Overpricing:
Evidence from earnings announcements

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Abstract

In the days before earnings announcements we find an average price increase of almost 1 percent for stocks that are likely to be overpriced already – stocks with low institutional ownership combined with high market-to-book ratios, turnover, volatility, or analyst forecast dispersion. However, in the days after earnings announcements these same stocks generate negative abnormal returns of more than 3 percent. Together, these results indicate a significant net correction following earnings announcements for stocks that are prone to be overpriced. These results are consistent with the optimism bias hypothesized in Miller (1977), and with recent evidence that cross-sectional return predictability is concentrated among stocks with low institutional ownership.

JEL Classification: D82, G14, G19.
Key Words: market efficiency, short-sale restrictions, overpricing, earnings announcements, institutional ownership.

Introduction

Several firm characteristics are effective in predicting the cross-section of stock returns.[1] Nagel (2005) suggests this return predictability takes the form of overpricing. He appeals to Miller's (1977) theory which posits that, given short-sale constraints and dispersion of opinions, a stock price will be biased upward because optimistic investors will buy the stock whereas pessimists are kept out of the market. Consistent with this hypothesis, Nagel shows that stocks with low institutional ownership (his proxy for short-sale constraints) combined with high values of four predictor variables (market-to-book ratio, stock return volatility, share turnover, or analyst forecast dispersion) experience significant price declines over the next year.

This paper shows that, for stocks with low institutional ownership combined with high values of these predictor variables, overpricing also manifests itself as a significant price decline in the few days around earnings announcements. However, this price decline is composed of an 1 percent price run-up before the announcement that is outweighed by a reversal of more than 3 percent after the announcement. We argue that this seemingly anomalous stock price behavior around earnings announcements is also consistent with the optimism bias in Miller (1977).

Earnings announcements are of particular interest to test the overpricing hypothesis, since any overpricing due to overly optimistic investors is likely to be reduced quickly, when value relevant information is disclosed and dispersion of opinions declines after the earnings release. However, before the announcement arrives and this correction occurs, the overpricing would be briefly exacerbated if investors temporarily increase their positions to speculate on the outcome

1 See Fama and French (1992) for evidence of cross-sectional return predictability based on the market-to-book ratio, Ang et al. (2006) for predictability based on firm-level volatility, Brennan et al. (1998) for predictability based on trading volume, and Diether et al. (2002) for predictability based on analyst forecast dispersion.

of the announcement.[2] According to this scenario, the optimism of investors holding overpriced stocks gives them incentive to further increase their holdings immediately before an earnings release, expecting that their presumed private information will be partially revealed at the forthcoming announcement. However, this additional demand from optimists is not matched by an increase in the supply from pessimists because of the limited ability of sophisticated investors to sell these overpriced stocks. As a result, the buying pressure associated with binding short sale constraints and dispersion of opinions that allegedly underlies the overpricing observed in Nagel (2005), is amplified in the period just before earnings announcements. Hence, we expect the strongest price increase in the period before the earnings announcement for stocks that are most prone to overpricing to begin with: stocks with low institutional ownership combined with high values of the four predictor variables.

After the announcement there are two predictable components of the price reaction for overpriced stocks. First, overly optimistic investors will cut back the intensified speculative positions they entered before the earnings release to bet on the outcome of the announcement. As a result, the price run-up in the days before the announcement should naturally be followed by a reversal. Second, to the extent that stocks with low institutional ownership and high dispersion of opinions were already overpriced before the event, the earnings release will reveal that investors in these stocks were too optimistic on average, resulting in a further price decrease. Combining these effects, we hypothesize that stocks which are already overpriced should have a temporary additional price run-up before the announcement that is outweighed by a larger price decline after the announcement.

2 Christensen and Feltham (2002) intuit that investors are likely to go long or short immediately before earnings announcements based on their private information, and then reverse their positions after the information from the announcement is impounded in prices (p. 397). He and Wang (1995) provide theoretical support for this behavior, whereas Chordia et al. (2001), and Morse (1981) provide empirical support.

