Analogous reasoning implies that high BTM stocks have announcement returns that are large and positive because investors correct over pessimism about these stocks. Our tests follow this logic, but we discriminate between high and low analyst coverage subsamples because the mispricing hypothesis offers different predictions across these subsamples.

The results in Table 3 show that the unusually low return earned by low BTM stocks with low analyst coverage drives the entire glamour discount. If this reflects mispricing due to a lack of analyst coverage, then we expect the earnings announcement return for this group of stocks to be significantly negative and more negative than that of high BTM stocks, *and also* more negative than that of low BTM stocks with high analyst coverage. This is exactly the pattern reported in Table 4.

The figures in Table 4 are size-adjusted "annualized" three days cumulative returns calculated as follows. Each June, we sort stocks independently by BTM and analyst coverage. As before, stocks with fewer than three analysts are defined as low coverage stocks, the rest are defined as high coverage. High, Medium and Low BTM groups consist of stocks in the top, middle three, and bottom BTM quintiles, respectively. For each stock, we record the cumulative announcement return over a 3-day window (-1, 0, +1) around the next four quarterly earnings announcements. We calculate the size-adjusted returns by subtracting the announcement return of a portfolio of stocks in the same size decile for the same quarter. For each stock, the size-adjusted "annualized" return is the average of the four quarterly size adjusted returns multiplied by four. The numbers reported in the table are temporal averages of cross-sectional means (one for each year) computed within each group. The p values reported in the tables correspond to t tests conducted on the yearly cross-sectional means and yearly differences in cross-sectional means.

The results in Table 4 corroborate the mispricing interpretation of the glamour discount. The announcement return for low BTM low coverage stocks is -1.26%, which is significantly negative and significantly more negative than the -0.16% for low BTM high coverage stocks, which is not significantly different from zero. This is consistent with the story that the glamour discount for low coverage stocks in Table 3 occurs because when investors get information about firms' fundamentals via earnings announcements, they make significant downward revisions in their valuations of these stocks. Note also that the earnings announcement returns are *not* significantly different between low and high BTM stocks with high coverage, and also not significantly different between low and high coverage value stocks. The results in Table 3 suggest that these stocks are not mispriced, and the absence of significant differences among their earnings announcement returns is consistent with this conclusion.

D. Evidence from Accounting Performance

In this section, we examine further the possibility that the mispricing that drives the glamour discount occurs because investors over extrapolate past success, and by implication that analyst coverage assists investors in avoiding such mistakes.

Table 5 reports past returns and current and future accounting return on assets (ROA) for the firms in our sample based on independent sorts in June of each year by book-to-market and analyst coverage. Low and high analyst coverage and low, middle and high BTM is defined as before. Each panel reports time series averages of cross-sectional medians. The *p* values correspond to *t* tests conducted on the time series of yearly cross-sectional medians and yearly differences in medians.

It is clear from the top panels of Table 5 that low BTM stocks have much higher past returns than middle or high BTM stocks measured at both 12-month and 36-month horizons. For example, the past 36-month return of low BTM stocks is eight (high coverage) to eleven (low coverage) times larger than that of high BTM stocks. This is not surprising because past price increases are a primary reason why stocks come to possess high market relative to book values. What is notable is that glamour stocks that have high analyst coverage have greater past success, suggesting that past success might be a factor in attracting analyst coverage.

The middle panels of Table 5 report ROA in the current and two future years. We examine this because the evidence in Table 4 suggests that investors of glamour stocks are overly optimistic about earnings, but only when there is low analyst coverage. If investors form their earnings expectations for all glamour stocks from information analysts provide about the stocks with high coverage, then the optimism documented in Table 4 should be reflected as differences in realized future ROA. Specifically, the future ROA of low coverage glamour stocks should be lower than that of high coverage glamour stocks.

The ROA of low coverage glamour stocks is indeed significantly lower than that of glamour stocks with high coverage by 2.15% in the year of portfolio formation, and by 1.63% and 0.65% in the first year and second year thereafter. In contrast, there is no significant difference in ROA between value stocks with high versus low analyst coverage. The difference in ROA between middle BTM stocks with high and low analyst coverage is statistically significant, but the economic magnitude is much smaller than that of glamour stocks.

Taken as a whole, the results indicate that glamour stocks have experienced greater past stock price increases, and have the greatest potential for generating ROA, relative to stocks in other BTM quintiles. Both of these effects are more pronounced for glamour stocks with high coverage than low coverage. Nevertheless, it seems that investors over extrapolate either past stock returns, future earnings potential, or both for stocks with low coverage. This results in overly optimistic mispricing of glamour stocks with low analyst coverage, and a return discount as this mispricing is corrected.

