Anomalies and Financial Distress

by

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Abstract

This paper explores commonalities across asset-pricing anomalies. In particular, we assess implications of financial distress for the profitability of anomaly-based trading strategies. Strategies based on price momentum, earnings momentum, credit risk, dispersion, idiosyncratic volatility, and capital investments derive their profitability from taking short positions in high credit risk firms that experience deteriorating credit conditions. In contrast, the value-based strategy derives most of its profitability from taking long positions in high credit risk firms that survive financial distress and subsequently realize high returns. The accruals anomaly is an exception - it is robust among high and low credit risk firms in all credit conditions.

Asset pricing theories prescribe that riskier assets should command higher returns. Existing theories, however, leave unexplained a host of empirically documented cross-sectional patterns in stock returns, classified as anomalies. Specifically, the literature has documented that in the cross-section, future stock returns are positively related to past returns (Jegadeesh and Titman, 1993, 'price momentum'), unexpected earnings (Ball and Brown, 1968, 'earnings momentum'), and book-to-market (Fama and French, 1992, 'value effect'). Further, stock returns are negatively related to firm size (Fama and French, 1992), accruals (Sloan, 1996), credit risk (Dichev, 1998; Campbell et al., 2008; Avramov et al., 2009a), dispersion in analysts' earnings forecasts (Diether et al., 2002), capital investments (Titman et al., 2004), asset growth (Cooper et al., 2008), and idiosyncratic volatility (Ang et al., 2006).

This paper examines the price momentum, earnings momentum, credit risk, dispersion, idiosyncratic volatility, asset growth, capital investments, accruals, and value anomalies in a unified framework. We explore commonalities across anomalies and, in particular, assess the implications of financial distress for the profitability of anomaly-based trading strategies. Financial distress leads to sharp responses in stock and bond prices[1] and this pattern could potentially be related to the dynamics of anomalies.

Our motivation to examine financial distress follows Fama and French (1993) who suggest that the size and value factors proxy for a priced distress factor. However, Campbell et al. (2008) find that while distressed firms have high loadings on the SMB and HML factors, they generate lower, not higher, returns, and argue against the existence of a priced distress factor. Moreover, consistent with the anomalies literature, Daniel and Titman (1997) argue that it is the size and value characteristics, not SMB and HML factor loadings, that impact stock returns. In this paper, we consider financial distress to be a characteristic and examine its impact on stock returns and the profitability of anomalies. The potential implications of financial distress for asset-pricing anomalies have not yet been comprehensively explored.

[1] See Hand et al. (1992) and Dichev and Piotroski (2001).

This paper attempts to fill this gap.

We focus on financial distress, rather than other possibly correlated characteristics, because financial distress has direct implications for a firm's future performance. For example, there may be triggers in bond covenants that stipulate coupon rate increases if rating drops below a certain grade. Creditors may abandon low-rated firms.[2] Financial distress could result in loss of customers, suppliers, and key employees. Further, managerial time may be spent on dealing with financial distress rather than focusing on value-enhancing projects. There are also regulatory restrictions on the minimum ratings of firms which some institutions can invest in. These restrictions may be difficult to tie to other firm characteristics such as size, illiquidity, or volatility. In addition, a credit rating downgrade offers a directly observable measure of deteriorating firm conditions. Thus, financial distress, as proxied by rating downgrades, is likely to be a primary ex-ante indicator of a firm's future performance.

The evidence, based on portfolio sorts and cross-sectional regressions as in Fama and French (2008), shows that the profitability of strategies based on price momentum, earnings momentum, credit risk, dispersion, idiosyncratic volatility, asset growth, and capital investments is concentrated in the worst-rated stocks. Their profitability disappears when firms rated BB+ or below are excluded from the investment universe. Strikingly, these low-rated firms represent only 9.7% of the market capitalization of rated firms. Yet credit risk is not merely a proxy for size or illiquidity. Results from double sorts on rating and size (or illiquidity) show that the anomalies are reasonably robust across size (and illiquidity) groups. The results also suggest that the profitability of the above anomaly-based trading strategies is generated almost entirely by the short side of the strategy among the worst-rated firms. The value effect is also significant only among low-rated stocks. The accruals strategy is an exception. While more profitable among low-rated firms, it is robust across all credit risk groups.

[2] Our analysis uses S&P entity ratings, which are based on the firm's overall ability to service its financial commitments. The Data section provides more details about the S&P definition of a company's rating.

The profitability of the price momentum, earnings momentum, credit risk, dispersion, idiosyncratic volatility, and capital investments anomalies derives exclusively from periods of financial distress. None of these strategies is profitable when periods around credit rating downgrades are excluded from the sample. In contrast, the value anomaly derives most of its profitability during stable or improving credit conditions from long positions in low-rated stocks. Accruals is again an exception. It is profitable during deteriorating, stable, and improving credit conditions.

The distinct patterns of the accruals and value effects suggest that these effects emerge from different economic premises. Accruals are based on managerial discretion about the desired gap between net profits and operating cash flows and this target gap appears insensitive to credit conditions. The value effect emerges from long positions in low-rated firms that survive financial distress and realize relatively high subsequent returns.

All other anomalies derive their profitability from low-rated firms experiencing falling stock prices during periods of financial distress. We find that financial distress causes these anomalies' conditioning variables for the low-rated stocks to take extreme values, which in turn puts these distressed low-rated stocks on the short side of the trading strategies. These distressed stocks subsequently realize extremely low returns thus producing the anomalous profits from the short side of the trading strategy. Financial distress thus provides the link between the anomalies' conditioning variables and the subsequent profitability of the anomaly-based trading strategy.

The paper proceeds as follows. The next section describes the data. Section 2 discusses the methodology. Section 3 presents the results and section 4 concludes.

1. Data

The full sample consists of the intersection of all US firms listed on NYSE, Amex, and Nasdaq with available monthly returns in the Center for Research in Security Prices (CRSP) and monthly Standard & Poor's (S&P) Long-Term Domestic Issuer Credit Rating available on Compustat North America or S&P Credit Ratings (also called RatingsXpress) on WRDS. The total number of rated firms with available return observations is 4,953 with an average of 1,931 per month. There are 1,232 rated firms in October 1985, when the sample begins and 2,196 in December 2008 when the sample ends. The maximum number of firms, 2,497, is recorded in April 2000. The asset-pricing anomalies we study require data on stock return, credit rating, and a variety of equity characteristics. The sample size changes based on the conditioning variable for each anomaly.[3]

A firm's long term issuer credit rating is provided in both Compustat and RatingsXpress directly by S&P. As defined by S&P, the "long-term issuer credit rating is a current opinion of an issuer's overall creditworthiness, apart from its ability to repay individual obligations. This opinion focuses on the obligor's capacity and willingness to meet its long-term financial commitments (those with maturities of more than one year) as they come due." We transform the S&P ratings into numeric scores. Specifically, 1 represents a AAA rating and 22 reflects a D rating.[4] Hence, a higher numeric score reflects higher credit risk. Numeric ratings of 10 or below ($BBB-$ or better) are considered investment grade, and ratings of 11 or higher ($BB+$ or worse) are labeled high-yield or non-investment grade.

Some stocks in our sample are delisted during the holding period. Delisting returns from CRSP are used whenever stocks are delisted. We have checked that our results are not driven by the delisting returns either by setting the delisting returns to zero or by eliminating the

[3]Details about the number of firms based on each conditioning variable are available upon request.

[4]The entire spectrum of ratings is as follows: $AAA = 1$, $AA+ = 2$, $AA = 3$, $AA- = 4$, $A+ = 5$, $A = 6$, $A- = 7$, $BBB+ = 8$, $BBB = 9$, $BBB- = 10$, $BB+ = 11$, $BB = 12$, $BB- = 13$, $B+ = 14$, $B = 15$, $B- = 16$, $CCC+ = 17$, $CCC = 18$, $CCC- = 19$, $CC = 20$, $C = 21$, $D = 22$.

delisting returns from the sample. Stocks priced less than a dollar at the beginning of the month are excluded from the analysis.

Summary statistics are reported in Table 1. Each month t, all stocks rated by S&P are sorted into terciles based on their credit rating. For each tercile, we compute the cross-sectional median characteristic for month $t+1$. Table 1 reports the time-series average of the monthly median cross-sectional characteristic. The best-rated stock tercile (C1) has an average rating of A+, the medium-rated tercile (C2) has an average rating of BBB-, and the worst-rated tercile (C3) has an average rating of B+.

Worse-rated firms tend to be smaller. The average market capitalization of the best-rated stocks is $3.30 billion, while that of the worst-rated is $0.35 billion. The book-to-market (BM) ratio increases monotonically from 0.52 in C1 to 0.64 in C3. The average stock price decreases monotonically from $38.07 in C1 to $12.47 in C3. Institutions hold on average 59% of the shares outstanding of the best-rated stocks (an average holding of $1.95 billion) and 49% of those of the worst-rated stocks (an average holding of $0.17 billion).

The worst-rated firms are considerably less liquid than the best-rated firms. The average monthly dollar trading volume decreases from $284 million for the best-rated to $53 million for the worst-rated NYSE/Amex stocks and from $73 million for the best-rated to $40 million for the worst-rated Nasdaq stocks. The Amihud (2002) illiquidity measure is 0.02 and 0.12 for the best-rated NYSE/Amex and Nasdaq stocks, respectively. For the lowest-rated stocks the illiquidity measure is 0.44 and 0.48 for NYSE/Amex and Nasdaq, respectively. This measure is computed as the absolute return per dollar of daily trading volume:

$$ILLIQ_{it} = \frac{1}{D_{it}} \sum_{t=1}^{D_{it}} \frac{|R_{itd}|}{DVOL_{itd}} * 10^7, \tag{1}$$

where R_{itd} is the return and $DVOL_{itd}$ is the dollar trading volume of stock i on day d in month t, and D_{it} is the number of days with positive $DVOL_{itd}$ for stock i in month t (a minimum of 10 days is required).

Next, we analyze several variables that proxy for uncertainty about a firm's future fundamentals. In particular, the average number of analysts following a firm decreases monotonically from 14 for the highest- to five for the lowest-rated stocks. Analysts' revisions of earnings per share (EPS) forecasts are negative and much larger in absolute value for the low-versus-high rated stocks. Standardized unexpected earnings (SUE)[5] decrease monotonically from 0.58 for C1 to 0.14 for C3 stocks. Dispersion in analysts EPS forecasts increases from 0.03 in C1 to 0.11 in C3 stocks. Leverage, computed as the book value of long-term debt to common equity, increases monotonically from 0.54 for C1 to 1.17 for C3 stocks.

Worse-rated stocks have more systematic risk and earn lower risk-adjusted returns than better-rated stocks. Market betas increase monotonically from 0.82 for the highest-rated to 1.31 for the lowest-rated stocks. The Fama-French SMB betas also increase from -0.06 for C1 to 0.82 for C3 stocks. However, the CAPM alphas decrease from 0.30% per month for C1 to -0.60% for C3 stocks, while the Fama-French alphas decrease from 0.11% to -0.80%. This is the credit risk puzzle – one of the anomalies we address in this paper.

2. Methodology

Our analysis of anomalies is based on portfolio sorts and cross-sectional regressions. Focusing on the former, portfolio returns are value-weighted as well as equally weighted across stocks. Equally weighted portfolio returns can be dominated by tiny (microcap) stocks which account for a very low fraction of the market capitalization but a vast majority of the stocks in the extreme anomaly-sorted portfolios. On the other hand, value-weighted returns can be dominated by a few big stocks. Separately, either case could result in an unrepresentative picture of the importance of an anomaly. Thus we present both.

[5]SUE is the difference between current quarterly EPS and EPS reported four quarters ago, divided by the standard deviation of quarterly EPS changes over the preceding eight quarters.

Portfolio returns and cross-sectional regressions are based on size- and BM-adjusted stock returns, as in Fama and French (2008).[6] In particular, using all stocks in CRSP, we form 5×5 independently sorted size and BM portfolios based on NYSE size and BM quintile cutoffs as of December of year t-1. Value-weighted monthly portfolio returns are then calculated for each of the 25 size- and BM-sorted portfolios from July of year t to June of year t+1. We then subtract the monthly return of the matching size and BM portfolio from each individual monthly stock return to obtain the stock's size- and BM-adjusted return.

We perform the analysis across all rated stocks as well as within subsets based on credit ratings and market capitalization. In particular, we implement the analysis within credit rating terciles (C1: best-rated, C2: medium-rated, C3: worst-rated), as well as within microcap, small, and big firms. The anomalies are also studied within subsamples based on an independent sort by the three size and three credit rating groups. Following Fama and French (2008), microcap firms are those with market cap below the 20^{th} percentile of NYSE firms, measured as of June of the prior year. Small firms are those between the 20^{th} and 50^{th} percentile and big firms are those above the median NYSE capitalization. We note that while microcap stocks represent 17.78% of the total number of rated stocks, they account for only 0.46% of the market capitalization of all rated stocks; small stocks comprise 27.26% of the total number of rated stocks and 3.03% of the market capitalization; big stocks represent 54.97% of the total number of rated stocks and an overwhelming 96.51% of the market capitalization. Fama and French (2008) report that microcap stocks account for 3.07%, small stocks for 6.45%, and big stocks for 90.48% of the market capitalization of all CRSP stocks. Our percentages are different because large firms are more likely to be rated.

Our portfolio formation methodology is consistent across anomalies. Each month t, stocks are sorted into quintile portfolios on the basis of the anomaly-specific conditioning variable. P1 (P5) denotes the portfolio containing stocks with the lowest (highest) value of

[6] We have checked that our results are robust to using raw, rather than size- and BM-adjusted returns. In fact, the raw anomaly profits are stronger and are again concentrated in high credit risk firms.

the conditioning variable. Each anomaly-based trading strategy involves buying one of the extreme portfolios P1 (or P5), selling the opposite extreme portfolio P5 (or P1), and holding both portfolios for the following K months. Each quintile portfolio return is calculated as the equally or value-weighted average return of its constituent stocks. When the holding period, K, is longer than a month, the monthly return is based on an equally weighted average of portfolio returns from strategies implemented in the prior K months. While this methodology applies to all strategies, strategies differ with respect to their conditioning variable and/or their holding period, consistent with the literature on each anomaly.

The price momentum strategy is constructed as in Jegadeesh and Titman (1993). Stocks are sorted on their cumulative return over the formation period (months $t-6$ to $t-1$). The momentum strategy involves buying the winner portfolio (P5), selling the loser portfolio (P1), and holding both positions for six months (months $t+1$ to $t+6$). We skip a month between the formation and holding periods to avoid the potential impact of short-run reversal.

The earnings momentum strategy conditions on SUE, based on the latest quarterly EPS announced over months $t-4$ to $t-1$. The strategy involves buying the highest-SUE portfolio (P5), selling the lowest-SUE portfolio (P1), and holding both portfolios for six months.

The credit risk strategy conditions on the prior month credit rating. It involves buying the best-rated (P1), selling the worst-rated (P5) portfolio, and holding both for a month.

As in Diether et al. (2002), the dispersion strategy conditions on the prior month standard deviation of analysts' EPS forecasts for the upcoming fiscal year end, standardized by the absolute value of the mean forecast. Observations based on less than two analysts are excluded. The strategy involves buying P1 (lowest dispersion), selling P5 (highest dispersion), and holding them for one month.