We empirically test these hypotheses for a sample of more than 37,000 earnings announcements over the five-year period, 2000 – 2004. We use a portfolio approach to analyze how return predictability around earnings announcements depends upon the four predictor variables and institutional ownership (controlling for firm size). We also present regression analysis that directly controls for firm size, institutional ownership, and the earnings surprise.

Following Nagel (2005) we use institutional ownership as our proxy for short sale constraints. For the short windows considered in this study the cost of short selling is relatively small. However, since most professional investors never sell short (see Alamazan et al., 2004), institutions are limited in their ability to sell overpriced stocks that they do not own. This behavior effectively represents a limit to arbitrage in these overpriced stocks.

Consistent with our hypotheses, we find that stocks with high predictor variables out- (under-) perform stocks with low predictor variables in the few days before (after) earnings announcements. Importantly, and consistent with Nagel (2005), these differences in abnormal returns are greatest for stocks with low institutional holdings, but are never significant for stocks with high institutional ownership. Furthermore, we find the price correction for overpriced stocks after the announcement goes well beyond the short term price increase before the event.[3]

This study contributes to the literature on cross-sectional return predictability. Using event study methodology, we confirm the main finding in Nagel (2005) that short sale constraints help to explain cross-sectional return predictability. Our study also shows that the optimism bias hypothesized in Miller (1977) manifests itself in stock prices over a much shorter

3 Our results are robust across the predictor variables, across different event windows, and across different methodologies. We also confirm our findings using a large sample of earnings announcements by firms in the merged Compustat-CRSP database.

time-frame than is suggested in previous work,[4] and helps to explain seemingly anomalous stock return patterns over short event windows.[5]

The remainder of this study is organized as follows. Section 1 reviews the literature and develops our hypotheses. In section 2 we describe the data and research design. Section 3 presents the results and section 4 summarizes and concludes.

1. Literature Review and Hypotheses

This paper draws on two research areas. We first review the literature regarding the impact of dispersion of opinions on stock prices when investors are limited in their ability to short sell. Next we discuss the literature on speculative trading around public announcements.

1.1 Heterogenous beliefs and short selling constraints

Miller (1977) introduced the idea that, when there are short sale constraints, a stock price will be biased upward because the most optimistic investors will buy the stock whereas pessimists are kept out of the market.[6] Recent empirical evidence supports the basic Miller (1977) prediction, indicating that arbitrageurs do not always force prices back to equilibrium. Asquith et al. (2005), Chen et al. (2002)), Jones and Lamont (2002), and Ofek and Richardson (2003) focus on the severity of the short sale constraints, and find that more binding constraints are associated with more dramatic overpricing and lower subsequent returns over the following months and quarters. Diether et al. (2002) use the dispersion across analysts' earnings forecasts

4 Prior work indicates overpricing consistent with Miller's theory over a period of months (Boehme et al., 2006, Diether et al., 2002, Ofek and Richardson, 2003) or quarters (Asquith et al., 2005, Chen et al., 2002, Nagel, 2005).
5 For example, Trueman et al. (2003) document a stock price pattern around earnings announcements by internet stocks during the late 1990's that resembles the pattern we observe for overpriced stocks. Similar to the 'overpriced stocks' in our analysis, these internet stocks were characterized by low institutional ownership and high dispersion of opinions (see Ofek and Richardson, 2003).
6 More recent theoretical models such as Chen et al. (2002), Duffie et al. (2002), Morris (1996) and Scheinkman and Xiong (2003) arrive at similar predictions. In contrast, Diamond and Verrecchia (1987) and Hong and Stein (2003) argue that rational traders take into account short sales constraints and adjust their prices so that, on average, prices are not biased.

to capture the degree of investor heterogeneity, and find stocks subject to greater dispersion of opinions are more overpriced, experiencing lower returns over the following months.