E. Institutional Holdings and Analyst Coverage in Explaining the Glamour Discount

In this section, we address two questions relating to the mispricing of low coverage glamour stocks. First, why does the mispricing last so long? The results in Table 3 correspond to a 12-month horizon. Second, why is the mispricing one-sided, resulting in overpricing but not underpricing? To answer both questions we examine limitations on arbitrage activity implied by constraints on short selling. When stocks are underpriced, arbitrage requires aggressive purchases that eliminate the underpricing. However, when stocks are overpriced, arbitrage requires (short) selling. If short sales are constrained for certain stocks, overpricing can persist.

Recognizing this, Nagel (2005) hypothesizes that overpricing, and predictable low future returns, should be most pronounced among stocks that are short sale constrained. He argues that the bulk of stock available for lending to short sellers originates in the brokerage or custodial accounts of institutional investors. So he uses institutional holdings as a proxy for the availability of shares for shorting. Stocks with low institutional holdings are more likely to be subject to short-sale constraints. He shows that institutional holdings helps explain cross-sectional stock return anomalies, including the value premium.

Our Table 1 shows that the correlation between institutional holdings and the low coverage dummy is strong at -0.478. To check whether our results on low coverage are spurious (perhaps low coverage is a proxy for low institutional holdings), we estimate a regression similar to that of Table 3 but we add two additional variables based on the percentage of the outstanding shares held by institutions (*INST*). The first is dummy that takes a value of one for low BTM stocks with zero *INST*, and zero otherwise. The second takes a value of one for high BTM stocks with zero *INST*. About 15% of our sample has zero institutional holdings. If constraints on arbitrage rather than low analyst coverage explain the glamour discount, then the inclusion of these variables should render the low-BTM-low-coverage dummy insignificant, and instead the low-BTM-zero-*INST* variable should be negative and significant.

Table 6 reports the results, which are consistent across columns. The low-BTM-low-coverage stocks continue to have significant negative returns of similar magnitude, and the high-BTM-low-coverage stocks continue to have insignificant returns just as in Table 3. Neither of the new variables are significant, indicating that the glamour discount is attributable to low analyst coverage. In addition, the arbitrage story has no explanatory power on its own after controlling for the impact of analyst coverage. However, the evidence below suggests that the short-sale constraints do contribute to the *extent* of mispricing associated with low analyst coverage.

The results so far seem to us convincing that glamour stocks with low coverage are overpriced. If low institutional holdings are associated with short-sale constraints that prevent traders from arbitraging mispricing, then the degree of overpricing should lessen the greater are institutional holdings. In the context of our earlier regressions, the negative coefficient on the interaction between low BTM and low coverage should be less negative the greater are institutional holdings. Furthermore, since low BTM high coverage stocks appear not to be mispriced, institutional holdings should not affect the coefficient relating to those stocks.

Table 7 reports regressions that add two variables to the regression in Table 3. The first is an interaction between *INST* and the low-BTM-low-coverage dummy. The second is an interaction between *INST* and the high-BTM-low-coverage dummy. In this regression, the coefficient on the "plain" low-BTM-low-coverage dummy is the return to a portfolio with zero institutional holdings (that has hedged out all the other effects). The interpretation of the interaction between *INST* and the low-BTM-low-coverage dummy is impact on the return to a portfolio of such stocks when institutional holdings increase from zero to 100%.

The results on the "plain" dummies are similar to those in earlier tables—there is strong evidence of overpricing for glamour stocks with low coverage, but no evidence of significant mispricing for value stocks. This means that even with zero institutional holdings, high BTM stocks appear not to be overpriced. The coefficients on the new variables are consistent with the hypothesis that constraints on arbitrage contribute to the mispricing associated with low coverage. The estimate on the interaction between INST and the low-BTM-low-coverage dummy is significant and positive, indicating that greater institutional holdings dissipate the overpricing of glamour stocks with low coverage. The coefficient on the interaction between *INST* and the high-BTM-low-coverage dummy is insignificant. This is consistent with the insignificant estimate on the "plain" high-BTM-low-coverage dummy—if at low levels of institutional holdings, high BTM stocks are not mispriced, then increasing institutional holdings should have no effect on their returns.

The magnitudes of these effects are economically significant. As an example, consider the estimates in column 2 for raw returns excluding January. The loss of high analyst coverage lowers the average return of glamour stocks by 0.91% per month as indicated by the coefficient of low-BTM-low-coverage dummy. This means the glamour discount for stocks that have no institutional investors and low analyst coverage is -1.02% (-0.99%-0.11%) per month outside of January, which is about -12.24% per year. This is very striking considering that we have exclude penny stocks (price <$5) from our sample. However, this large discount decreases in magnitude with an increase in institutional holdings at the rate of 1.44% per month as indicated by the coefficient on the interaction between *INST* and the low-BTM-low-coverage dummy. Every 1% increase in institutional holdings decreases the glamour discount by 1.44 basis points. Under the assumption of a linear impact of institutional holdings on the glamour discount, if institutional holdings were to reach 70.8%, the -1.02% per month glamour discount to low coverage stocks would vanish. The same qualitative conclusions hold for risk-adjusted returns.