Idiosyncratic volatility (IV) is computed as the sum of the stock's squared daily returns minus the sum of the squared daily returns on the value-weighted CRSP index, as in Campbell et al. (2001). The strategy conditions on prior month IV and involves buying P1 (lowest volatility), selling P5 (highest volatility), and holding both for one month.

Following Cooper et al. (2008), the asset growth anomaly conditions on the percentage change in total assets from December of year $t-2$ to December of year $t-1$. The strategy involves buying P1 (lowest growth), selling P5 (highest growth), and holding both from July of year t through June of year $t+1$.

As in Titman et al. (2004), the capital investments strategy conditions on the ratio of capital expenditures for year $t-1$ to the amount of property, plant, and equipment as of December of year $t-2$. It involves buying P1 (lowest investments), selling P5 (highest investments), and holding both positions from July of year t through June of year $t+1$.

Accruals is computed following Sloan (1996) using quarterly Compustat data. There is a four-month lag between formation and holding periods to ensure that all accounting variables to calculate accruals are in the investor's information set. The strategy involves buying P1 (lowest accruals), selling P5 (highest accruals), and holding them for 12 months.

As in Fama and French (1992), the value strategy conditions on the BM ratio as of December of year $t-1$. It involves buying P5 (highest BM: value stocks), selling P1 (lowest BM: growth stocks), and holding both portfolios from July of year t to June of year $t+1$.

3. Results

One concern we address upfront is whether the sample of rated firms is representative. For each anomaly, we compute the fraction of market capitalization captured by our sample of rated firms relative to the entire CRSP sample. Our sample captures 89.35% of market capitalization of the overall CRSP sample for price momentum; 90.72% for earnings momentum; 90.44% for the dispersion anomaly; 89.30% for the idiosyncratic volatility anomaly; 88.64% for the asset growth anomaly; 88.60% for the investments anomaly; 86.84% for the accruals anomaly; and 88.43% for the value anomaly. On average we capture about 89.04% of the overall CRSP market capitalization, suggesting that our sample of rated firms is reasonably representative. In addition, we compare anomaly profits in rated firms (Table 2) and in all CRSP firms (Table 2A in the Appendix). Anomaly profits are comparable, suggesting that our sample of rated firms adequately represents the overall CRSP universe. This paper focuses on credit rating as a proxy for credit conditions, as the rating provides us with a publicly available, non-model-specific, measure of credit risk and financial distress.[7]

Table 2 presents for each anomaly monthly returns for the extreme portfolios, P1 and P5, as well as return differentials, P5-P1 or P1-P5, as noted at the top of each column. Panel A exhibits the size- and BM-adjusted equally weighted portfolio returns, while Panel B presents the corresponding value-weighted returns.

We first examine anomaly-based profitability for all rated firms based on equally weighted returns. The price momentum strategy yields a winner-minus-loser return of 100 basis points (bps) per month with the loser stocks earning -74 bps and the winner stocks earning 27 bps. The monthly profits are 44 bps for the earnings momentum strategy, 71 bps for the credit risk strategy, 62 bps for the dispersion strategy, 81 bps for the idiosyncratic volatility strategy, 54 bps for the asset growth strategy, 45 bps for the capital investments strategy, and 27 bps for the accruals strategy. All these anomalies' profits are statistically significant. The value strategy delivers the lowest return – a statistically insignificant -15 bps per month. Given that we use size- and BM-adjusted returns, it is not surprising that in the overall sample the value strategy's profits are indistinguishable from zero. Except for the value effect, all trading strategies are profitable in the overall sample of rated firms.

Next, we examine trading strategies implemented within microcap, small, and big firms.

[7]In Table 2A, we use Altman's Z-score instead of credit ratings to proxy for financial distress. One caveat with using Altman's Z-score is that it uses past returns and is thus somewhat endogenous. Moreover, not all firms have accounting data in Compustat to compute Z-scores, so the reduction in number of firms from Z-score is even larger. We find ratings to be a much better filter than Z-scores when isolating the firms driving most anomalies. In any case, we show in Figure 2 that the Z-score and downgrades are highly correlated.

The profits of both earnings and price momentum diminish monotonically with market capitalization. For microcap stocks, the monthly profits are 135 bps for the earnings momentum strategy and 187 bps for the price momentum strategy. The earnings momentum strategy yields 68 bps among small stocks and 14 bps among big stocks, while the price momentum strategy generates 103 bps for small stocks and 57 bps for big stocks. The P1 portfolio (the short side of the strategy) leads to the observed differences across the size-sorted portfolios. Focusing on earnings momentum, P1 earns −99, −41, and −4 bps per month for microcap, small, and big stocks, respectively. In contrast, the long side of the strategy (P5) delivers earnings momentum returns of 37, 27, and 10 bps per month for the corresponding size groups. For price momentum, P1 returns −144, −76, and −34 bps per month and P5 returns 43, 27, and 23 bps per month for microcap, small, and big stocks. Thus, a large portion of the anomaly profit differences across size groups derives from the short side of the strategy.

Likewise, the credit risk, dispersion, idiosyncratic volatility, asset growth, and capital investments strategies deliver profits that monotonically diminish across the size groups. Once again, the return differential between microcap and big stocks is larger on the short side than on the long side of the strategy. For instance, for the asset growth strategy, the return differential between microcap and big stocks is 109 bps on the short side and 32 bps on the long side. The accruals strategy yields 31, 38, and 21 bps per month in microcap, small, and big firms. Among big stocks only the price momentum, asset growth, and accruals-based trading strategies are profitable at the 5% level.

Since our objective is to examine the impact of credit risk on anomalies, we next partition the sample into best-rated (C1), medium-rated (C2), and worst-rated (C3) stocks. The evidence shows that the impact of credit conditions is striking. For instance, the price momentum strategy' profits are 26, 41, and 193 bps per month, while the asset growth strategy' profits are 15, 26 and 76 bps in best-, medium-, and worst-rated stocks, respectively.

Among best-rated (C1) firms, no strategy (except accruals, which earns statistically significant 14 bps per monthly overall and among big stocks) provides significant profits. Among medium-rated (C2) stocks, only the asset growth and accruals strategies are profitable, and even these two are not profitable among microcap and small stocks. None of the other strategies displays significant profits in the C1 and C2 subsamples.

Remarkably, all strategies (except value) are profitable among low-rated (C3) stocks. The two highest profits are earned by the price momentum strategy in low-rated microcap stocks (262 bps per month) and in low-rated small stocks (184 bps). Even big low-rated stocks deliver a significant (at the 10% level) price momentum profit of 81 bps. All trading strategies are profitable among low-rated microcap and small stocks. The only exception is the dispersion strategy which is profitable only at the 10% level in small stocks. Among low-rated big stocks, only the idiosyncratic volatility, accruals and value strategies are profitable. The value strategy provides statistically and economically significant profits (103 bps per month) only in low-rated big stocks. Note that although returns are adjusted by the 'unconditional' returns of their matching size- and BM portfolios, conditioning on credit risk, the value effect is still significant in certain subsamples.

Differences in profitability between low- and high-rated firms are economically and statistically significant at the 5% level for almost all trading strategies (unreported results). The only exceptions are the dispersion strategy, for which this difference is significant at the 10% level, and the value strategy, for which it is not statistically significant.

We should point out that despite the various sorting procedures in Table 2, the results are based on well populated portfolios. We have an average of 1,931 rated firms per month which leaves an average of 129 firms in each of the 3×5 credit rating and anomaly-sorted portfolios. The main conclusion that anomaly profits are driven by high credit risk firms is based on these very well populated portfolios. When we further subdivide into three size groups in parts of Table 2, we get an average of 43 stocks per portfolio (the finest sort in the paper). While this double sort on credit risk and size checks the importance of firm size versus ratings for the anomalies, it is not crucial to our main conclusions.

Panel B of Table 2 is the value-weighted counterpart of Panel A. Indeed, the value-weighted profits are often lower, suggesting a role for small firms. For instance, the overall price momentum profits in Panel B are 64 bps compared to 100 bps in Panel A. Nevertheless, value-weighted profits generally increase with worsening credit rating and are typically significant only among low-rated firms.

Quite prominent in the results is the overwhelming impact of the short side of the strategies. To illustrate, consider the anomaly profits of the small rated stocks in Panel B – for price momentum the long side earns 27 bps and the short side 79 bps. Recall that all returns in Table 2 are size- and BM-adjusted. Thus, these returns should be zero as long as it is the size and value characteristics that drive returns. However, both the long and short sides of the strategies earn non-zero returns with the short side earning substantially higher returns. For instance, among small stocks, the returns of the long and short positions of the earnings momentum strategy are 20 and 42 bps respectively; for credit risk they are four and 64 bps; for dispersion they are 38 and 39 bps; for idiosyncratic volatility they are nine and 72 bps; for asset growth they are three and 58 bps; and for capital investments nine and 67 bps.

We note that the short side of the anomaly-based trading strategies is also more profitable for the overall sample of CRSP firms, not just for rated firms. Panel B of Table 2A (in the Appendix) provides the value-weighted size- and BM-adjusted returns for the trading strategies. For all firms, the long side of the price momentum strategy returns 28 bps while the short side returns 63 bps. The returns of the long and short positions of the earnings momentum strategy are 28 bps and 54 bps, respectively; for credit risk they are one and 89 bps; for dispersion 16 and 41 bps; for idiosyncratic volatility eight and 135 bps; for asset growth eight and 35 bps, and for capital investments the payoffs are three and 28 bps. In every case, the short positions are more profitable and often the difference between the profitability of the short and the long side is substantial.

Table 2 provides results from double sorts on size and credit ratings. It shows that even after controlling for firm size, it is credit ratings (which proxy for economic fundamentals) that drive the anomaly profits. We have considered another double sort on illiquidity and credit ratings and find similar results (unreported). The results suggest that credit ratings are not simply proxies for firm size or illiquidity.

Let us summarize the takeaways from Table 2: (i) the trading strategies' profits diminish with improving credit ratings; (ii) the short side of the strategy is the primary source of anomaly profits; (iii) the accruals strategy is robust across the credit rating groups; (iv) trading strategies are remarkably robust for the small and microcap stocks. The evidence suggests that credit risk plays an important role in explaining the source of anomaly profits.

To further pinpoint the segment of firms driving the anomalies' profits, we document in Table 3 the equally weighted size- and BM-adjusted profits for various credit rating subsamples as we sequentially exclude the worst-rated stocks from our investment universe. The starting point is the full sample with all ratings (AAA-D) – profits are identical to those exhibited in Panel A of Table 2. Table 3 shows that the profitability of the anomalies declines as the lowest-rated stocks are excluded from the sample. The earnings momentum strategy profits monotonically diminish from 44 bps in the overall sample to a statistically insignificant 17 bps, while the price momentum strategy profits decline from 100 to 36 bps, as firms rated BB- or below are eliminated. The asset growth strategy is reduced to an insignificant 19 bps when firms rated BB+ and below are removed. The accruals strategy is an exception, remaining statistically significant throughout. Except for accruals, the profitability of all other anomalies disappears when firms rated BB+ and below are excluded. Remarkably, the excluded firms comprise only 9.7% of our sample based on market capitalization.[8]

Thus far, the analysis has focused exclusively on credit rating levels. The overall evidence

[8]While we have presented the equally weighted results, the value-weighted results show that an even smaller fraction of the low-rated firms drive the anomaly profits.

suggests that credit risk has a major impact on the cross-section of stock returns in general and anomalies in particular. Specifically, profitability typically increases with worsening credit conditions. Moreover, the short side of the strategy generates most of the profits.

Studying the impact of credit rating changes is our next task. Rating changes have already been analyzed in empirical asset-pricing. In particular, Hand et al. (1992) and Dichev and Piotroski (2001) show that bond and stock prices fall sharply following rating downgrades, while rating upgrades play virtually no role. However, the implications of credit rating downgrades for all market anomalies have not yet been explored. Below we show that credit rating downgrades are indeed crucial for understanding the source of anomaly profits.

3.1. Credit rating downgrades

Table 4 presents the number and size of rating downgrades, as well as returns around downgrades, for the credit risk-sorted terciles. Downgrades are more frequent and larger in magnitude among lower-rated stocks. The number of downgrades in the highest-rated group is 2,485 (8.94 per month on average), while the corresponding number for the lowest-rated group is much larger at 3,147 (11.32 per month). The average size of a downgrade is 2.14 notches among the lowest-rated and 1.75 notches among the highest-rated stocks.

The price impact around downgrades is considerably larger for low-versus-high rated stocks. For example, the return during the month of downgrade averages -1.15% for the best-rated stocks, while it is a rather dramatic -14.08% for the worst-rated. In the six-month period before and after the downgrade, the lowest-rated stocks deliver average returns of -25.99% and -16.69%. The corresponding returns for the highest-rated stocks are 2.09% and 5.39%. In the year before and after the downgrade, the returns for the worst-rated stocks are -32.44% and -13.26%, while for the best-rated stocks they are 5.53% and 11.86%.

Table 4 also documents that, following downgrades, delistings are much more likely among lower-rated stocks. Over 6, 12 and 24 months after a downgrade, the numbers of delistings among the highest-rated stocks are 63, 96 and 154, while among the lowest-rated stocks the corresponding numbers are 289, 484 and 734. The probability of delisting of a low-rated firm over 6 months following a downgrade is 9.2% (289 delistings out of 3,147 downgrades), while it is only 2.5% (63 delistings out of 2,485 downgrades) for a high-rated firm.

We have also examined downgrades during expansions and recessions as well as during months with positive and negative market returns. We have also studied pairwise correlations of downgrades. The results (available upon request) suggest that downgrades tend to be idiosyncratic events and do not appear to cluster together.

Overall, the lowest-rated stocks experience significant price drops around downgrades, whereas the highest-rated stocks realize positive returns. This difference in responses is further illustrated in Figure 1. Low-rated stocks deliver negative returns over six months following the downgrade. Could these major cross-sectional differences in returns around downgrades drive the profitability of anomalies? We show below that the answer is "Yes."

3.2. Impact of downgrades on anomalies

Table 5 repeats the analysis from Table 2 but focusing on periods of stable or improving credit conditions. Specifically, for each downgraded stock, we exclude observations from six months before to six months after a downgrade. Of course, our analysis does not intend to constitute a real-time trading strategy as we look ahead when discarding the six-month period prior to a downgrade. Our objective here is to merely compare the anomaly profits in periods of improving (or stable) versus deteriorating credit conditions.[9] Panels A and B of Table 5 present the equally weighted and value-weighted size- and BM-adjusted returns for each strategy.

[9]Note that rating agencies often place firms on a credit watch prior to a downgrade. Vazza et al. (2005) document that 64% of the firms placed on a negative credit watch subsequently experience a downgrade. This suggests that the downgrade event is largely predictable.

Panel A shows that, except for accruals and value, the economic and statistical significance of all trading strategies diminishes strongly when only periods of stable or improving conditions are considered. Price momentum, credit risk, dispersion, idiosyncratic volatility, and capital investments are unprofitable overall, as well as in all credit risk- and size-sorted subsamples. Earnings momentum is unprofitable overall and in all subsamples, except for low-rated microcap stocks. Only the asset growth strategy profits are statistically significant in the overall sample, although they drop from 54 bps (Table 2) to 27 bps (Table 5) per month when periods around downgrades are removed.[10] Even the asset growth profitability disappears from all, but the low-rated microcap and the medium-rated big stocks.