Nagel (2005) extends this literature by showing that institutional ownership (his proxy for short sale constraints) helps to explain several well-known cross-sectional stock return anomalies. Controlling for firm size, he finds that abnormal returns from trading strategies based on the market-to-book ratio, volatility, turnover, or analyst forecast dispersion are most pronounced for stocks with low institutional ownership. Furthermore, he finds these firm characteristics can predict negative returns, but not positive returns. His evidence suggests the predictability from these four firm characteristics results from overpricing and not risk.[7]

In the spirit of Miller (1977), Nagel (2005) suggests that institutional ownership plays an important role for two reasons. First, as shown in D'Avolio (2002), institutional ownership is the dominant variable explaining the cost of short selling.[8] Secondly, since the majority of institutional investors do not sell short (see Almazan et al., 2004), most of these sophisticated investors can only sell an overpriced stock if they own the stock. Consequently, stocks with low institutional ownership could remain overpriced for longer periods of time. Since institutions can always buy underpriced stocks, the same logic does not apply to the buy-side and there is less reason to expect a stock with high institutional ownership to be underpriced.

The predictor variables used in this study are the same as in Nagel (2005). Three of these variables (turnover, volatility, and analyst dispersion) have been used to proxy dispersion of opinions in previous studies.[9] Furthermore, we find the fourth (market-to-book ratio) is positively correlated with the other three predictor variables. In addition, returns on growth

7 Other studies have shown that these anomalies are related to firm size (e.g. Loughran, 1997 and Griffin and Lemon, 2002) and investor sophistication (e.g. Ali et al., 2003).
8 D'Avolio (2002) reports that the percentage of institutional ownership explains 55 percent of the cross-sectional variation in the percentage loanable shares scaled by shares outstanding.
9 For example, see Diether et al. (2002), Boehme et al. (2006), and Gebhardt et al. (2001).

stocks (with high market-to-book ratios) are likely to be more sensitive to differences of opinion about the firm's expected earnings than the returns of value stocks since the equity value of growth stocks depends more on expected future earnings growth and less on assets-in-place (see Diether et al., 2002).

1.2 Speculative trading around public announcements

Prior research suggests that investors respond to anticipated public announcements by taking speculative positions based on their private information, to bet on the outcome of the announcement. For example, Kim and Verrechia (1991) show how public announcements create incentive to acquire private information, resulting in heterogeneous beliefs and speculative trading before earnings announcements. He and Wang (1995) develop a multi-period rational expectations model of competitive stock trading. In their model, investors receive supply shocks that generate noise trading, as well as differential private information, which generates information-based trading. The model also contains a public signal about the true value of the stock (such as an earnings announcement). Anticipation of this public signal generates additional information-based trading, as investors bet on the outcome of the impending announcement based on their private information. As a result, investors will intensify their speculative trading around a public announcement, increasing their positions just before the announcement and reducing their positions after the announcement.

The empirical evidence in Morse (1981) is consistent with the implications of He and Wang (1995), suggesting that investors take on additional speculative positions prior to earnings announcements which they unwind after the announcement. Chordia et al. (2001) also find that trading activity and market depth increase in the two days before scheduled public announcements of GDP and the unemployment rate, and then fall back toward normal levels

after the announcement. They argue that this behavior is consistent with differences of opinion and a concomitant flurry of prior uninformed trading, as well as an increase in the number of informed traders, in anticipation of the forthcoming announcement (Chordia et al., 2001, p. 524).

1.3 Hypotheses

Based on this discussion, we expect increased pice pressure in anticipation of earnings announcements if optimistic investors further increase their speculative positions just before earnings announcements, while pessimists are forced to remain on the sidelines. Furthermore, we expect this upward pressure to be greatest for stocks that were already most prone to this overpricing behavior before the event: stocks with low institutional ownership combined with high values of the four predictor variables. This discussion leads to our first hypothesis:

H1: Before earnings announcements, stocks with high predictor variables (market-to-book ratio, volatility, turnover, or analyst forecast dispersion) should outperform stocks with low predictor variables, and this out-performance should be greatest for stocks with low institutional ownership.