Taken together, these results indicate that analyst coverage and institutional holdings play different roles in the formation and existence of the glamour discount. Low analyst coverage is a necessary condition, while low institutional holdings act as a proxy for short-sales constraints that enable mispricing to persist. When the short-sale constraint is relaxed with an increase in institutional investors, the degree of overpricing is reduced through arbitrage, and can eventually be eliminated if institutional holdings reach a high enough level (indicating that the short-sales constraints no longer bind).

4. Conclusion

We document that the value premium described in the literature is actually a glamour discount. The difference between returns to high and low book-to-market (BTM) stocks is driven by unusually low returns to the lowest BTM quintile stocks (i.e., glamour stocks), and there is no significant difference in returns between the highest BTM quintile stocks (value stocks) and stocks in the middle three quintiles. Furthermore, the discount exists only among glamour stocks with low analyst coverage.

These results pose a significant challenge to explanations of the value premium that are based on differences in systematic risk. This is because such a model would have to predict that risk is similar for stocks across the entire value-glamour spectrum, provided they have high analyst coverage; and that systematic risk is less for glamour stocks with *low* analyst coverage than those with high coverage. These findings seem more consistent with mispricing than an explanation based on risk. In particular, the upward price path by which stocks achieve low BTM status reflects substantial overpricing in the stocks that are not followed by many analysts. The glamour discount is then the correction of the overpricing of these stocks over time.

This explanation is supported by further tests using accounting performance and earning announcements. Stock returns surrounding earnings announcements are significantly negative for glamour stocks with low analyst coverage, but insignificant for glamour stocks with high coverage and for value stocks regardless of coverage. This indicates that investors are genuinely surprised by negative news upon learning the earnings performance of low coverage glamour stocks, but not the other stocks, which is consistent with overpricing of glamour stocks with low coverage. We also document that the accounting return on assets (ROA) of glamour stocks with low coverage is lower than that of glamour stocks with high analyst coverage, but this is not true of value stocks. This too is consistent with the notion that investors overestimate the earnings potential of glamour stocks with low coverage.

We also examine institutional holdings as an inverse proxy for shares available for shorting as in Nagel (2005). Short-sale constraints might be thought to contribute to the apparent overpricing of low coverage glamour stocks, because constraining short sales constrains arbitrage strategies designed to exploit overpricing. Consistent with this view, we find that the glamour discount is smaller, the greater are shares available for shorting as proxied by institutional holdings. Moreover, returns to high coverage glamour stocks, and value stocks regardless of coverage, are unaffected by the level of institutional holdings. This suggests that institutional holdings do proxy for the ease with which shorting can be done, and also that analyst and institutions play crucial but distinct roles in explaining mispricing. Analysts provide useful information to investors that prevents mispricing as stock prices rise (i.e., for glamour stocks). Where analyst information is scarce, the supply of shares for shorting provided by institutional investors facilitates arbitrage strategies that control overpricing. However, when analyst coverage and institutional holdings are low, overpricing occurs and it takes a while for it to be corrected.

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Table 1

Panel A reports time-series average of equally-weighted monthly cross-sectional means, median , maximum and minimum of the variables used in the paper. Pane B report time-series average of equally-weighted monthly cross-sectional correlation. Using monthly data from January 1984 to December 2003, we construct indicator variables for each of the measures described in the text. *BTM* is the book-to-market, *NOA* is the number of financial analysts, *INST* is institutional holdings at month t. *Ret(-1.-12)* one year return prior to month t, *Ret(-13,-25)* is the two-year return prior to month t-12. *Low Cov. Dummy* is a dummy that take a value of 1 if a stock is cover by fewer than three analysts and zero otherwise. The *High BTM* and *Low BTM* variables are dummies for whether individual stocks are in the top and bottom 20% of *BTM* respectveily.

Panel A

	Mean	Median	Min	Max
BTM	0.87	0.68	0.001	18.77
Low BTM Dummy	0.20	0.00	0.00	1.00
High BM Dummy	0.20	0.00	0.00	1.00
Market cap (Millions)	1799.62	231.59	2.38	178248.59
Return (-13,-36)	0.44	0.19	-0.92	33.99
Return(-1,-12)	0.24	0.13	-0.80	16.45
NOA	5.49	2.35	0	42.96
INST	0.34	0.32	0	0.99
Low Cov. Dummy	0.51	0.62	0	1.00

Panel B

	BTM	*Low BTM Dummy*	*High BTM Dummy*	*Market Cap*	*Ret (-13,-36)*	*Ret (-1,-12)*	*NOA*	*INST*	*Low Cov. Dummy*
BTM	1.000								
Low BTM Dummy	-0.296	1.000							
High BTM Dummy	0.522	-0.250	1.000						
Market Cap	-0.059	0.112	-0.070	1.000					
Ret(-13,-36)	-0.143	0.272	-0.167	0.008	1.000				
Ret(-1,-12)	0.028	-0.006	0.047	0.006	-0.059	1.000			
NOA	-0.104	0.145	-0.143	0.477	0.023	-0.055	1.000		
INST	-0.172	0.082	-0.156	0.156	0.028	-0.047	0.468	1.000	
Low Cov. Dummy	0.096	-0.113	0.167	-0.177	-0.043	0.062	-0.683	-0.478	1.000