The value strategy, on the other hand, becomes profitable at 26 bps per month (t-statistic of 2.53) when periods around downgrades are eliminated, as opposed to an insignificant −15 bps over all periods. The value strategy generates significant 61 bps among low-rated and 85 bps among big low-rated stocks. Note that although returns are adjusted by the 'unconditional' returns of their matching size and BM portfolios, value stocks earn higher returns when conditioning on non-distress periods. That is low-rated value stocks that survive financial distress earn higher returns than otherwise similar value stocks.

The accruals strategy is robust in periods of improving or stable credit conditions. For instance, across all stocks, the accruals strategy returns 32 bps per month (as opposed to 27 bps in Table 2). The strategy results in profits of 52, 32, and 24 bps per month for the microcap, small, and big firms, respectively (as compared to 31, 38, and 21 bps in Table 2).

The value-weighted portfolio returns (Panel B) display similar patterns as the equally weighted ones (Panel A). Apart from accruals and value, only the asset growth strategy is profitable and that too only in low-rated microcap and medium-rated big stocks. All other strategies provide insignificant returns in all size- or credit rating-sorted subsamples.

[10] Collins and Kim (2011) suggest that a significant portion of the asset growth anomaly can be ascribed to mergers, and this may be the reason why the asset growth strategy is sometimes profitable.

Recall from Table 2 that, except for value and accruals, a large fraction of the strategies' profitability is due to the short side. Here, the short side usually generates negative size- and BM-adjusted returns. To illustrate, consider the small rated stocks (Panel B of Table 5). The short side of the price momentum strategy returns −23 bps compared to 79 bps in Panel B of Table 2. The long side generates 46 bps. Similarly, for earnings momentum the short and long sides yield −24 and 38 bps. The returns of the short and long sides are −10 and six bps for credit risk; −48 and 47 bps for dispersion; −16 and 19 bps for idiosyncratic volatility; −14 and 46 bps for asset growth; and two and 31 bps for capital investments. The returns of the short side are clearly much smaller than when the downgrade period is included.

In the case of the value anomaly, a larger fraction of the profits derives from the long side of the strategy. The short and long sides of the value strategy yield −9 and 31 bps across all rated stocks and 28 and 66 bps within low-rated stocks, respectively.

The distinct patterns exhibited by the accruals and value strategies suggest that these effects are based on different economic fundamentals. All other strategies derive their profits from short positions in low-rated stocks that realize strongly negative returns around financial distress. The strategies are no longer profitable in stable or improving credit conditions.

To further investigate the source of the similarities between anomalies and the distinct patterns exhibited by the value and accruals anomalies, we next examine the anomalies' conditioning variables around downgrades. Figure 1 illustrates, for each anomaly, the average conditioning variable from 36 months before to 36 months after a downgrade event. The first panel shows the equally weighted average monthly returns for the high-rated (C1) and the low-rated (C3) stocks around downgrades. The monthly returns are negative for the C3 stocks from around 18 months before the downgrade to nine months after. The average return in the month of downgrade is as low as −14%. Therefore, these distressed low-rated stocks are likely to end up on the short side of the price momentum strategy. In contrast, the returns of C1 stocks are mostly positive around downgrades. The second panel of Figure 1 shows that the average SUE for C3 stocks becomes increasingly negative from about 15 months prior to a downgrade, reaching a minimum of minus one in the downgrade month, and remains negative until about 12 months after the downgrade. Distressed low-rated stocks are thus also likely to end up on the short side of the earnings momentum strategy. The SUE of C1 stocks remain positive throughout the downgrade period. Dispersion in analysts' EPS forecasts, idiosyncratic volatility, asset growth, and capital investments for C3 stocks increase dramatically around downgrades. Thus, distressed low-rated stocks are also more likely to end up on the short side of the dispersion, idiosyncratic volatility, asset-growth, and capital investments-based trading strategies.

Figure 1 illustrates that financial distress causes the anomalies' conditioning variables for the low-rated stocks to take extreme values, which in turn puts these distressed low-rated stocks on the short side of the trading strategies. These distressed stocks subsequently realize extremely low returns thus producing the anomalous profits from the short side of the trading strategy. Financial distress thus provides the link between the anomalies' conditioning variables and the subsequent profitability of the anomaly-based trading strategy.

In contrast, Figure 1 reveals no discernible pattern in accruals around downgrades for either high- or low-rated stocks. Accruals are partially based on managerial discretion about the desired gap between net profit and cash flows from operation and that target does not seem to depend upon credit conditions.

In the case of the value strategy, Figure 1 shows that the BM ratio of C3 stocks increases substantially around downgrades, reaching a maximum of over 1.8. However, the value strategy involves buying the high BM stocks. Thus, unlike the other strategies which are likely to go short the distressed low-rated stocks, the value strategy is likely to go long these low-rated stocks in financial distress. The value strategy's bet is that these high BM stocks will survive financial distress and provide high subsequent returns. If such firms get delisted, they realize abysmally low returns and the strategy could become unprofitable. Instead if the firm rebounds, the strategy would be profitable. Indeed, we find the value strategy is more profitable during stable or improving credit conditions. The value effect seems to emerge from long positions in low-rated firms that survive financial distress and subsequently realize relatively high returns. Thus even though returns are adjusted for the unconditional returns of matching size and BM portfolios, the value firms that survive financial distress generate much higher returns than otherwise comparable value stocks and produce the high abnormal returns from the long side of the strategy.

3.3. Credit rating downgrades and financial distress

Next we check whether downgrades indeed capture financial distress and deteriorating economic fundamentals by examining alternative measures of distress around downgrades.

First, recall from Figure 1 that the most negative return, −14%, occurs during the month of downgrade suggesting that the downgrade is informative or potentially precipitates selling by institutions that cannot hold low-rated stocks. Further, Figure 2 shows that the Altman's Z-score of C3 firms falls drastically and reaches a minimum around downgrades. Unreported analysis of industry-adjusted financial ratios further confirms that company fundamentals deteriorate drastically around downgrades. Low-rated firms experience a considerable drop in their profit margin, interest coverage, and asset turnover around downgrades.

Finally, covenant violations increase substantially around downgrades. Data on covenant violations, provided on Amir Sufi's webpage, are compiled by Nini et al. (2009) from actual occurrences of violations reported in company 10-K or 10-Q filings. The monthly percentage of firms with covenant violations for our sample averages 0.84%/2.42%/6.57% for C1/C2/C3 firms. Figure 2 shows that the percentage of covenant violations in C3 firms reaches a maximum of 26.80% around downgrades. In contrast, the maximum percentage of covenant violations in C1 firms is 5.43% and occurs more than 18 months after a downgrade. The figure confirms that low-rated firms face real financial problems around downgrades.

To ensure that our financial distress measure is not merely capturing the impact of past returns, we repeat the analysis of Table 2, sorting stocks on their past return-adjusted ratings, rather than on raw ratings. The past return-adjusted rating is the intercept and residual from monthly cross-sectional regressions of rating levels on past six-month returns. The results (available upon request) are very similar to those in Table 2. Furthermore, to check that the downgrade itself has a large impact on the profitability of anomalies that is independent of past returns, we replicate the results of Table 5 using past return-adjusted rating changes. A past return-adjusted rating change, computed as the intercept and residual from regressing rating changes on past six-month returns, that is higher than two standard deviations above the mean is considered a downgrade and is used to identify periods of financial distress. The results (available upon request) are very similar to those in Table 5.

In sum, the evidence points to financial distress as the determinant of falling stock prices around downgrades. Financial distress also causes the anomalies' conditioning variables of low-rated stocks to go to extremes, putting these distressed stocks on the short side of the trading strategies. These distressed stocks subsequently realize extremely low returns generating the anomalous profits from the short side of the strategy. Financial distress provides the link between the anomalies' conditioning variables and their subsequent profitability.

3.4. Regression analysis

In this section, we scrutinize the asset-pricing anomalies using regression analysis. In particular, each month we run the following cross-sectional regressions:

$$r_{it}^{*} = a_t + b_t \, Z_{i,t-lag} + e_{it}, \tag{2}$$

where r^*_{it} is the size- and BM-adjusted return[11] on stock i in month t and $Z_{i,t-lag}$ is the value of the conditioning variable for stock i underlying a specific anomaly, lagged as prescribed by the corresponding anomaly. Specifically, momentum uses the cumulative past six-month returns as the independent variable after a one-month lag. SUE are based on the last reported EPS over the past 4 months. Credit risk, dispersion, and idiosyncratic volatility condition on variables from the past month. For the asset-growth, investments, and value anomalies, we use conditioning variables as of December of year $t-1$ for returns between July of year t to June of year $t+1$. Returns of month t are regressed on quarterly accruals 4 months prior.

Each column in Panel A of Table 6 reports the Fama-MacBeth coefficient estimates and t-statistics from a separate univariate regression of returns on a past anomaly variable estimated across all rated stocks. The regression-based evidence is consistent with our results from portfolio sorts, reported in Table 2. In particular, the coefficient estimates for past returns (0.86) and SUE (0.11) are positive and significant, consistent with the price and earnings momentum anomalies. The coefficient estimates for credit risk (-0.06), analyst dispersion (-0.31), idiosyncratic volatility (-8.76), asset-growth (-0.47), capital investments (-0.57), and accruals (-3.89) are negative and significant. Given that returns are size- and BM-adjusted, it is not surprising that the BM coefficient is insignificant in the overall sample.

Next we introduce dummy variables for the period around downgrades:

$$r^*_{it} = a_t + b_t\, Z_{i,t-lag} + d_{t,IG}\, D_{IG} + d_{t,NIG}\, D_{NIG} + e_{it}, \qquad (3)$$

where dummy variables D_{NIG} and D_{IG} take the value of one over a period that extends from six months prior to six months after a downgrade for non-investment and investment grade stocks, respectively. D_{NIG} and D_{IG} take the value of zero outside the downgrade period.

We start with a dummy for non-investment grade stocks only. The coefficient on the

[11] We have also used risk-adjusted return (using Fama-French factors) as the dependent variable as in Brennan et al. (1998) and the results are quite similar to those reported.

dummy variable is significantly negative across the board, consistent with the negative returns realized around downgrades. The regression analysis suggests that only the earnings momentum, the asset growth, the accruals, and the value strategies are profitable. Then we consider both dummies for investment grade and non-investment grade stocks. The coefficient estimates on both dummy variables are significantly negative although for investment grade stocks the coefficient estimate is uniformly smaller in absolute value. With both dummy variables, only the asset growth, accruals, and value strategies are profitable.

Note that the coefficient for the BM ratio increases and becomes significant as the downgrade dummy variables are introduced in the regression. This indicates that the value anomaly is prominent across firms that survive financial distress. In contrast, during periods of financial distress, stock prices fall sharply and the BM ratio rises, leading to a temporally negative relation between BM and stock returns.

Overall, the regression evidence is consistent with our portfolio-based findings in Table 5. The earnings and price momentum, credit risk, dispersion, idiosyncratic volatility, and capital investments anomalies are driven by falling stock prices around downgrades. Only the accruals and value effects become stronger when periods around downgrades are removed.

Panel B, C, and D of Table 6 present the regression evidence for microcap, small, and big stocks, respectively. For microcap stocks, only the coefficients for earnings momentum and asset growth are significant in the presence of the downgrade dummies. For small stocks, the coefficients for earnings momentum and capital investments are significant, though smaller, when downgrade dummies are included. Accruals and BM are significant when downgrade periods are removed consistent with our portfolio-based results. For big stocks, only accruals and asset growth are significant in the presence of the downgrade dummies.

We next consider multivariate cross-sectional regressions combining all anomaly variables. Table 7 presents Fama-Macbeth coefficients from regressions of size- and BM-adjusted returns on various combinations of anomaly variables. Firm size is included as a control variable, but over our sample period, it is insignificant across all specifications.

Regressions (1) and (2) show that before introducing the downgrade dummies, the conditioning variables that have statistically significant (at the 5% level) coefficients are those of earnings momentum, credit risk, idiosyncratic volatility, asset growth, and accruals.[12] The dispersion anomaly is profitable only in the absence of the credit risk anomaly, consistent with Avramov et al. (2009b). The price momentum anomaly is statistically insignificant in the presence of the earnings momentum anomaly, consistent with the findings of Chordia and Shivakumar (2006) that price and earnings momentum interact. The coefficient on capital investments is insignificant in the presence of the other anomaly variables. When downgrade dummies are included, the only two profitable anomalies are accruals and value.

4. Conclusions

We document that the profitability of the price momentum, earnings momentum, credit risk, dispersion, idiosyncratic volatility, asset growth, and investments anomalies is concentrated in the worst-rated stocks. The profitability of all these anomalies disappears when firms rated BB+ or below are excluded from the sample. Remarkably, the eliminated firms represent only 9.7% of the market capitalization of rated firms. Indeed, the profitability of these anomalies is concentrated in a small sample of low-rated stocks facing deteriorating credit conditions. Moreover, a vast majority of the profitability of anomaly-based trading strategies is derived from the short side of the trade. The anomaly-based trading strategy profits are statistically insignificant and economically small when periods around credit rating downgrades are excluded from the sample. During stable or improving credit conditions, none of the above strategies delivers significant profits.

[12] Excluding other anomaly variables produces results consistent with the ones presented here.

The unifying logic of financial distress does not apply to the accruals and value anomalies. Accruals is based on managerial discretion about the desired gap between net profit and operating cash flows and this target gap does not seem to depend upon credit conditions. The value-based trading strategy is more profitable in stable or improving credit conditions. The value effect seems to emerge from long positions in low-rated firms that survive financial distress and realize high subsequent returns. Thus, the accruals and value anomalies are based on different economic fundamentals and do not emerge during periods of deteriorating credit conditions. Nor are they attributable to the short side of the trading strategy.

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Table 1

Stock Characteristics, Alphas, and Betas by Credit Rating Tercile

Each month t, all stocks rated by Standard & Poor's are divided into terciles based on their credit rating. Stocks priced below \$1 are removed. Panel A reports the average S&P numeric (and letter equivalent) rating for each group, where the numeric rating is 1=AAA, 2=AA+, ..., 21=C, 22=D. For each tercile, we compute the cross-sectional median characteristic for month $t+1$. The sample period is October 1985 to December 2008. Panel A reports the time-series average of these monthly medians. Institutional share is the percentage of shares outstanding owned by institutions. Dollar volume is the monthly dollar trading volume. Amihud's illiquidity is computed, as in Amihud (2002) (see eq. (1)). Analysts' EPS revisions is the change in mean EPS forecast since the prior month divided by the absolute value of the prior month mean EPS forecast. Standardized Unexpected Earnings (SUE) is the EPS reported this quarter minus the EPS four quarters ago, divided by the standard deviation of EPS changes over the last eight quarters. Dispersion is the standard deviation in analysts' EPS forecasts standardized by the absolute value of the consensus forecast. Leverage is the ratio of book value of long-term debt to common equity. Panel B reports CAPM and Fama and French (1993) alphas and betas from time-series regressions of the credit risk tercile portfolio excess returns on the factor returns. t-statistics are in parentheses (bold if significant at the 5% level).