If optimistic investors cut back their intensified speculative positions after the earnings announcement, the price run-up in the days before the announcement will be reversed. In addition, the earnings information released in the announcement should resolve uncertainty about earnings and reduce overall dispersion of opinions, leading to a further price decline after the announcement for stocks that were already overpriced before the event. This discussion leads to our second and third hypotheses:

H2: After earnings announcements, stocks with high predictor variables should under-perform stocks with low predictor variables, and this under-performance should be greatest for stocks with low institutional ownership.

H3: In the period around earnings announcements (before and after combined), stocks with high predictor variables should under-perform stocks with low predictor variables, and this under-performance should be greatest for stocks with low institutional ownership.

2. Sample Selection, Variable Construction, and Research Design

2.1 Sample Selection

Alignment of event dates around the precise time of the earnings announcement is essential in this study, because our main hypotheses predict opposite return patterns in the days before versus after the earnings release. Our sample of announcements is thus taken from a source that reports the precise time of each announcement: the earnings calendar on WSJ.com. If the announcement occurs before the market opening on a given calendar date, the time entry is 'BMO'; for announcements made after the market close the time entry is 'AMC'; and for announcements made public during the trading day, the hour and minute of the announcement are reported.

We limit our main sample to earnings announcements available on WSJ.com over the five-year period from 2000 through 2004, made by all stocks in the Russell 3000 index as of 2004. This selection criterion keeps data collection manageable and yet includes stocks comprising more than 98% of the total U.S. market capitalization. The main sample includes 37,219 earnings announcements, 17,461 of which take place after the close of trading. Event day 0 is the calendar date of the announcement if it takes place before the close of trading, and one trading day later if it takes place after the close. Appendix A provides a detailed discussion of our sample selection procedure.

We also examine the robustness of our results by considering a broader sample of earnings announcements for all stocks with data in both CRSP and Compustat, over the ten-year

period from 1995 through 2004.[10] For this expanded sample of 259,486 earnings announcements, we do not have the precise time of day the earnings were released, so we assign the Compustat announcement date as event day 0. Note that this procedure results in the misalignment of event day 0 for all announcements made after trading hours.[11] Therefore in this additional analysis we do not separately analyze the returns in the days before and after the earnings announcement date. Instead, we focus on the total return over the 4-day window from day -2 through day +1 around the Compustat earnings announcement date (day 0).

2.2 Variable Construction

Daily stock returns are obtained from the Center for Research in Securities Prices (CRSP). Accounting data are from the Compustat annual industrial files of income statements and balance sheets. Data on quarterly earnings and analyst forecasts are taken from I/B/E/S.

We use the same four firm-level return predictor variables as in Nagel (2005): market-to-book ratio, stock return volatility, share turnover, and analyst forecast dispersion. The market-to-book ratio (MBK) is the market value of equity at the end of the fiscal year (product of Compustat annual data items 25 and 199) divided by the book value of common equity (Compustat annual data item 60). Portfolios are formed in June of each year, using the market-to-book ratio from the prior fiscal year-end. Consistent with previous research, we only use stocks with positive market-to-book ratios. Volatility (VOL) is the standard deviation across daily returns over the 45 trading days from day -50 to day -5, prior to the earnings announcement (day 0). Turnover (TURN) is average daily turnover for the same pre-announcement period (-

10 Consistent with Nagel (2005) we exclude stocks in the two lowest NYSE/AMEX size deciles from our analysis.
11 Evidence reported in Della-Vigna, and Pollet (2005) shows that since 1995 Compustat earnings announcement dates are accurate (i.e., the same as the actual earnings announcement date) for 97 percent of their sample. However, for these announcements there is still a problem determining event day 0 since some announcements are BMO and some announcements are AMC. Before 1995, event day misalignment is even more likely, with less than 70 percent of Compustat earnings announcement dates being accurate.