Table 2

Each month between January 1983 and December 2003, 12 (j=1,…,12) cross-sectional regressions of the following forms are estimated in Panel A and Panel B respectively:

$$R_{it} = b_{0jt} + b_{1jt} LBTM_{i,t-j} + b_{2jt} LBTM_{i,t-j} + e_{ijt}$$

$$R_{it} = b_{0jt} + b_{1jt} LBTM_{i,t-j} + b_{2jt} LBTM_{i,t-j} + b_{3jt}\, 52wkhW_{i,t-j} + b_{4jt}\, 52wkhL_{i,t-j} + b_{5jt}\, LTRW_{i,t-j} + b_{6jt}\, LTRL_{i,t-j} + b_{7jt}\, SIZE_{it-1} + b_{8jt}\, NYSE\ Vol_{i,t-1} + b_{9jt}\, NAS\ Vol_{i,t-1} + e_{ijt}$$

$R_{i,t}$ and $size_{i,t}$ are the return and the market capitalization of stock i in month t; $NYSE\ VOl_{i,t-1}$ ($NAS\ VOl_{i,t-1}$i) is the average daily turnover for stock i in month t-1if stock i trades on NYSE/AMEX (NASDAQ) and zero otherwise. $52wkW_{i,t-j}$ ($52wkL_{i,t-j}$) is the 52-week high winner (loser) dummy that takes the value of 1 if the 52-week high measure for stock i is ranked in the top (bottom) 20% in month $t-j$, and zero otherwise. The 52-week high measure in month $t-j$ is the ratio of price level in month $t-j$ to the maximum price achieved in months $t-j$-12 to $t-j$. *LTRWi*,*t*-j (*LTRWi*,*t*-j) is long term return winner and loser dummies constructed similarly. The long term return in month $t-j$ is measured as the cumulative return between $t-j-13$ and $t-j-36$. $HBTM_{i,t-j}$ ($LBTM_{i,t-j}$) is the High (Low) BTM dummy that takes the value of 1 if $(book_{i,t-1}/mkt_{i,t-1})$ of stock i is ranked in the top (bottom) 20% in month $t-j$, and zero otherwise. $(book_{i,t}/mkt_{i,t})$ is the book-to market measure in month t and is computed from the book value of equity in the most recent annual financial statements whose closing date is at least six-months prior to month t, and market value of equity at the end of previous December. The coefficient estimates of a given independent variable are averaged over j=1,…,12 hence the column labels (1,12). To obtain risk-adjusted returns, we further run times series regressions of these averages (one for each average) on the contemporaneous Fama-French's factors. Both three factors (*MKT*,*SMB*,*HML*) and two factors (*MKT SMB*) risk adjusted results are reported and labeled accordingly. The numbers reported for risk adjusted returns are intercepts from these time-series regressions. They are in percent per month and their t-statistics are in parentheses. Nobs is the time-series average number of cross-sectional observations in each monthly regression

Panel A

	Raw Monthly Return (1,12)	Raw Monthly return Jan. excluded (1.12)).	FF 2 Factors Risk-adjusted Monthly Return (1.12)	FF 2 Factors Risk-adjusted Monthly Return (1.12) Excl. January	FF 3 Factors Risk-adjusted Monthly Return (1.12)	FF 3 Factors Risk-adjusted Monthly Return Jan. excluded (1.12)
Intercept	1.22 (4.11)	1.02 (3.34)	0.25 (2.34)	0.17 (1.60)	0.02 (0.21)	-0.04 (-0.54)
Low BTM Dummy	-0.58 (-2.71)	-0.69 (-3.10)	-0.84 (-5.38)	-0.88 (-5.56)	-0.47 (-4.20)	-0.54 (-4.95)
High BTM Dummy	0.13 (1.46)	0.08 (0.94)	0.18 (2.27)	0.12 (1.47)	0.11 (1.35)	0.07 (0.82)
Nobs	3525	3525	3525	3525	3525	3525