Panel A: Stock Characteristics

	Rating Tercile (C1=Lowest , C3=Highest Risk)		
Characteristics	C1	C2	C3
Average S&P Letter Rating	A+	BBB-	B+
Average S&P Numeric Rating	5.55	9.64	14.39
Market capitalization (\$billions)	3.30	1.26	0.35
Book-to-market ratio	0.52	0.62	0.64
Price (\$)	38.07	26.40	12.47
Institutional share	0.59	0.61	0.49
Dollar volume - NYSE/Amex (\$ million)	284.34	147.27	53.28
Dollar volume - Nasdaq (\$ million)	73.07	84.64	39.57
Illiquidity - NYSE/Amex ($\times 10^7$)	0.02	0.05	0.44
Illiquidity - Nasdaq ($\times 10^7$)	0.12	0.19	0.48
Number of analysts	14.04	9.30	5.28
Analysts' EPS revisions (%)	-0.02	-0.11	-0.14
SUE	0.58	0.33	0.14
Dispersion in analysts' EPS forecasts	0.03	0.05	0.11
LT debt/equity	0.54	0.77	1.17

Panel B: Portfolio Alphas and Betas

	C1	C2	C3	C1-C3
CAPM Alpha (%/month)	0.30	0.21	-0.60	0.90
	(**2.96**)	(1.71)	(**-3.06**)	(**4.12**)
CAPM Beta	0.82	0.95	1.31	-0.48
	(**37.46**)	(**34.68**)	(**30.17**)	(**-10.06**)
FF93 Alpha (%/month)	0.11	-0.05	-0.80	0.91
	(1.69)	(-0.58)	(**-6.49**)	(**6.81**)
Mkt Beta	0.96	1.08	1.32	-0.37
	(**59.33**)	(**56.48**)	(**44.78**)	(**-11.42**)
SMB Beta	-0.06	0.28	0.82	-0.89
	(**-3.00**)	(**11.07**)	(**21.12**)	(**-20.88**)
HML Beta	0.41	0.60	0.47	-0.06
	(**16.47**)	(**19.95**)	(**10.24**)	(-1.16)

Table 2

Profits from Asset-Pricing Anomalies in Rated Firms

Our sample includes all NYSE, Amex, and Nasdaq stocks with available issuer credit rating on Compustat or RatingXpress. We exclude stocks priced below $1 at the beginning of the month. In addition, stocks are sorted into best- (C1), medium- (C2), and worst-rated (C3) terciles, based on prior month credit rating. Stocks are also sorted into micro, small, and big, based on the 20th and 50th size percentile bounds of all NYSE stocks listed on CRSP. Within each subsample, stocks are sorted into quintile portfolios based on the conditioning variable of each specific anomaly, as noted in the column heading. 'Momentum' refers to price momentum, 'SUE' to earnings momentum, 'Credit Risk' to the credit risk effect, 'Dispersion' to the dispersion in analysts' EPS forecasts anomaly, 'Idio Vol' to the idiosyncratic volatility effect, 'Asset Growth' to the asset growth anomaly, 'Investments' to the capital investments anomaly, 'Accruals' to the accruals anomaly, and 'BM' to the value effect. For strategies with holding periods longer than a month ($K > 1$), monthly returns are computed by weighting equally all portfolios formed over the preceding K months. The conditioning variable and holding period for each anomaly are described in the Methodology section. The line 'Strategy' specifies the long and the short position of each strategy, i.e. P5-P1 implies long P5 and short P1. t-statistics are in parentheses (bold if indicating 5% significance). Panel A/B provides the average monthly equally/value-weighted anomaly returns based on size- and BM-adjusted returns. In particular, the monthly return for each stock is measured net of the monthly value-weighted return on a matching portfolio formed on the basis of a 5×5 independent sort on size and BM using all stocks in CRSP. The sample period is October 1985 to December 2008.

Table 2 (continued)

Panel A: Equally Weighted Size- and BM-Adjusted Returns

Anomaly		Momentum	SUE	Credit Risk	Dispersion	Idio Vol	Asset Growth	Investment	Accruals	BM
Strategy		P5-P1	P5-P1	P1-P5	P1-P5	P1-P5	P1-P5	P1-P5	P1-P5	P5-P1
All Rated	P1	-0.74	-0.29	0.08	0.21	0.04	0.03	-0.04	0.01	-0.12
	P5	0.27	0.15	-0.63	-0.41	-0.78	-0.51	-0.49	-0.26	-0.27
	Strategy	1.00	0.44	0.71	0.62	0.81	0.54	0.45	0.27	-0.15
		(**4.07**)	(**3.15**)	(**3.61**)	(**2.94**)	(**2.71**)	(**4.43**)	(**2.45**)	(**3.43**)	(-1.26)
Micro Rated	P1	-1.44	-0.99	-0.12	0.10	-0.33	-0.18	-0.27	-0.27	-0.63
	P5	0.43	0.37	-0.81	-1.00	-1.16	-1.36	-1.03	-0.58	-0.49
	Strategy	1.87	1.35	0.68	1.11	0.82	1.18	0.75	0.31	0.14
		(**7.30**)	(**4.32**)	(**2.08**)	(**2.75**)	(**2.46**)	(**4.96**)	(**2.66**)	(**2.01**)	(0.31)
Small Rated	P1	-0.76	-0.41	0.02	0.36	0.10	0.07	0.02	0.05	-0.25
	P5	0.27	0.27	-0.57	-0.38	-0.65	-0.55	-0.60	-0.33	-0.27
	Strategy	1.03	0.68	0.58	0.75	0.75	0.62	0.63	0.38	-0.03
		(**3.73**)	(**3.46**)	(**2.00**)	(**2.99**)	(**2.21**)	(**3.89**)	(**2.99**)	(**3.35**)	(-0.12)
Big Rated	P1	-0.34	-0.04	0.11	0.18	0.05	0.14	0.02	0.08	-0.07
	P5	0.23	0.10	-0.33	-0.16	-0.54	-0.27	-0.22	-0.13	0.03
	Strategy	0.57	0.14	0.43	0.34	0.59	0.41	0.24	0.21	0.10
		(**2.05**)	(0.91)	(1.29)	(1.36)	(1.67)	(**2.74**)	(1.14)	(**2.56**)	(0.70)
C1 All	P1	-0.04	0.00	0.05	0.25	0.08	0.15	0.05	0.15	0.13
	P5	0.21	0.16	0.12	-0.06	0.02	-0.00	0.05	0.02	-0.07
	Strategy	0.26	0.16	-0.07	0.31	0.06	0.15	-0.00	0.14	-0.20
		(1.33)	(1.20)	(-0.94)	(1.71)	(0.28)	(1.41)	(-0.01)	(**2.30**)	(-1.13)
C1 Micro	P1	-0.32	-0.35	0.06	0.48	0.28	-0.12	-0.15	0.15	0.26
	P5	0.28	0.89	-0.03	-0.39	-0.80	0.13	-0.13	-0.10	-0.01
	Strategy	0.68	1.13	0.16	0.60	0.68	-0.35	-0.05	0.33	-2.03
		(1.53)	(1.25)	(0.44)	(0.76)	(1.35)	(-0.76)	(-0.09)	(1.02)	(-0.33)
C1 Small	P1	-0.51	-0.39	-0.02	-0.13	0.17	0.16	0.02	-0.17	-0.19
	P5	0.20	-0.04	-0.18	-0.27	-0.28	0.08	-0.05	-0.08	-0.04
	Strategy	0.72	0.35	0.16	0.08	0.45	0.08	0.09	-0.09	0.68
		(1.41)	(0.96)	(0.79)	(0.17)	(1.48)	(0.22)	(0.21)	(-0.61)	(0.74)
C1 Big	P1	0.03	0.04	0.06	0.26	0.05	0.15	0.06	0.19	0.13
	P5	0.23	0.16	0.18	0.03	0.09	0.03	0.09	0.05	0.01
	Strategy	0.20	0.12	-0.12	0.23	-0.04	0.12	-0.03	0.14	-0.12
		(1.02)	(0.88)	(-1.41)	(1.21)	(-0.15)	(1.06)	(-0.17)	(**2.15**)	(-0.72)
C2 All	P1	-0.18	-0.09	0.02	0.12	0.03	0.09	0.01	0.07	0.01
	P5	0.23	0.09	0.05	-0.06	-0.06	-0.17	-0.07	-0.12	-0.04
	Strategy	0.41	0.18	-0.04	0.18	0.09	0.26	0.09	0.19	-0.05
		(1.85)	(1.13)	(-0.38)	(0.93)	(0.36)	(**2.24**)	(0.50)	(**2.31**)	(-0.39)
C2 Micro	P1	-0.17	-0.34	0.03	-0.05	-0.45	-0.10	0.06	-0.38	-1.51
	P5	0.17	-0.20	-0.05	-0.43	-0.17	0.10	-0.01	-0.42	-0.09
	Strategy	0.37	0.05	-0.06	0.36	-0.16	-0.35	0.18	0.04	1.22
		(0.80)	(0.08)	(-0.17)	(0.59)	(-0.33)	(-0.51)	(0.30)	(0.11)	(1.20)
C2 Small	P1	-0.21	-0.16	-0.32	0.05	-0.01	-0.02	-0.08	0.08	0.00
	P5	0.21	0.19	0.03	-0.20	-0.14	-0.29	-0.24	-0.07	-0.06
	Strategy	0.42	0.35	-0.35	0.25	0.13	0.27	0.16	0.15	-0.06
		(1.80)	(1.76)	(-1.64)	(0.93)	(0.47)	(1.44)	(0.73)	(1.21)	(-0.16)
C2 Big	P1	-0.18	-0.05	0.10	0.14	0.07	0.16	0.08	0.06	0.01
	P5	0.28	0.06	0.10	0.10	-0.05	-0.13	-0.02	-0.16	0.12
	Strategy	0.46	0.11	0.00	0.04	0.12	0.30	0.10	0.22	0.11
		(1.92)	(0.65)	(0.01)	(0.16)	(0.47)	(**2.29**)	(0.58)	(**2.06**)	(0.74)
C3 All	P1	-1.55	-0.78	-0.16	0.17	-0.05	-0.08	-0.20	-0.16	-0.47
	P5	0.37	0.19	-1.06	-0.52	-1.57	-0.85	-0.98	-0.61	-0.49
	Strategy	1.93	0.97	0.90	0.69	1.51	0.76	0.78	0.45	-0.02
		(**5.59**)	(**5.17**)	(**4.43**)	(**2.62**)	(**4.47**)	(**3.68**)	(**3.26**)	(**3.34**)	(-0.10)
C3 Micro	P1	-1.95	-1.32	-0.09	-0.18	-0.25	-0.13	-0.48	-0.25	-0.75
	P5	0.67	0.08	-1.29	-1.40	-1.93	-1.55	-1.45	-0.70	-0.65
	Strategy	2.62	1.40	1.20	1.23	1.69	1.42	0.96	0.45	0.10
		(**7.83**)	(**4.09**)	(**4.04**)	(**2.72**)	(**4.86**)	(**4.36**)	(**2.55**)	(**2.34**)	(0.25)
C3 Small	P1	-1.48	-0.65	-0.06	0.36	0.14	-0.04	0.03	-0.05	-0.29
	P5	0.36	0.34	-1.04	-0.22	-1.32	-0.72	-0.92	-0.54	-0.60
	Strategy	1.84	0.99	0.98	0.58	1.46	0.69	0.95	0.48	-0.31
		(**4.56**)	(**3.81**)	(**2.91**)	(1.80)	(**3.27**)	(**2.74**)	(**3.56**)	(**2.78**)	(-1.13)
C3 Big	P1	-0.76	-0.36	-0.29	-0.14	-0.17	-0.03	-0.11	0.01	-0.59
	P5	0.04	0.04	-0.11	-0.20	-1.56	-0.49	-0.57	-0.65	0.44
	Strategy	0.81	0.40	-0.19	0.06	1.37	0.46	0.46	0.66	1.03
		(1.76)	(1.27)	(-0.46)	(0.16)	(**2.52**)	(1.51)	(1.26)	(**2.14**)	(**2.65**)

Table 2 (continued)