Table 2

Panel B

	Raw Monthly Return (1,12)	Raw Monthly return Jan. excluded (1.12)	FF 2 Factors Risk-adjusted Monthly Return (1.12)	FF 2 Factors Risk-Adjusted Monthly Return Jan. excluded (1.12)	FF 3 Factors Risk-adjusted Monthly Return (1.12)	FF 3 Factors Risk-adjusted Monthly Return Jan. excluded (1.12)
Intercept	1.22	1.04	0.26	0.20	0.01	-0.03
	(4.21)	(3.47)	(2.39)	(1.79)	(0.11)	(-0.40)
Low BM Dummy	-0.32	-0.39	-0.39	-0.44	-0.16	-0.24
	(-2.90)	(-3.60)	(-4.01)	(-4.57)	(-2.31)	(-3.51)
High BM Dummy	0.05	0.08	0.00	0.09	0.05	0.06
	(0.64)	(0.90)	(-0.08)	(1.30)	(0.72)	(0.87)
Size	0.01	0.08	0.10	0.05	0.00	0.06
	(0.33)	(0.90)	(1.35)	(2.20)	(0.15)	(2.36)
Past Three Year Return Winner Dummy	-0.18	-0.15	-0.25	-0.21	-0.21	-0.19
	(-2.66)	(-2.21)	(-3.95)	(-3.35)	(-3.29)	(-2.91)
Past Three Year Return Loser Dummy	0.04	-0.13	-0.05	-0.18	-0.04	-0.17
	(0.32)	(-1.13)	(-0.51)	(-2.01)	(-0.47)	(-1.84)
52 Wk High Winner Dummy	0.30	0.39	0.33	0.40	0.39	0.47
	(4.68)	(6.06)	(5.02)	(6.39)	(6.21)	(7.69)
52 Wk High Loser Dummy	-0.35	-0.60	-0.49	-0.70	-0.53	-0.74
	(-1.98)	(-3.55)	(-3.04)	(-4.54)	(-3.21)	(-4.73)
NASDAQ Volume	0.00	-0.05	-0.17	-0.17	-0.03	-0.05
	(0.01)	(-0.43)	(-2.65)	(-2.72)	(-0.67)	(-1.02)
NYSE/AMEX Volume	-0.08	-0.14	-0.22	-0.25	-0.21	-0.23
	(-0.93)	(-1.49)	(-4.07)	(-4.61)	(-3.74)	(-4.27)
Nobs	2898	2898	2898	2898	2898	2898

Table 3

Each month between January 1983 and December 2003, 12 (j=1,…,12) cross-sectional regressions of the following forms are estimated:

$$R_{it} = b_{0jt} + b_{1jt} LBTM_{i,t-j} + b_{2jt} HBTM_{i,t-j} + b_{3jt} LBTM_{i,t-j} *LCOV_{i,t-j} + b_{4jt} HBTM_{i,t-j} *LCOV_{i,t-j} + b_{5jt} 52wkhL_{i,t-j} + b_{6jt} 52wkhW_{i,t-j}$$
$$+ b_{7jt} LTRW_{i,t-j} + b_{8jt} LTRL_{i,t-j} + b_{9jt} SIZE_{it-1} + b_{10jt} NYSE\ Vol_{i,t-1} + b_{11jt} NAS\ Vol_{i,t-1} + e_{ijt}$$

$R_{i,t}$ and $size_{i,t}$ are the return and the market capitalization of stock i in month t; $NYSE\ VOl_{i,t-1}$ ($NAS\ VOl_{i,t-1}$) is the average daily turnover for stock i in month $t-1$if stock i trades on NYSE/AMEX (NASDAQ) and zero otherwise. $52wkW_{i,t-j}$ ($52wkL_{i,t-j}$) is the 52-week high winner (loser) dummy that takes the value of 1 if the 52-week high measure for stock i is ranked in the top (bottom) 20% in month $t-j$, and zero otherwise. The 52-week high measure in month $t-j$ is the ratio of price level in month $t-j$ to the maximum price achieved between month $t-j-12$ to $t-j$. $LTRWi,t$-j and $LTRLi,t$-j are long term return winner and loser dummies constructed similarly. The long term return in month $t-j$ is measured as the cumulative return between $t-j-13$ and $t-j-36$. $HBTM_{i,t-j}$ ($LBTM_{i,t-j}$) is the High (Low) BTM dummy that takes the value of 1 if book-to-market of stock i is ranked in the top (bottom) 20% in month $t-j$, and zero otherwise. Book-to market measure in month t is computed from the book value of equity in the most recent annual financial statements whose closing date is at least six-months prior to month t, and market value of equity at the end of previous December. $LCOV_{i,t-j}$ is the Low coverage dummy that takes the value of 1 if stock is covered by fewer than three analysts in month $t-j$, and zero otherwise. The coefficient estimates of a given independent variable are averaged over j=1,…,12 hence the column labels (1,12). The coefficients of the control variables, b_{5jt} ….b_{11jt} , have been omitted. To obtain risk-adjusted returns, we further run times series regressions of these averages (one for each average) on the contemporaneous Fama-French factors. Both three factors (*MKT,SMB,HML*) and two factors (*MKT SMB*) risk adjusted results are reported and labeled accordingly. The numbers reported for risk adjusted returns are intercepts from these time-series regressions. They are in percent per month and their t-statistics are in parentheses. Nobs is the time-series average number of cross-sectional observations in each monthly regression.

	Raw Monthly Return (1,12)	Raw Monthly return Jan. excluded (1.12))	FF 2 Factors Risk-adjusted Monthly Return (1.12)	FF 2 Factors Risk-Adjusted Monthly Return Jan. excluded (1.12)	FF 3 Factors Risk-adjusted Monthly Return (1.12)	FF 3 Factors Risk-adjusted Monthly Return Jan. excluded (1.12)
Intercept	1.22	1.04	0.26	0.20	0.01	-0.03
	(4.21)	(3.48)	(2.40)	(1.81)	(0.13)	(-0.38)
Low BTM Dummy	-0.10	-0.12	-0.17	-0.17	0.08	0.05
	(-0.87)	(-1.07)	(-1.62)	(-1.60)	(1.16)	(0.64)
High BTM Dummy	0.00	0.03	0.05	0.05	-0.05	-0.03
	(0.01)	(0.30)	(0.52)	(0.57)	(-0.61)	(-0.30)
Low BTM and	-0.50	-0.62	-0.50	-0.62	-0.55	-0.65
Low Coverage Dummy	(-4.31)	(-5.40)	(-4.42)	(-5.48)	(-4.81)	(-5.67)
High BTM and	0.07	0.05	0.06	0.04	0.14	0.12
Low Coverage Dummy	(0.93)	(0.62)	(0.77)	(0.52)	(1.93)	(1.55)
Nobs	2894	2894	2894	2894	2894	2894

Table 4

Every June from 1983 to 2002, we sort firms independently into two groups by analyst coverage (fewer than three and more than two) and three groups by Book-to-market (top 20%, middle 60% and bottom 20%), and form portfolios based on these groupings. For each firm, we then compute the average abnormal return over the four quarterly announcement returns following portfolio formation and annualize this number by multiplying by four. Following La Porta et al (1997), we benchmark each earnings announcement return by the firm with median book-to-market in the same size decile as the announcer. The numbers in the table are the equally weighted average annualized earning announcement abnormal (net of benchmark) returns. The column labeled H-L is the difference between the returns to high and low leverage groups, and p-values relate to a test of the null hypothesis that the difference between the mean abnormal returns of high and low leverage groups is zero.

Cumulative Abnormal Returns						**Number of stocks**			
	Book to Market						Book to Market		
Coverage	L	M	H	H-L	p-value	Coverage	L	M	H
L	-1.26	0.65	0.57	1.84	0.00	L	184	739	303
H	-0.16	-0.04	0.03	0.19	0.57	H	314	785	158
H-L	1.10	-0.69	-0.56						
p-value	0.00	0.55	0.14						

Table 5

Using annual Compustat data from June 1983 to June 2001, firms are independently ranked into three categories based on book-to-market , and two groups by analyst coverage. Each panel reports the time-series average of annual medians computed within each book-to-market and analyst coverage category. In this table, firms are included in a given year only if there is non-missing data for all attributes listed below. The panel labeled Number of Firms per year reports the time-series average of the number of firms included in the annual median computations.

Book-to-Market

Analyst Coverage	Past 12-Month Return (percent) L	M	H	Past 36-Month Return (percent) L	M	H	Market Capitalization (Millions) L	M	H
L	20.00	13.99	10.57	80.77	38.17	6.97	502.01	367.93	329.06
H	27.81	13.69	8.07	110.57	37.96	14.24	820.29	550.20	518.81
H-L	7.81	-0.03	-2.50	29.80	-0.19	7.24	318.28	182.27	189.75
P-value	0.00	0.76	0.15	0.00	0.92	0.01	0.00	0.00	0.00

Analyst Coverage	Return on Assets Year 0 (percent) L	M	H	Return on Assets Year 1 (percent) L	M	H	Return on Assets Year 2 (percent) L	M	H
L	5.47	3.83	2.18	6.40	3.89	2.50	6.76	3.92	2.91
H	7.62	4.43	2.24	8.03	4.23	2.40	7.41	4.23	2.82
H-L	2.15	0.59	0.06	1.63	0.34	-0.10	0.65	0.29	-0.09
P-value	0.00	0.00	0.44	0.00	0.01	0.24	0.06	0.02	0.52

Analyst Coverage	Book to Market L	M	H	Number of Firms L	M	H
L	0.23	0.69	1.40	124	557	253
H	0.25	0.63	1.39	280	707	169
H-L	0.02	-0.06	-0.01			
P-value	0.00	0.00	0.04			