Panel B: Value-Weighted Size- and BM-Adjusted Returns

Anomaly		Momentum	SUE	Credit Risk	Dispersion	Idio Vol	Asset Growth	Investment	Accruals	BM
Strategy		P5-P1	P5-P1	P1-P5	P1-P5	P1-P5	P1-P5	P1-P5	P1-P5	P5-P1
All Rated	P1	-0.37	-0.12	0.05	0.10	0.02	0.19	0.06	0.11	-0.02
	P5	0.28	0.06	-0.61	-0.36	-0.57	-0.27	-0.20	-0.13	-0.12
	Strategy	0.64	0.18	0.66	0.46	0.59	0.46	0.25	0.24	-0.11
		(**2.33**)	(0.98)	(**2.21**)	(1.69)	(1.63)	(**2.43**)	(1.08)	(**2.20**)	(-1.05)
Micro Rated	P1	-1.35	-0.90	-0.13	0.02	-0.22	-0.22	-0.22	-0.22	-0.59
	P5	0.33	0.32	-0.86	-0.99	-1.18	-1.26	-1.04	-0.56	-0.54
	Strategy	1.68	1.22	0.72	1.03	0.95	1.04	0.82	0.34	0.05
		(**6.14**)	(**3.71**)	(1.93)	(**2.44**)	(**2.63**)	(**3.87**)	(**2.58**)	(1.94)	(0.11)
Small Rated	P1	-0.79	-0.42	0.04	0.38	0.09	0.03	0.04	0.07	-0.27
	P5	0.27	0.20	-0.64	-0.39	-0.72	-0.58	-0.67	-0.35	-0.31
	Strategy	1.06	0.62	0.67	0.76	0.81	0.61	0.71	0.42	-0.04
		(**3.76**)	(**3.08**)	(**2.27**)	(**2.93**)	(**2.31**)	(**3.65**)	(**3.11**)	(**3.41**)	(-0.19)
Big Rated	P1	-0.32	-0.09	0.05	0.09	0.02	0.20	0.06	0.11	-0.01
	P5	0.28	0.06	-0.44	-0.34	-0.53	-0.25	-0.16	-0.12	-0.07
	Strategy	0.59	0.15	0.48	0.43	0.55	0.45	0.21	0.23	-0.06
		(**2.12**)	(0.84)	(1.34)	(1.52)	(1.44)	(**2.29**)	(0.89)	(**2.06**)	(-0.50)
C1 All	P1	-0.06	-0.05	0.06	0.23	0.06	0.16	0.01	0.10	0.01
	P5	0.21	0.13	0.07	-0.02	-0.07	-0.03	-0.04	-0.03	-0.06
	Strategy	0.27	0.18	-0.01	0.25	0.13	0.20	0.06	0.13	-0.07
		(1.19)	(0.92)	(-0.08)	(1.00)	(0.48)	(1.01)	(0.27)	(1.15)	(-0.46)
C1 Micro	P1	-0.38	-0.41	0.10	0.49	0.29	0.03	0.02	0.15	0.26
	P5	0.11	0.84	-0.25	-0.32	-0.79	0.02	-0.15	-0.10	-0.03
	Strategy	0.57	1.27	0.41	0.47	0.70	-0.05	0.03	0.31	-1.41
		(1.21)	(1.28)	(1.02)	(0.52)	(1.19)	(-0.09)	(0.06)	(1.02)	(-0.23)
C1 Small	P1	-0.51	-0.45	-0.03	-0.19	0.16	0.18	0.11	-0.14	-0.19
	P5	0.21	-0.08	-0.15	-0.32	-0.18	0.13	-0.08	-0.05	-0.03
	Strategy	0.72	0.38	0.12	0.09	0.34	0.05	0.20	-0.09	0.65
		(1.38)	(1.02)	(0.59)	(0.19)	(1.10)	(0.13)	(0.46)	(-0.58)	(0.71)
C1 Big	P1	-0.06	-0.04	0.06	0.23	0.06	0.16	0.01	0.10	0.01
	P5	0.21	0.13	0.07	-0.02	-0.07	-0.03	-0.04	-0.03	-0.05
	Strategy	0.27	0.17	-0.02	0.25	0.13	0.20	0.05	0.13	-0.06
		(1.18)	(0.90)	(-0.10)	(0.98)	(0.48)	(1.01)	(0.26)	(1.15)	(-0.40)
C2 All	P1	-0.36	-0.30	0.09	0.13	0.14	0.25	0.08	0.08	-0.10
	P5	0.39	-0.14	0.01	-0.15	-0.24	-0.32	-0.02	-0.23	0.11
	Strategy	0.75	0.16	0.08	0.28	0.39	0.58	0.10	0.31	0.21
		(**2.61**)	(0.72)	(0.54)	(1.01)	(1.21)	(**2.83**)	(0.37)	(**2.14**)	(1.24)
C2 Micro	P1	-0.22	-0.41	-0.03	0.02	-0.39	-0.35	0.00	-0.46	-1.52
	P5	0.13	-0.22	-0.17	-0.66	-0.35	0.09	0.18	-0.35	-0.13
	Strategy	0.39	0.11	-0.07	0.62	0.10	-0.58	-0.06	-0.11	1.05
		(0.81)	(0.21)	(-0.18)	(0.94)	(0.20)	(-0.83)	(-0.10)	(-0.32)	(1.06)
C2 Small	P1	-0.24	-0.17	-0.30	0.10	-0.00	-0.02	-0.06	0.12	-0.06
	P5	0.17	0.17	-0.01	-0.17	-0.27	-0.28	-0.40	-0.07	-0.05
	Strategy	0.41	0.34	-0.29	0.27	0.27	0.26	0.34	0.19	0.00
		(1.72)	(1.61)	(-1.63)	(0.96)	(0.95)	(1.28)	(1.38)	(1.36)	(0.01)
C2 Big	P1	-0.36	-0.31	0.10	0.13	0.16	0.27	0.09	0.08	-0.10
	P5	0.41	-0.15	0.04	-0.14	-0.23	-0.32	-0.00	-0.24	0.15
	Strategy	0.76	0.16	0.07	0.26	0.39	0.59	0.10	0.32	0.25
		(**2.62**)	(0.69)	(0.42)	(0.93)	(1.20)	(**2.80**)	(0.36)	(**2.10**)	(1.37)
C3 All	P1	-1.14	-0.68	-0.31	-0.00	-0.06	-0.00	0.05	-0.41	-0.65
	P5	0.08	-0.01	-0.71	-0.46	-1.58	-0.76	-0.97	-0.72	-0.07
	Strategy	1.22	0.67	0.40	0.45	1.52	0.76	1.02	0.31	0.58
		(**2.91**)	(**2.14**)	(1.26)	(1.28)	(**3.25**)	(**2.59**)	(**2.81**)	(1.42)	(**2.06**)
C3 Micro	P1	-1.87	-1.30	0.00	-0.24	-0.18	-0.15	-0.42	-0.21	-0.76
	P5	0.61	-0.03	-1.36	-1.35	-2.10	-1.43	-1.52	-0.66	-0.66
	Strategy	2.47	1.27	1.36	1.11	1.93	1.28	1.10	0.44	0.10
		(**6.88**)	(**3.44**)	(**4.14**)	(**2.39**)	(**4.89**)	(**3.61**)	(**2.68**)	(**2.05**)	(0.23)
C3 Small	P1	-1.56	-0.64	-0.09	0.44	0.09	-0.09	0.01	-0.03	-0.30
	P5	0.37	0.24	-1.01	-0.31	-1.33	-0.85	-0.97	-0.62	-0.75
	Strategy	1.94	0.88	0.92	0.75	1.41	0.76	0.98	0.59	-0.45
		(**4.54**)	(**3.19**)	(**2.58**)	(**2.13**)	(**2.90**)	(**2.87**)	(**3.22**)	(**2.89**)	(-1.61)
C3 Big	P1	-0.77	-0.60	-0.33	-0.34	-0.11	0.08	0.06	-0.30	-0.69
	P5	-0.05	-0.04	-0.30	-0.39	-1.73	-0.62	-0.84	-0.72	0.30
	Strategy	0.72	0.56	-0.03	0.06	1.59	0.71	0.91	0.41	0.99
		(1.70)	(1.45)	(-0.08)	(0.13)	(**2.61**)	(**1.97**)	(**2.07**)	(1.29)	(**2.28**)

Table 3

Profits from Asset-Pricing Anomalies in Decreasing Subsamples of Rated Firms

The table reports profits from anomaly-based trading strategies as in Table 2, as we sequentially eliminate the worst-rated stocks. Stocks are eliminated before anomaly-based portfolios are formed each month. Once included in a portfolio, a stock stays in that portfolio throughout the holding period even if it is subsequently downgraded. The first column specifies the range of ratings included in the corresponding subsample. The reported anomaly profits are based on equally weighted size- and BM-adjusted returns. t-statistics are in parentheses (bold is significant at the 5% level). The last two columns report the percentage of rated firms or of total market capitalization represented by each subsample.

Subsample	Momentum	SUE	Credit Risk	Dispersion	Idio Vol	Asset Growth	Investment	Accruals	BM	% of Firms	% of MV
AAA-D	1.00	0.44	0.71	0.62	0.81	0.54	0.45	0.27	-0.15	100.00	100.00
	(**4.07**)	(**3.15**)	(**3.61**)	(**2.94**)	(**2.71**)	(**4.43**)	(**2.45**)	(**3.43**)	(-1.26)		
AAA-C	0.93	0.41	0.60	0.57	0.73	0.54	0.45	0.28	-0.12	99.26	99.93
	(**3.81**)	(**2.94**)	(**3.19**)	(**2.75**)	(**2.44**)	(**4.43**)	(**2.45**)	(**3.55**)	(-1.05)		
AAA-CC	0.93	0.41	0.60	0.57	0.73	0.54	0.45	0.28	-0.12	99.25	99.93
	(**3.79**)	(**2.91**)	(**3.19**)	(**2.74**)	(**2.43**)	(**4.43**)	(**2.45**)	(**3.55**)	(-1.05)		
AAA-CCC−	0.90	0.39	0.57	0.58	0.71	0.53	0.44	0.29	-0.12	99.05	99.92
	(**3.68**)	(**2.78**)	(**3.09**)	(**2.75**)	(**2.38**)	(**4.33**)	(**2.38**)	(**3.77**)	(-1.02)		
AAA-CCC	0.88	0.38	0.54	0.57	0.69	0.53	0.43	0.29	-0.11	98.83	99.91
	(**3.60**)	(**2.72**)	(**2.94**)	(**2.72**)	(**2.30**)	(**4.37**)	(**2.33**)	(**3.69**)	(-0.96)		
AAA-CCC+	0.82	0.35	0.47	0.54	0.60	0.52	0.41	0.29	-0.10	98.31	99.87
	(**3.39**)	(**2.53**)	(**2.60**)	(**2.59**)	(**2.02**)	(**4.35**)	(**2.21**)	(**3.78**)	(-0.84)		
AAA-B−	0.75	0.33	0.42	0.52	0.51	0.47	0.38	0.28	-0.09	97.39	99.77
	(**3.12**)	(**2.37**)	(**2.38**)	(**2.51**)	(1.75)	(**4.00**)	(**2.09**)	(**3.70**)	(-0.79)		
AAA-B	0.65	0.30	0.34	0.46	0.40	0.42	0.31	0.26	-0.13	94.96	99.42
	(**2.83**)	(**2.16**)	(**2.01**)	(**2.26**)	(1.41)	(**3.77**)	(1.81)	(**3.60**)	(-1.06)		
AAA-B+	0.53	0.25	0.27	0.32	0.26	0.34	0.27	0.27	-0.15	90.14	98.62
	(**2.40**)	(1.88)	(1.71)	(1.62)	(1.01)	(**3.17**)	(1.64)	(**3.69**)	(-1.20)		
AAA-BB−	0.42	0.20	0.14	0.30	0.14	0.28	0.19	0.20	-0.14	80.38	97.24
	(**2.00**)	(1.52)	(1.03)	(1.62)	(0.57)	(**2.71**)	(1.24)	(**3.17**)	(-1.05)		
AAA-BB	0.36	0.17	0.00	0.26	0.04	0.29	0.12	0.17	-0.11	71.34	95.36
	(1.74)	(1.33)	(0.04)	(1.41)	(0.16)	(**2.92**)	(0.76)	(**2.93**)	(-0.79)		
AAA-BB+	0.30	0.14	-0.01	0.25	-0.03	0.26	0.08	0.16	-0.13	64.39	93.04
	(1.51)	(1.13)	(-0.13)	(1.43)	(-0.11)	(**2.58**)	(0.49)	(**2.92**)	(-0.89)		
AAA-BBB−	0.28	0.09	0.03	0.25	0.03	0.19	0.04	0.16	-0.14	58.83	90.29
	(1.45)	(0.74)	(0.38)	(1.44)	(0.14)	(1.60)	(0.23)	(**2.89**)	(-0.97)		
AAA-BBB	0.26	0.10	0.06	0.27	0.01	0.16	0.05	0.14	-0.16	50.61	85.83
	(1.37)	(0.87)	(0.78)	(1.41)	(0.06)	(1.48)	(0.30)	(**2.50**)	(-1.06)		
AAA-BBB+	0.26	0.07	0.02	0.27	0.03	0.15	0.05	0.12	-0.16	40.15	78.42
	(1.34)	(0.60)	(0.33)	(1.57)	(0.13)	(1.26)	(0.27)	(**2.16**)	(-0.94)		

Table 4

Downgrades, Returns, and Delistings by Credit Rating Groups

The table focuses on stocks with at least one downgrade and priced at least $1 at the beginning of the month. We analyze downgrades by credit rating tercile, sorted on firm rating at the end of month $t-1$. The sample period is October 1985 to December 2008.

	Rating Group (C1=Lowest , C3=Highest Risk)		
	C1	C2	C3
Number of Downgrades	2,485	2,441	3,147
Downgrades/month	8.94	8.78	11.32
Size of Downgrades	1.75	1.77	2.14
r_{t-1}	0.10	-4.06	-6.56
r_t	-1.15	-3.45	-14.08
r_{t+1}	0.62	-1.32	-6.29
$r_{t-6:t-1}$	2.09	-8.60	-25.99
$r_{t+1:t+6}$	5.39	-3.44	-16.69
$r_{t-12:t-1}$	5.53	-6.87	-32.44
$r_{t+1:t+12}$	11.86	1.43	-13.26
Delisted over $(t+1:t+6)$	63	109	289
Delisted over $(t+1:t+12)$	96	172	484
Delisted over $(t+1:t+24)$	154	312	734

Table 5

Impact of Downgrades on Profits from Asset-Pricing Anomalies

We repeat the analysis in Table 2 after removing return observations from six months prior to six months after a downgrade.

Panel A: Equally Weighted Size- and BM-Adjusted Returns

Anomaly		Momentum	SUE	Credit Risk	Dispersion	Idio Vol	Asset Growth	Investment	Accruals	BM
Strategy		P5-P1	P5-P1	P1-P5	P1-P5	P1-P5	P1-P5	P1-P5	P1-P5	P5-P1
All Rated	P1	0.23	0.23	0.19	0.28	0.14	0.36	0.28	0.44	0.15
	P5	0.42	0.32	0.18	0.30	0.15	0.09	0.01	0.11	0.40
	Strategy	0.19	0.09	0.00	-0.02	-0.01	0.27	0.27	0.32	0.26
		(0.80)	(0.75)	(0.01)	(-0.09)	(-0.04)	(**2.45**)	(1.47)	(**4.17**)	(**2.53**)
Micro Rated	P1	0.34	0.03	0.07	0.39	-0.10	0.53	0.39	0.79	0.16
	P5	0.80	0.56	0.32	0.30	0.30	-0.20	-0.11	0.27	0.47
	Strategy	0.46	0.53	-0.24	0.09	-0.39	0.74	0.50	0.52	0.32
		(1.40)	(1.78)	(-0.73)	(0.21)	(-1.10)	(**2.57**)	(1.69)	(**2.82**)	(0.64)
Small Rated	P1	0.21	0.24	0.07	0.46	0.21	0.49	0.31	0.43	0.33
	P5	0.46	0.47	0.13	0.49	0.21	0.22	0.01	0.11	0.35
	Strategy	0.25	0.23	-0.07	-0.03	0.00	0.27	0.30	0.32	0.02
		(0.94)	(1.26)	(-0.23)	(-0.11)	(0.01)	(1.79)	(1.40)	(**2.76**)	(0.07)
Big Rated	P1	0.21	0.26	0.22	0.23	0.14	0.27	0.19	0.30	0.09
	P5	0.30	0.24	0.08	0.15	0.00	0.11	0.06	0.06	0.39
	Strategy	0.09	-0.02	0.14	0.08	0.14	0.16	0.13	0.24	0.30
		(0.34)	(-0.13)	(0.45)	(0.32)	(0.40)	(1.20)	(0.66)	(**3.12**)	(**2.43**)
C1 All	P1	0.17	0.22	0.13	0.27	0.14	0.21	0.15	0.24	0.17
	P5	0.28	0.17	0.22	0.16	0.25	0.12	0.17	0.11	0.18
	Strategy	0.11	-0.05	-0.09	0.11	-0.11	0.09	-0.03	0.13	0.02
		(0.58)	(-0.39)	(-1.14)	(0.59)	(-0.54)	(0.77)	(-0.16)	(**2.18**)	(0.12)
C1 Micro	P1	-0.27	0.17	0.14	0.47	0.35	0.37	-0.20	0.05	3.54
	P5	0.19	-0.24	0.05	-0.05	-0.36	-0.04	-0.05	-0.05	0.54
	Strategy	0.54	-0.84	0.15	-0.06	0.39	0.50	-0.27	0.34	-4.45
		(1.37)	(-1.29)	(0.41)	(-0.10)	(0.84)	(1.03)	(-0.49)	(1.04)	(-0.98)
C1 Small	P1	-0.29	-0.08	0.04	-0.14	0.27	0.08	0.09	-0.13	0.72
	P5	0.18	-0.18	-0.02	0.00	-0.20	0.22	-0.05	-0.01	0.07
	Strategy	0.48	-0.23	0.07	-0.20	0.42	-0.14	0.17	-0.12	0.09
		(1.64)	(-0.88)	(0.30)	(-0.43)	(1.35)	(-0.37)	(0.41)	(-0.81)	(0.07)
C1 Big	P1	0.24	0.27	0.15	0.28	0.11	0.20	0.17	0.28	0.16
	P5	0.29	0.19	0.26	0.23	0.33	0.17	0.22	0.14	0.20
	Strategy	0.04	-0.08	-0.11	0.06	-0.22	0.04	-0.05	0.14	0.04
		(0.23)	(-0.60)	(-1.38)	(0.29)	(-0.95)	(0.30)	(-0.30)	(**2.06**)	(0.30)
C2 All	P1	0.35	0.24	0.15	0.21	0.14	0.29	0.22	0.30	0.19
	P5	0.30	0.27	0.32	0.25	0.33	0.10	0.13	0.09	0.24
	Strategy	-0.05	0.03	-0.17	-0.05	-0.19	0.19	0.09	0.21	0.05
		(-0.23)	(0.25)	(-1.83)	(-0.24)	(-0.79)	(1.53)	(0.54)	(**2.46**)	(0.41)
C2 Micro	P1	0.09	-0.34	-0.12	-0.04	-0.37	-0.64	0.06	0.11	-0.84
	P5	-0.16	0.10	0.16	-0.30	-0.44	0.14	0.30	-0.25	-0.52
	Strategy	-0.45	0.22	-0.33	-0.12	-0.03	-0.61	-0.03	0.38	-0.13
		(-1.23)	(0.42)	(-0.88)	(-0.17)	(-0.05)	(-0.96)	(-0.06)	(0.97)	(-0.12)
C2 Small	P1	0.41	0.27	-0.12	0.20	0.10	0.30	0.20	0.23	0.18
	P5	0.34	0.37	0.41	0.32	0.42	0.21	0.12	0.23	0.20
	Strategy	-0.06	0.10	-0.53	-0.12	-0.32	0.09	0.09	0.00	0.02
		(-0.30)	(0.53)	(-1.23)	(-0.46)	(-1.15)	(0.44)	(0.36)	(0.03)	(0.05)
C2 Big	P1	0.30	0.28	0.24	0.22	0.19	0.38	0.27	0.30	0.17
	P5	0.33	0.24	0.32	0.37	0.34	0.11	0.13	0.03	0.37
	Strategy	0.04	-0.04	-0.08	-0.15	-0.15	0.27	0.14	0.27	0.20
		(0.16)	(-0.25)	(-0.68)	(-0.67)	(-0.59)	(**2.00**)	(0.78)	(**2.57**)	(1.28)
C3 All	P1	0.18	0.17	0.19	0.34	0.22	0.40	0.43	0.63	0.07
	P5	0.63	0.56	0.29	0.62	0.03	0.07	-0.09	0.11	0.68
	Strategy	0.45	0.39	-0.10	-0.27	0.19	0.32	0.53	0.52	0.61
		(1.15)	(1.89)	(-0.48)	(-1.02)	(0.56)	(1.82)	(1.90)	(**3.84**)	(**3.38**)
C3 Micro	P1	0.57	-0.09	0.33	0.14	0.10	0.73	0.50	0.87	0.31
	P5	1.07	0.72	0.40	0.53	0.17	-0.13	-0.15	0.27	0.66
	Strategy	0.50	0.81	-0.07	-0.38	-0.06	0.86	0.65	0.60	0.36
		(0.97)	(**2.24**)	(-0.24)	(-0.70)	(-0.16)	(**2.06**)	(1.55)	(**2.80**)	(0.77)
C3 Small	P1	-0.03	0.34	0.34	0.51	0.43	0.35	0.44	0.53	0.29
	P5	0.59	0.58	0.29	0.92	0.15	0.27	0.00	0.07	0.62
	Strategy	0.62	0.24	0.05	-0.41	0.27	0.08	0.44	0.46	0.33
		(1.51)	(0.95)	(0.17)	(-1.25)	(0.59)	(0.37)	(1.58)	(**2.48**)	(1.15)
C3 Big	P1	0.14	0.12	-0.03	-0.04	-0.01	0.12	0.24	0.45	-0.26
	P5	0.21	0.37	0.23	0.50	-0.60	0.08	-0.11	-0.03	0.60
	Strategy	0.07	0.25	-0.28	-0.52	0.59	0.03	0.35	0.48	0.85
		(0.16)	(0.83)	(-0.71)	(-1.33)	(1.08)	(0.12)	(0.94)	(1.60)	(**2.05**)