Table 6

Each month between January 1983 and December 2003, 12 (j=1,…,12) cross-sectional regressions of the following forms are estimated:

$$R_{it} = b_{0jt} + b_{1jt} LBTM_{i,t-j} + b_{2jt} HBTM_{i,t-j} + b_{3jt} LBTM_{i,t-j} *LCOV_{i,t-j} + b_{4jt} HBTM_{i,t-j} *LCOV_{i,t-j} + b_{5jt} LTBM_{i,t-j} *ZINST_{i,t-j} + b_{6jt} HBTM_{i,t-j} *ZINST_{i,t-j} + b_{7jt}\, 52wkhL_{i,t-j} + b_{8jt}\, 52wkhW_{i,t-j} + b_{9jt} LTRW_{i,t-j} + b_{10jt} LTRL_{i,t-j} + b_{11jt} SIZE_{it-1} + b_{12jt} NYSE\ Vol_{i,t-1} + b_{13jt} NAS\ Vol_{i,t-1} + e_{ijt}$$

$R_{i,t}$ and $size_{i,t}$ are the return and the market capitalization of stock i in month t; $NYSE\ VOl_{i,t-1}$ ($NAS\ VOl_{i,t-1}$) is the average daily turnover for stock i in month $t-1$if stock i trades on NYSE/AMEX (NASDAQ) and zero otherwise. $52wkW_{i,t-j}$ ($52wkL_{i,t-j}$) is the 52-week high winner (loser) dummy that takes the value of 1 if the 52-week high measure for stock i is ranked in the top (bottom) 20% in month $t-j$, and zero otherwise. The 52-week high measure in month $t-j$ is the ratio of price level in month $t-j$ to the maximum price achieved between month $t-j-12$ to $t-j$. $LTRWi,t$-j and $LTRLi,t$-j are long term return winner and loser dummies constructed similarly. The long term return in month $t-j$ is measured as the cumulative return between $t-j-13$ and $t-j-36$. $HTBM_{i,t-j}$ ($LBTM_{i,t-j}$) is the High (Low) BTM dummy that takes the value of 1 if book-to-market of stock i is ranked in the top (bottom) 20% in month $t-j$, and zero otherwise. Book-to market measure in month t is computed from the book value of equity in the most recent annual financial statements whose closing date is at least six-months prior to month t, and market value of equity at the end of previous December. $LCOV_{i,t-j}$ is the Low coverage dummy that takes the value of 1 if stock is covered by fewer than three analysts in month $t-j$, and zero otherwise. $ZINST_{i,t-j}$ is the zero institutional dummy that takes the value of 1 if stock i has no institutional holding in month $t-j$ and zero otherwise. The coefficient estimates of a given independent variable are averaged over j=1,…,12 hence the column labels (1,12). The coefficients of the control variables, b_{7jt}…..b_{13jt}, have been omitted. To obtain risk-adjusted returns, we further run times series regressions of these averages (one for each average) on the contemporaneous Fama-French factors. Both three factors (*MKT,SMB,HML*) and two factors (*MKT SMB*) risk adjusted results are reported and labeled accordingly. The numbers reported for risk adjusted returns are intercepts from these time-series regressions. They are in percent per month and their t-statistics are in parentheses. Nobs is the time-series average number of cross-sectional observations in each monthly regression.

	Raw Monthly Return (1,12)	Raw Monthly return Jan. excluded (1.12)	FF 2 Factors Risk-adjusted Monthly Return (1.12)	FF 2 Factors Risk-Adjusted Monthly Return Jan. excluded (1.12)	FF 3 Factors Risk-adjusted Monthly Return (1.12)	FF 3 Factors Risk-adjusted Monthly Return Jan. excluded (1.12)
Intercept	1.23 (4.22)	1.05 (3.48)	0.27 (2.42)	0.21 (1.83)	0.01 (0.16)	-0.03 (-0.35)
Low BTM Dummy	-0.09 (-0.80)	-0.12 (-1.00)	-0.16 (-1.55)	-0.16 (-1.52)	0.09 (1.22)	0.06 (0.71)
High BTM Dummy	0.12 (1.27)	0.12 (1.23)	0.17 (1.89)	0.15 (1.61)	0.00 (-0.01)	0.01 (0.08)
Low BTM and Low Coverage Dummy	-0.48 (-4.21)	-0.60 (-5.29)	-0.49 (-4.38)	-0.60 (-5.40)	-0.54 (-4.82)	-0.64 (-5.65)
High BTM and Low Coverage Dummy	0.05 (0.62)	0.02 (0.28)	0.03 (0.36)	0.01 (0.10)	0.11 (1.48)	0.09 (1.15)
Low BTM and No Inst. Holding Dummy	-0.13 (-0.83)	-0.13 (-0.83)	-0.08 (-0.51)	-0.10 (-0.65)	-0.05 (-0.34)	-0.08 (-0.46)
High BTM and No Inst. Holding Dummy	-0.24 (-1.20)	-0.12 (-0.59)	-0.17 (-0.90)	-0.09 (-0.45)	0.04 (0.20)	0.09 (0.45)
Nobs	2894	2894	2894	2894	2894	2894