Table 5 (continued)

Panel B: Value-Weighted Size- and BM-Adjusted Returns

Anomaly		Momentum	SUE	Credit Risk	Dispersion	Idio Vol	Asset Growth	Investment	Accruals	BM
Strategy		P5-P1	P5-P1	P1-P5	P1-P5	P1-P5	P1-P5	P1-P5	P1-P5	P5-P1
All Rated	P1	0.12	0.21	0.17	0.15	0.10	0.33	0.18	0.31	0.09
	P5	0.31	0.17	-0.02	0.05	-0.09	0.12	0.02	0.04	0.31
	Strategy	0.19	-0.04	0.19	0.09	0.19	0.21	0.16	0.27	0.22
		(0.68)	(-0.25)	(0.66)	(0.36)	(0.52)	(1.11)	(0.68)	(**2.47**)	(**2.22**)
Micro Rated	P1	0.18	0.04	-0.01	0.40	-0.05	0.51	0.35	0.72	0.19
	P5	0.66	0.41	0.23	0.30	0.28	-0.25	-0.09	0.17	0.37
	Strategy	0.47	0.37	-0.24	0.09	-0.34	0.76	0.44	0.55	0.19
		(1.60)	(1.26)	(-0.73)	(0.22)	(-0.90)	(**2.58**)	(1.42)	(**2.78**)	(0.38)
Small Rated	P1	0.23	0.24	0.06	0.47	0.19	0.46	0.31	0.48	0.37
	P5	0.46	0.38	0.10	0.48	0.16	0.14	-0.02	0.09	0.28
	Strategy	0.23	0.14	-0.04	-0.01	0.03	0.32	0.33	0.39	-0.09
		(0.85)	(0.74)	(-0.14)	(-0.04)	(0.09)	(1.80)	(1.46)	(**3.25**)	(-0.37)
Big Rated	P1	0.11	0.21	0.17	0.14	0.10	0.32	0.17	0.30	0.09
	P5	0.30	0.16	-0.03	-0.00	-0.13	0.12	0.04	0.03	0.32
	Strategy	0.19	-0.04	0.20	0.15	0.23	0.20	0.14	0.26	0.23
		(0.69)	(-0.28)	(0.57)	(0.53)	(0.59)	(1.03)	(0.57)	(**2.35**)	(**2.03**)
C1 All	P1	0.20	0.25	0.15	0.25	0.13	0.22	0.09	0.27	0.06
	P5	0.27	0.16	0.14	0.17	0.13	0.17	0.10	0.08	0.16
	Strategy	0.07	-0.09	0.01	0.08	-0.01	0.05	-0.01	0.19	0.10
		(0.31)	(-0.49)	(0.06)	(0.33)	(-0.03)	(0.26)	(-0.03)	(1.57)	(0.85)
C1 Micro	P1	-0.28	0.13	0.14	0.48	0.42	0.35	-0.21	0.09	3.54
	P5	0.08	-0.23	-0.12	-0.12	-0.45	-0.09	-0.03	-0.04	0.36
	Strategy	0.43	-0.71	0.32	0.16	0.60	0.56	-0.41	0.37	-4.45
		(1.05)	(-1.09)	(0.79)	(0.23)	(1.12)	(1.08)	(-0.71)	(1.23)	(-0.98)
C1 Small	P1	-0.27	-0.10	0.04	-0.20	0.24	0.00	0.13	-0.11	0.72
	P5	0.19	-0.18	0.01	-0.06	-0.14	0.26	-0.07	0.02	0.08
	Strategy	0.46	-0.21	0.02	-0.23	0.33	-0.25	0.21	-0.14	0.00
		(1.57)	(-0.80)	(0.11)	(-0.47)	(1.05)	(-0.65)	(0.49)	(-0.90)	(0.00)
C1 Big	P1	0.20	0.26	0.15	0.25	0.13	0.22	0.09	0.27	0.06
	P5	0.27	0.16	0.14	0.17	0.13	0.17	0.10	0.08	0.17
	Strategy	0.07	-0.09	0.01	0.08	-0.01	0.05	-0.01	0.19	0.10
		(0.31)	(-0.51)	(0.06)	(0.32)	(-0.03)	(0.27)	(-0.03)	(1.56)	(0.86)
C2 All	P1	0.18	0.10	0.25	0.27	0.25	0.44	0.26	0.29	0.12
	P5	0.44	0.16	0.35	0.14	0.20	0.01	0.20	-0.07	0.30
	Strategy	0.26	0.06	-0.10	0.13	0.05	0.43	0.06	0.36	0.18
		(0.93)	(0.33)	(-0.68)	(0.50)	(0.15)	(1.86)	(0.23)	(**2.64**)	(1.01)
C2 Micro	P1	0.03	-0.45	-0.23	-0.03	-0.33	-0.88	0.03	0.00	-0.84
	P5	-0.24	0.06	0.01	-0.45	-0.39	0.10	0.30	-0.19	-0.56
	Strategy	-0.46	0.31	-0.34	0.10	-0.04	-0.79	-0.05	0.21	-0.21
		(-1.16)	(0.59)	(-0.87)	(0.13)	(-0.07)	(-1.17)	(-0.08)	(0.57)	(-0.20)
C2 Small	P1	0.38	0.25	-0.06	0.28	0.10	0.30	0.24	0.26	0.17
	P5	0.30	0.34	0.37	0.31	0.28	0.24	0.02	0.25	0.21
	Strategy	-0.08	0.10	-0.42	-0.03	-0.18	0.06	0.21	0.01	0.04
		(-0.40)	(0.49)	(-1.48)	(-0.10)	(-0.63)	(0.28)	(0.86)	(0.05)	(0.10)
C2 Big	P1	0.16	0.09	0.26	0.26	0.26	0.45	0.26	0.28	0.12
	P5	0.45	0.15	0.37	0.13	0.21	0.01	0.20	-0.10	0.32
	Strategy	0.28	0.06	-0.11	0.13	0.06	0.44	0.06	0.38	0.20
		(1.01)	(0.30)	(-0.69)	(0.46)	(0.17)	(**1.96**)	(0.22)	(**2.67**)	(1.05)
C3 All	P1	0.05	0.12	-0.07	0.20	0.12	0.28	0.38	0.28	-0.28
	P5	0.28	0.29	0.15	0.50	-0.46	-0.00	-0.30	-0.02	0.66
	Strategy	0.23	0.18	-0.22	-0.30	0.58	0.29	0.68	0.30	0.93
		(0.56)	(0.61)	(-0.79)	(-0.89)	(1.26)	(1.10)	(1.80)	(1.45)	(**3.21**)
C3 Micro	P1	0.37	-0.09	0.44	0.10	0.08	0.68	0.49	0.81	0.48
	P5	0.94	0.53	0.40	0.42	0.19	-0.19	-0.26	0.18	0.57
	Strategy	0.57	0.62	0.04	-0.31	-0.11	0.87	0.75	0.63	0.10
		(1.26)	(1.70)	(0.13)	(-0.58)	(-0.23)	(**2.10**)	(1.78)	(**2.64**)	(0.22)
C3 Small	P1	-0.00	0.40	0.32	0.56	0.35	0.36	0.39	0.62	0.32
	P5	0.61	0.46	0.32	0.83	0.08	0.15	-0.03	0.00	0.55
	Strategy	0.61	0.07	0.00	-0.27	0.28	0.21	0.42	0.62	0.23
		(1.42)	(0.25)	(0.01)	(-0.77)	(0.54)	(0.92)	(1.34)	(**3.14**)	(0.81)
C3 Big	P1	0.08	0.02	-0.15	-0.14	0.02	0.20	0.31	0.26	-0.38
	P5	0.14	0.26	0.02	0.47	-0.59	0.11	-0.34	0.05	0.54
	Strategy	0.07	0.24	-0.18	-0.58	0.59	0.09	0.65	0.21	0.91
		(0.14)	(0.63)	(-0.46)	(-1.35)	(0.96)	(0.29)	(1.41)	(0.65)	(1.93)

Table 6

Cross-Sectional Regressions of Size- and BM-Adjusted Returns on Anomaly Variables

Each month t, we run univariate cross-sectional regressions of monthly size- and BM-adjusted stock returns on a lagged firm characteristic based on each of the anomalies studied using all NYSE, Amex, and Nasdaq stocks with available credit rating on Compustat or RatingXpress:

$$r^*_{it} = a_t + b_t Z_{i,t-lag} + e_{it}.$$

Returns are size- and BM-adjusted as in Fama and French (2008). In particular, we form 5×5 portfolios independently sorted on size and BM using NYSE size and BM quintiles as of December of year t-1. Each firm characteristic, $Z_{i,t-lag}$, is a conditioning variable described in the Methodology section, lagged as prescribed by each specific anomaly. Momentum uses the past six-month returns as the independent variable. SUE uses the SUE calculated based on the last reported EPS over the prior four months. Credit risk, dispersion, and idiosyncratic volatility condition on variables from the past month. For the asset-growth, investments, and BM anomalies, we use conditioning variables as of December of year $t-1$ for returns between July of year t to June of year $t+1$. Returns of month t are regressed on quarterly accruals four months prior. Each column reports the results from a separate univariate regression and shows the time-series average of these cross-sectional regression coefficients, b_t, with their associated sample t-statistics in parentheses (bold if significant at the 5% level). Each panel also provides results from regressions including downgrade dummies:

$$r^*_{it} = a_t + b_t Z_{it-1} + d_{t,IG} D_{IG} + d_{t,NIG} D_{NIG} + e_{it},$$

where D_{IG} (D_{NIG}) is a dummy variable which takes the value of one from six months prior to six months after a downgrade from an investment-grade (non-investment-grade) rating. Panel A presents results for all stocks, while Panel B/C/D show results for micro/small/big stocks, respectively.

Panel A: All Stocks

	Momentum	SUE	Credit Risk	Dispersion	Idio Vol	Asset Growth	Investment	Accruals	BM
b	0.86	0.11	-0.06	-0.31	-8.76	-0.47	-0.57	-3.89	-0.01
	(**2.26**)	(**3.85**)	(**-2.62**)	(**-2.93**)	(**-3.25**)	(**-3.68**)	(**-2.63**)	(**-2.95**)	(-0.27)
b	0.18	0.06	0.01	-0.03	-1.40	-0.40	-0.36	-4.98	0.13
	(0.49)	(**2.07**)	(0.64)	(-0.37)	(-0.55)	(**-3.17**)	(-1.35)	(**-3.88**)	(**2.74**)
d_{NIG}	-3.80	-3.31	-3.76	-3.91	-3.72	-3.64	-3.47	-3.46	-3.71
	(**-14.93**)	(**-10.36**)	(**-14.21**)	(**-11.03**)	(**-15.21**)	(**-12.06**)	(**-11.88**)	(**-10.78**)	(**-11.94**)
b	0.06	0.04	-0.00	-0.02	-1.73	-0.42	-0.41	-5.05	0.14
	(0.17)	(1.53)	(-0.04)	(-0.18)	(-0.68)	(**-3.39**)	(-1.55)	(**-3.94**)	(**2.84**)
d_{IG}	-0.95	-0.85	-0.96	-0.90	-0.97	-0.97	-0.93	-0.80	-0.94
	(**-10.27**)	(**-8.12**)	(**-8.66**)	(**-8.19**)	(**-9.71**)	(**-9.52**)	(**-9.12**)	(**-6.78**)	(**-8.99**)
d_{NIG}	-3.86	-3.35	-3.73	-3.94	-3.74	-3.67	-3.50	-3.49	-3.74
	(**-15.11**)	(**-10.46**)	(**-14.25**)	(**-11.08**)	(**-15.24**)	(**-12.12**)	(**-11.92**)	(**-10.82**)	(**-12.00**)

Table 6 (continued)

Panel B: Micro Stocks

	Momentum	SUE	Credit Risk	Dispersion	Idio Vol	Asset Growth	Investment	Accruals	BM
b	1.75	0.27	-0.07	-0.76	-7.96	-0.81	-0.50	-0.19	0.02
	(**4.03**)	(**3.55**)	(**-2.52**)	(**-3.25**)	(**-2.61**)	(**-2.78**)	(-1.48)	(-0.06)	(0.19)
b	0.62	0.15	0.02	-0.32	-0.49	-0.72	-0.27	-2.04	0.15
	(1.52)	(1.93)	(0.76)	(-1.36)	(-0.17)	(**-2.45**)	(-0.82)	(-0.62)	(1.63)
d_{NIG}	-4.22	-3.82	-4.39	-5.02	-4.39	-4.30	-4.32	-3.96	-4.39
	(**-12.81**)	(**-7.33**)	(**-12.91**)	(**-8.56**)	(**-13.25**)	(**-11.49**)	(**-12.14**)	(**-9.39**)	(**-11.88**)
b	0.59	0.15	0.01	-0.35	-0.75	-0.72	-0.30	-2.03	0.15
	(1.45)	(1.93)	(0.41)	(-1.46)	(-0.25)	(**-2.46**)	(-0.90)	(-0.61)	(1.59)
d_{IG}	-1.05	-0.90	-1.05	-0.80	-1.09	-1.13	-1.26	-1.22	-1.04
	(**-3.50**)	(**-2.42**)	(**-3.58**)	(**-2.15**)	(**-3.63**)	(**-3.69**)	(**-4.16**)	(**-2.97**)	(**-2.70**)
d_{NIG}	-4.26	-3.84	-4.39	-5.03	-4.41	-4.33	-4.35	-3.99	-4.41
	(**-12.96**)	(**-7.40**)	(**-12.90**)	(**-8.59**)	(**-13.33**)	(**-11.61**)	(**-12.23**)	(**-9.44**)	(**-11.88**)

Panel C: Small Stocks

	Momentum	SUE	Credit Risk	Dispersion	Idio Vol	Asset Growth	Investment	Accruals	BM
b	0.97	0.17	-0.07	-0.23	-17.42	-0.48	-0.74	-4.07	-0.01
	(**2.31**)	(**4.26**)	(**-2.63**)	(**-2.36**)	(**-3.57**)	(**-2.82**)	(**-3.09**)	(**-1.96**)	(-0.10)
b	0.33	0.11	0.02	0.06	-7.82	-0.41	-0.50	-5.76	0.06
	(0.81)	(**2.83**)	(0.83)	(0.40)	(-1.70)	(-1.81)	(**-2.15**)	(**-2.85**)	(0.79)
d_{NIG}	-3.55	-3.00	-3.53	-3.62	-3.44	-3.41	-3.14	-3.27	-3.40
	(**-11.17**)	(**-8.00**)	(**-10.57**)	(**-8.35**)	(**-11.17**)	(**-9.52**)	(**-8.63**)	(**-8.25**)	(**-9.42**)
b	0.20	0.09	0.00	0.10	-8.26	-0.35	-0.52	-5.97	0.11
	(0.51)	(**2.36**)	(0.08)	(0.65)	(-1.60)	(-1.64)	(**-2.26**)	(**-2.93**)	(1.42)
d_{IG}	-1.38	-1.34	-1.42	-1.42	-1.45	-1.45	-1.38	-1.06	-1.57
	(**-7.98**)	(**-6.31**)	(**-7.51**)	(**-6.78**)	(**-8.14**)	(**-7.91**)	(**-6.65**)	(**-3.57**)	(**-8.30**)
d_{NIG}	-3.57	-3.02	-3.47	-3.64	-3.43	-3.40	-3.13	-3.29	-3.40
	(**-11.25**)	(**-8.06**)	(**-10.50**)	(**-8.41**)	(**-11.16**)	(**-9.51**)	(**-8.65**)	(**-8.30**)	(**-9.42**)

Panel D: Big Stocks

	Momentum	SUE	Credit Risk	Dispersion	Idio Vol	Asset Growth	Investment	Accruals	BM
b	-0.12	0.05	-0.03	-0.36	-7.96	-0.40	-0.39	-5.69	0.07
	(-0.27)	(1.76)	(**-2.09**)	(**-2.05**)	(**-2.13**)	(**-2.83**)	(-1.46)	(**-4.05**)	(1.17)
b	-0.43	0.03	0.00	-0.20	-1.95	-0.34	-0.26	-6.02	0.16
	(-0.97)	(1.36)	(0.02)	(-1.20)	(-0.29)	(**-2.50**)	(-0.99)	(**-4.38**)	(**2.64**)
d_{NIG}	-3.42	-2.57	-3.15	-3.39	-3.20	-2.90	-2.49	-3.09	-3.18
	(**-8.37**)	(**-5.09**)	(**-7.90**)	(**-6.50**)	(**-8.59**)	(**-6.64**)	(**-5.74**)	(**-5.59**)	(**-6.93**)
b	-0.64	0.02	-0.01	-0.16	-1.29	-0.37	-0.31	-6.12	0.20
	(-1.44)	(0.71)	(-0.27)	(-0.95)	(-0.19)	(**-2.71**)	(-1.20)	(**-4.43**)	(**3.21**)
d_{IG}	-0.87	-0.71	-0.84	-0.72	-0.84	-0.83	-0.78	-0.68	-0.82
	(**-9.17**)	(**-6.40**)	(**-8.00**)	(**-6.36**)	(**-8.50**)	(**-7.92**)	(**-7.58**)	(**-5.22**)	(**-7.58**)
d_{NIG}	-3.43	-2.56	-3.09	-3.34	-3.17	-2.86	-2.47	-3.06	-3.16
	(**-8.39**)	(**-5.09**)	(**-7.81**)	(**-6.43**)	(**-8.52**)	(**-6.58**)	(**-5.70**)	(**-5.51**)	(**-6.88**)

Table 7

Joint Cross-Sectional Regressions of Size- and BM-Adjusted Returns on All Anomaly Variables

Each month t, we run multivariate cross-sectional regressions of monthly size- and BM-adjusted stock returns on lagged firm characteristics based on each of the anomalies studied using all NYSE, Amex, and Nasdaq stocks with available credit rating on Compustat or RatingXpress:

$$r^*_{it} = a_t + \mathbf{b}_t \mathbf{Z}_{i,t-lag} + d_{t,IG} D_{IG} + d_{t,NIG} D_{NIG} + e_{it}.$$

The firm characteristics, $\mathbf{Z}_{i,t-lag}$, are all the conditioning variable described in Table 6, lagged as prescribed by each specific anomaly, and D_{IG} (D_{NIG}) is a dummy variable which takes the value of one from six months prior to six months after a downgrade from an investment-grade (non-investment-grade) rating. Market capitalization, $Size_{i,t-lag}$, is also included in the regression as a control, lagged as in Fama and French (1992). The table reports the results from the joint multivariate regression and shows the time-series average of these cross-sectional regression coefficients, $\mathbf{b}_t$, with their associated sample t-statistics in parentheses (bold if significant at the 5% level). Returns are size- and BM-adjusted as in Table 6. The time-series average adjusted-R^2 from the joint cross-sectional regressions are reported in the last column.

	Momentum	SUE	Credit Risk	Dispersion	Idio Vol	Asset Growth	Investment	Accruals	BM	Size	D_{IG}	D_{NIG}	Adj. R^2(%)
1	-0.29	0.08	-0.04	-0.21	-11.11	-0.51	-0.07	-7.52	0.11	-0.06			6.06
	(-0.71)	(**2.93**)	(**-2.13**)	(-1.70)	(**-2.07**)	(**-2.71**)	(-0.26)	(**-5.73**)	(1.09)	(-0.73)			
2	-0.29	0.08		-0.29	-10.17	-0.53	-0.11	-7.64	0.12	-0.05			5.43
	(-0.70)	(**2.80**)		(**-2.36**)	(**-1.97**)	(**-2.83**)	(-0.37)	(**-5.80**)	(1.16)	(-0.64)			
3	-0.76	0.05	0.00	-0.09	-6.99	-0.30	-0.10	-7.71	0.23	-0.03	-0.93	-3.25	7.05
	(-1.83)	(1.91)	(0.14)	(-0.79)	(-1.30)	(-1.62)	(-0.34)	(**-5.89**)	(**2.15**)	(-0.40)	(**-6.99**)	(**-10.16**)	
4	-0.49		0.01	-0.00	-9.07	-0.23	-0.17	-7.67	0.21	-0.01	-0.81	-3.46	6.35
	(-1.28)		(0.52)	(-0.02)	(-1.95)	(-1.50)	(-0.71)	(**-6.16**)	(**2.09**)	(-0.06)	(**-6.31**)	(**-11.29**)	
5		0.02	0.01	-0.02	-5.88	-0.28	-0.05	-8.06	0.22	0.01	-0.86	-3.11	5.66
		(0.84)	(0.56)	(-0.20)	(-1.08)	(-1.51)	(-0.16)	(**-5.94**)	(**2.01**)	(0.11)	(**-6.36**)	(**-9.32**)	

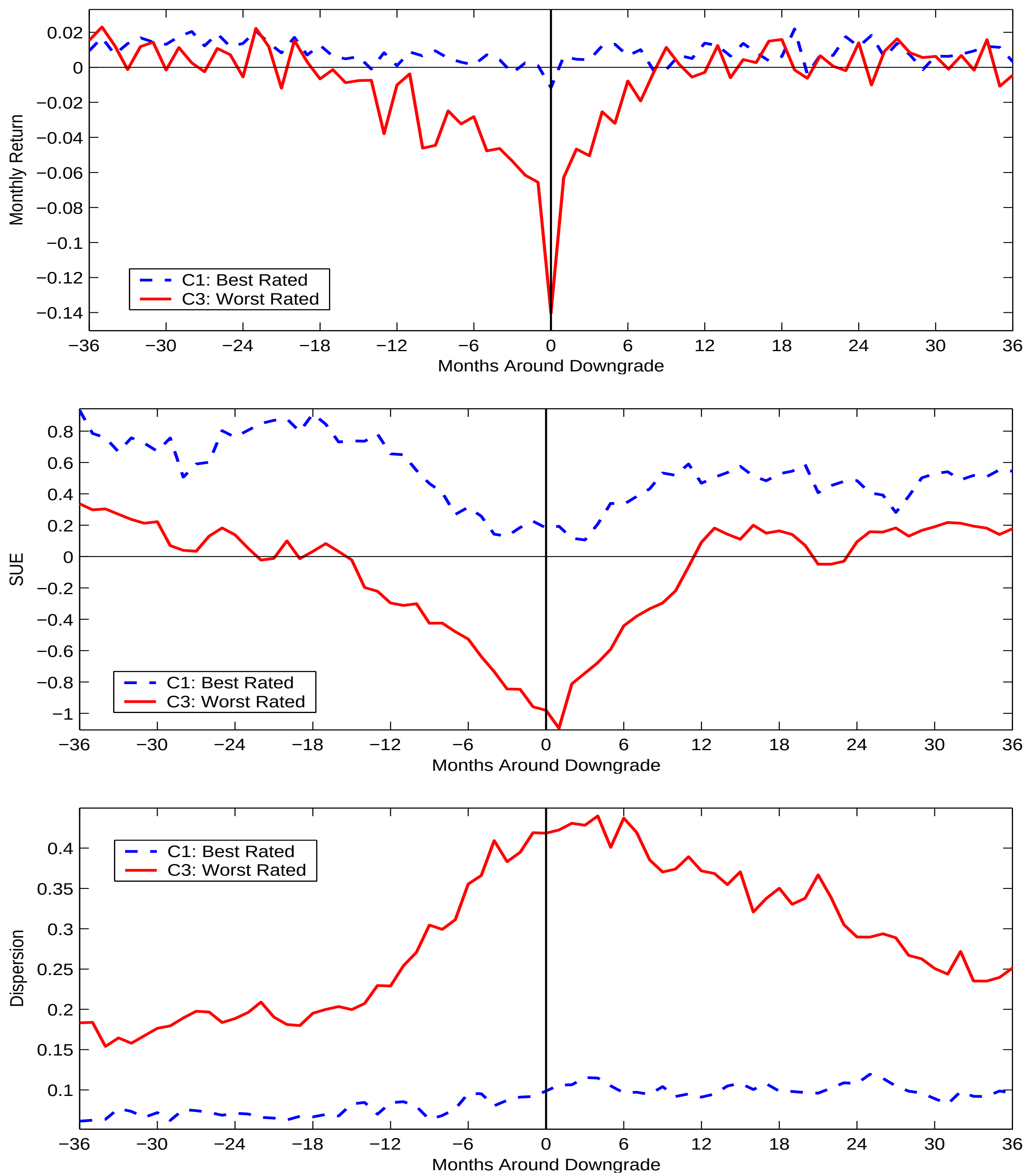


Figure 1. Conditioning Variables around Downgrades. Each month t, all stocks rated by Standard & Poor's with available return data in CRSP are divided into terciles based on credit rating. Within each tercile, we find firms that have been downgraded in month t and compute their equally weighted average firm conditioning variable based on each anomaly over each month from $t-36$ to $t+36$. We repeat this every month. The figure presents these average monthly conditioning variables for the best (C1) and worst (C3) rated terciles around rating downgrades. Month 0 is the month of downgrade. The conditioning variables are described in the Methodology section. The sample period is October 1985 to December 2008.