Table 7

Each month between January 1983 and December 2003, 12 (j=1,…,12) cross-sectional regressions of the following forms are estimated:

$$R_{it} = b_{0jt} + b_{1jt} LBTM_{i,t-j} + b_{2jt} HBTM_{i,t-j} + b_{3jt} LBTM_{i,t-j} *LCOV_{i,t-j} + b_{4jt} HBTM_{i,t-j} * LCOV_{i,t-j} + b_{5jt} LBTM_{i,t-j} * LCOVi,t\text{-}j * INST_{i,t-j}$$
$$+ b_{6jt} HBTM_{i,t-j} * LCOVi,t\text{-}j*INST_{i,t-} + b_{7jt}\, 52wkhL_{i,t-j} + b_{8jt}\, 52wkhW_{i,t-j} + b_{9jt} LTRW_{i,t-j} + b_{10jt} LTRL_{i,t-j} + b_{11jt} SIZE_{it-1}$$
$$+ b_{12jt} NYSE\ Vol_{i,t-1} + b_{13jt} NAS\ Vol_{i,t-1} + e_{ijt}$$

$R_{i,t}$ and $size_{i,t}$ are the return and the market capitalization of stock i in month t; $NYSE\ VOl_{i,t-1}$ ($NAS\ VOl_{i,t-1}$) is the average daily turnover for stock i in month t-1 if stock i trades on NYSE/AMEX (NASDAQ) and zero otherwise. $52wkW_{i,t-j}$ ($52wkL_{i,t-j}$) is the 52-week high winner (loser) dummy that takes the value of 1 if the 52-week high measure for stock i is ranked in the top (bottom) 20% in month t-j, and zero otherwise. The 52-week high measure in month t-j is the ratio of price level in month t-j to the maximum price achieved between month t-j-12 to t-j. $LTRWi,t$-j and $LTRLi,t$-j are long term return winner and loser dummies constructed similarly. The long term return in month t-j is measured as the cumulative return between t-j-13 and t-j-36. $HBTM_{i,t-j}$ ($LBTM_{i,t-j}$) is the High (Low) BTM dummy that takes the value of 1 if book-to-market of stock i is ranked in the top (bottom) 20% in month t-j, and zero otherwise. Book-to market measure in month t is computed from the book value of equity in the most recent annual financial statements whose closing date is at least six-months prior to month t, and market value of equity at the end of previous December. $LCOV_{i,t-j}$ is low coverage dummy that takes the value of 1 if stock is covered by less than three analysts in month t-j, and zero otherwise. $INST_{i,t-j}$ is the institutional holdings of stock i month t-j. The coefficient estimates of a given independent variable are averaged over j=1,…,12 hence the column labels (1,12). The coefficients of the control variables, b_{7jt}…..b_{13jt} , have been omitted. To obtain risk-adjusted returns, we further run times series regressions of these averages (one for each average) on the contemporaneous Fama-French factors. Both three factors (*MKT*,*SMB*,*HML*) and two factors *(MKT SMB*) risk adjusted results are reported and labeled accordingly. The numbers reported for risk adjusted returns are intercepts from these time-series regressions. They are in percent per month and their t-statistics are in parentheses. Nobs is the time-series average number of cross-sectional observations in each monthly regression.

	Raw Monthly Return (1,12)	Raw Monthly return Jan. excluded (1.12)	FF 2 Factors Risk-adjusted Monthly Return (1.12)	FF 2 Factors Risk-Adjusted Monthly Return Jan. excluded (1.12)	FF 3 Factors Risk-adjusted Monthly Return (1.12)	FF 3 Factors Risk-adjusted Monthly Return Jan. excluded (1.12)
Intercept	1.22 (4.22)	1.04 (3.48)	0.26 (2.40)	0.20 (1.81)	0.01 (0.13)	-0.03 (-0.37)
Low BTM Dummy	0.00 (0.01)	0.03 (0.32)	-0.16 (-1.55)	-0.16 (-1.50)	0.09 (1.22)	0.06 (0.73)
High BTM Dummy	-0.09 (-0.80)	-0.11 (-0.98)	0.05 (-0.53)	0.05 (-0.58)	-0.05 (-0.61)	-0.03 (-0.29)
Low BTM and Low Coverage Dummy	-0.71 (-4.05)	-0.91 (-5.30)	-0.72 (-4.21)	-0.90 (-5.45)	-0.74 (-4.23)	-0.90 (-5.34)
High BTM and Low Coverage Dummy	0.00 (0.04)	-0.01 (-0.08)	0.01 (0.12)	-0.01 (-0.09)	0.16 (1.67)	0.12 (1.26)
Low BTM and Low Coverage Dummy*INST	1.10 (2.90)	1.44 (3.89)	1.08 (2.91)	1.42 (3.90)	1.02 (2.68)	1.34 (3.62)
High BTM and Low Coverage Dummy*INST	0.33 (1.03)	0.26 (0.79)	0.22 (0.74)	0.23 (0.73)	-0.13 (-0.44)	-0.09 (-0.30)
Nobs	2894	2894	2894	2894	2894	2894