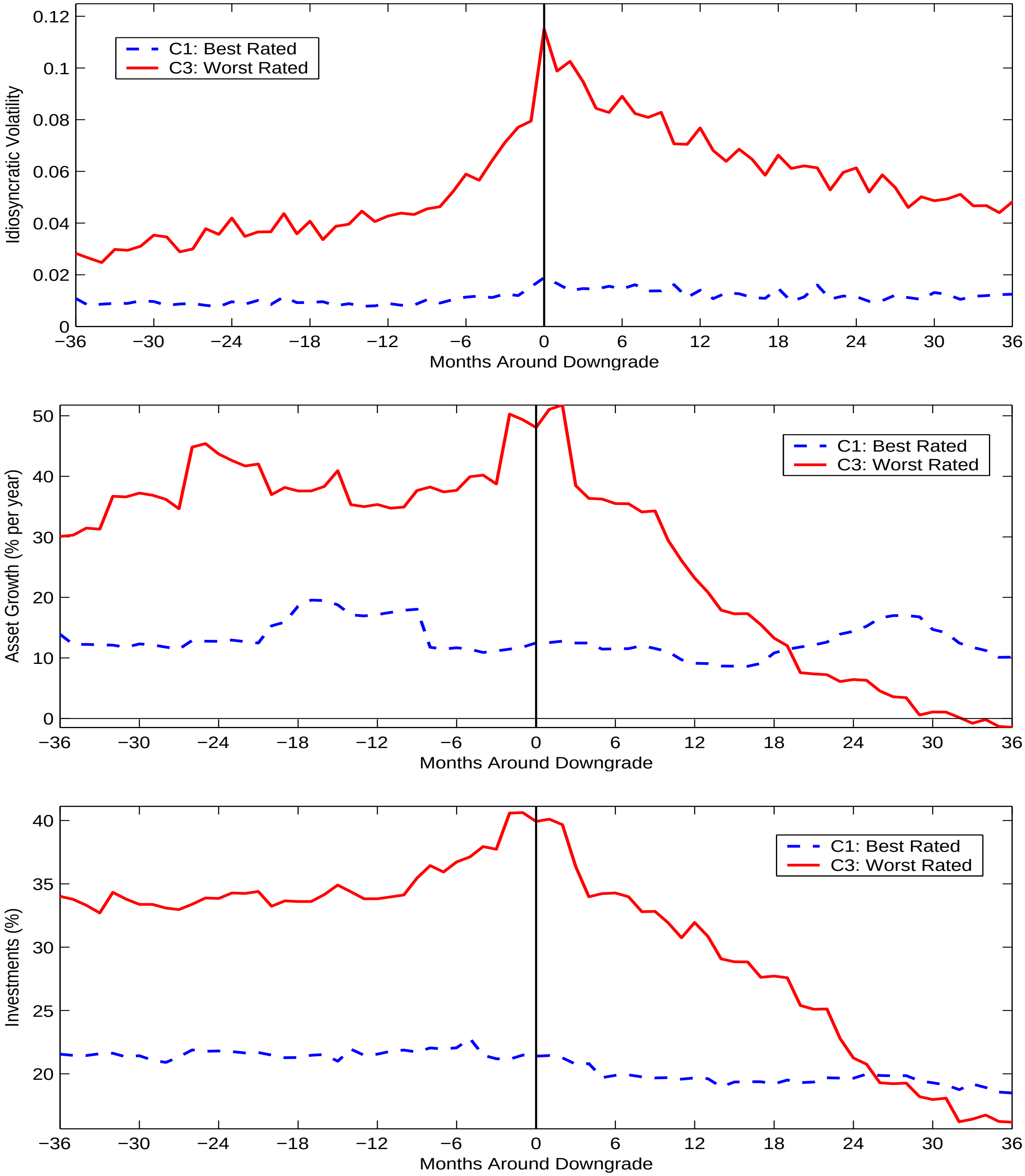


Figure 1(continued). Conditioning Variables around Downgrades.

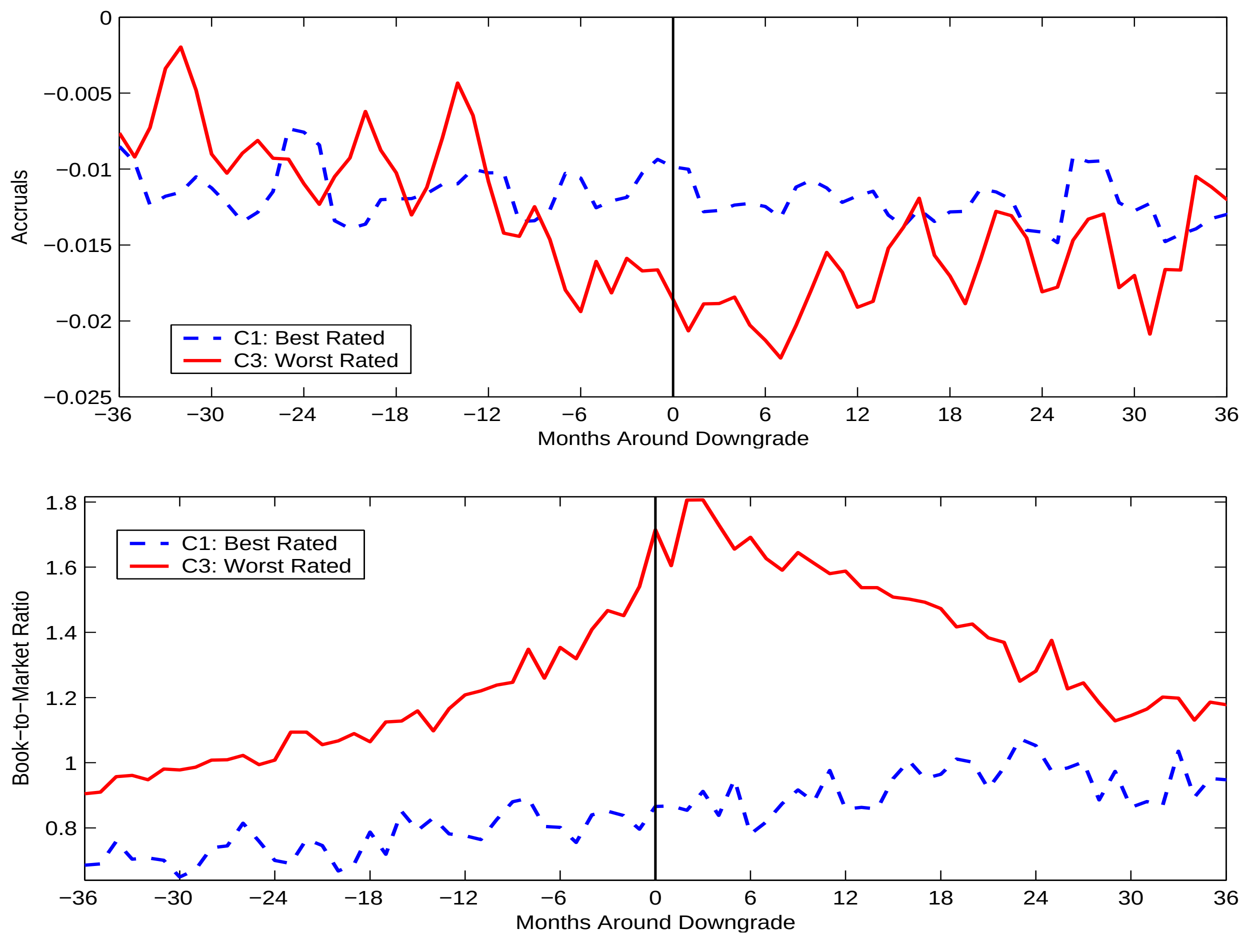
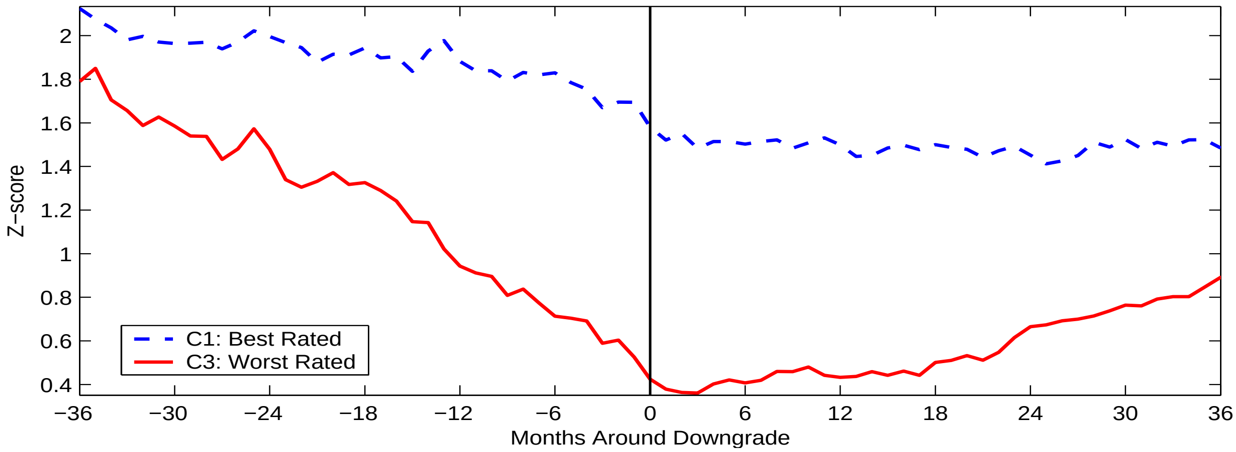


Figure 1(continued). Conditioning Variables around Downgrades.



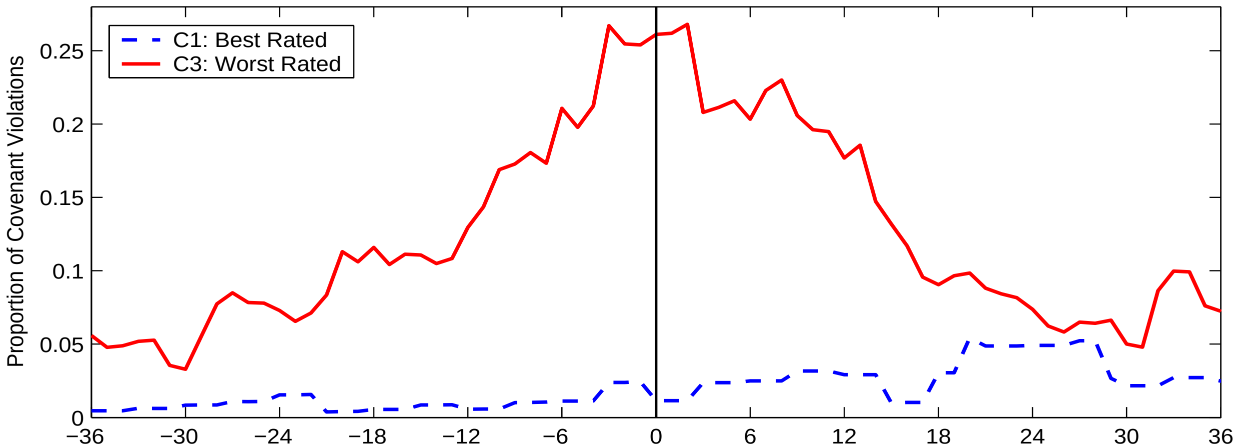


Figure 2. Z-scores and Percentage of Covenant Violations around Downgrades. Each month t, all stocks rated by Standard & Poor's with available return data in CRSP are divided into terciles based on credit rating. Within each tercile, we find firms that have been downgraded in month t and compute their equally weighted average Z-scores and the percentage of covenant violations over each month from $t - 36$ to $t + 36$. We repeat this every month. The figure presents these average monthly Z-scores and covenant violations rates for the best (C1) and worst (C3) rated terciles around rating downgrades. Month 0 is the month of downgrade. Data on covenant violations are obtained from Professor Amir Sufi's website. The data consist of zeros and ones, one (zero) indicating a (no) covenant violation. The sample period is October 1985 to December 2008 for Z-scores and June 1996 to June 2008 for covenant violations.

Appendix

Table 2A
Profits from Asset-Pricing Anomalies in All Firms

We repeat the analysis in Table 2 considering all firms listed on NYSE, Amex, and Nasdaq with returns on CRSP over the period October 1985 to December 2008. Stocks priced below $1 at the beginning of the month are removed. All return adjustments and cut-offs for the size groups are the same as in Table 2. For the Credit Risk anomaly, we use here Z-scores rather than credit ratings, since these are available for both rated and unrated firms.

Panel A: Equally Weighted Size and BM adjusted Returns

Anomaly		Momentum	SUE	Credit Risk	Dispersion	Idio Vol	Asset Growth	Investment	Accruals	BM
Strategy		P5-P1	P5-P1	P5-P1	P1-P5	P1-P5	P1-P5	P1-P5	P1-P5	P5-P1
All Firms	P1	-1.14	-0.54	-1.48	0.38	-0.03	-0.33	-0.29	-0.33	-0.46
	P5	0.18	0.28	-0.17	-0.47	-1.33	-0.84	-0.73	-0.53	-0.34
	Strategy	1.32	0.82	1.31	0.85	1.30	0.52	0.44	0.20	0.13
		(**7.01**)	(**6.86**)	(**8.44**)	(**4.60**)	(**5.43**)	(**4.90**)	(**3.10**)	(**4.13**)	(1.43)
Micro	P1	-1.33	-0.79	-1.64	0.50	-0.24	-0.47	-0.44	-0.43	-0.79
	P5	0.12	0.46	-0.19	-0.64	-1.38	-1.07	-0.88	-0.67	-0.39
	Strategy	1.45	1.25	1.45	1.14	1.13	0.60	0.43	0.24	0.39
		(**8.78**)	(**9.53**)	(**8.88**)	(**6.10**)	(**4.52**)	(**5.69**)	(**3.57**)	(**5.15**)	(**3.06**)
Small	P1	-0.91	-0.40	-1.32	0.39	0.10	-0.05	-0.09	-0.19	-0.31
	P5	0.28	0.36	-0.14	-0.33	-1.52	-0.63	-0.55	-0.33	-0.26
	Strategy	1.18	0.76	1.17	0.72	1.62	0.58	0.46	0.14	0.04
		(**5.00**)	(**5.09**)	(**5.46**)	(**3.37**)	(**5.00**)	(**4.10**)	(**2.58**)	(1.92)	(0.35)
Big	P1	-0.53	-0.12	-0.53	0.26	0.06	0.06	-0.01	-0.08	-0.13
	P5	0.27	0.10	-0.07	-0.26	-1.12	-0.43	-0.34	-0.14	-0.01
	Strategy	0.79	0.22	0.46	0.52	1.19	0.48	0.33	0.06	0.12
		(**2.82**)	(1.51)	(**2.64**)	(**2.04**)	(**2.87**)	(**2.88**)	(1.36)	(0.63)	(0.97)

Panel B: Value-Weighted Size and BM adjusted Returns

Anomaly		Momentum	SUE	Credit Risk	Dispersion	Idio Vol	Asset Growth	Investment	Accruals	BM
Strategy		P5-P1	P5-P1	P5-P1	P1-P5	P1-P5	P1-P5	P1-P5	P1-P5	P5-P1
All Firms	P1	-0.63	-0.18	-0.89	0.16	0.08	0.08	0.03	-0.05	-0.09
	P5	0.28	0.07	-0.01	-0.41	-1.35	-0.35	-0.28	-0.16	-0.11
	Strategy	0.91	0.25	0.89	0.57	1.44	0.42	0.31	0.11	-0.02
		(**3.39**)	(1.52)	(**4.93**)	(**2.12**)	(**4.04**)	(**2.36**)	(1.08)	(0.99)	(-0.18)
Micro	P1	-1.26	-0.65	-1.70	0.45	-0.10	-0.31	-0.29	-0.27	-0.61
	P5	0.23	0.42	-0.12	-0.63	-1.53	-0.98	-0.81	-0.54	-0.40
	Strategy	1.50	1.07	1.58	1.08	1.43	0.67	0.51	0.26	0.21
		(**7.87**)	(**7.21**)	(**8.18**)	(**5.18**)	(**5.21**)	(**5.71**)	(**3.47**)	(**4.39**)	(1.83)
Small	P1	-0.88	-0.39	-1.35	0.37	0.11	-0.06	-0.07	-0.16	-0.25
	P5	0.28	0.31	-0.10	-0.37	-1.50	-0.63	-0.57	-0.31	-0.28
	Strategy	1.16	0.70	1.24	0.74	1.60	0.56	0.50	0.15	-0.03
		(**4.76**)	(**4.52**)	(**5.60**)	(**3.25**)	(**4.80**)	(**3.70**)	(**2.63**)	(1.88)	(-0.22)
Big	P1	-0.51	-0.14	-0.68	0.15	0.08	0.12	0.05	-0.02	-0.08
	P5	0.29	0.06	0.01	-0.40	-1.28	-0.27	-0.17	-0.09	-0.03
	Strategy	0.80	0.20	0.69	0.55	1.36	0.39	0.22	0.07	0.05
		(**2.72**)	(1.12)	(**3.52**)	(1.88)	(**3.03**)	(**1.99**)	(0.69)	(0.53)	(0.44)