50,-5), where daily turnover is defined as the number of shares traded per day divided by the total shares outstanding. Analyst forecast dispersion (ADISP) is the standard deviation across all valid analyst forecasts made within the 45 calendar days prior to the earnings announcement, using unadjusted data from I/B/E/S. We scale this standard deviation by total assets per share, following Johnson (2004). Finally, we construct the quarterly earnings surprise (SURPRISE) as the difference between actual quarterly earnings released on day 0 and the most recent analyst forecast prior to day 0, scaled by the stock price ten days before the announcement.[12] A more detailed description of the construction of ADISP and SURPRISE from the I/B/E/S data can be found in Appendix B.

Data on institutional holdings are from CDA Spectrum 13F Filings, available through Thomson Financial. All institutional investors that manage portfolios of $100 Million or more must file quarterly 13F reports with the SEC. These institutions include banks, insurance companies, brokerage firms, pension funds, and other investment houses. Institutions are required to report all their equity holdings greater than 10,000 shares or $200,000 in market value, at the end of each quarter. Consistent with prior research, we refer to institutional holdings as the equity holdings of managers that submit 13F Filings.

For each quarter we calculate the percentage of institutional holdings (PCT_INST) for each firm as the aggregate shares held by institutions scaled by the total shares outstanding. If a stock is available in CRSP but lacks any information on institutional ownership from the 13F filings data, we assume this stock has zero institutional ownership (see Asquith et al., 2005,

12 Results are robust with respect to alternative choices for the time frame before earnings announcements used to measure stock return volatility, share turnover, and analyst forecast dispersion. We also consider several alternative measures of the earnings surprise, including actual earnings minus the mean or median earnings forecast over the 45 days before the announcement, all scaled by the stock price ten days before the announcement. Results are robust, and available upon request.

Gompers and Metrick, 2000, and Nagel, 2005). A more detailed description of our construction of this variable appears in Appendix C.

2.3 Research Design

Our main results are based on size-adjusted returns for windows of 2 days before and 2 days after the earnings announcement on event day 0 (where event day 0 is the first trading day with a closing price after the announcement). *RetBefore* is the size-adjusted return over the 2 days before the announcement. It is defined as the sum of the daily (log) returns on event days -2 and -1, minus the equally-weighted return for all NYSE/AMEX firms in the same size-decile, over the same period (see Bartov et al., 2000, and Battalio and Mendenhall, 2005). *RetAfter* is the size-adjusted return over the 2 days after the announcement, defined as the sum of the returns on event days 0 and +1 minus the return on the corresponding size-decile portfolio over the same period. Finally, *RetTotal* is the cumulative return over the 4-day period covering day -2 through day +1, minus the return on the corresponding size-decile portfolio over the same period. (In our robustness tests, we present analogous results for windows of different lengths).

There is a strong positive correlation between firm size and institutional ownership. We therefore follow Nagel (2005) and generate a measure of residual institutional ownership (RIO) that controls for firm size as follows. For every quarter in our sample, we estimate a cross-sectional regression of the percentage of institutional ownership (after a logit transformation, as in Nagel, 2005) on the natural log of firm size and the log of firm size squared. The residual from this regression is defined as RIO, and is used to partition the sample into quintiles, where quintile 1 includes the stocks with the lowest values for RIO and quintile 5 includes the stocks with the

highest values. In all our tests, we use the level of residual institutional ownership in the quarter preceding the earnings announcement.[13]

In our first set of tests, we compare size-adjusted returns around earnings announcements on different portfolios of stocks where each portfolio is created by independently sorting the entire sample into quintiles based on two factors: (i) RIO, and (ii) each of the four predictor variables (where quintile 1 includes stocks with low values, and quintile 5 includes stocks with high values). Each double-sorting scheme is done on a quarterly basis and leads to 25 portfolios.

Since many firms announce earnings on the same calendar date, standard t-tests applied to cross-sectional mean returns could be biased upward due to cross-correlation of returns on the same date (see Bernard, 1987). We conduct tests that are not affected by this bias. Specifically, for each of the 20 quarters in our sample period, we allocate stocks with earnings announcements in that quarter to one of our double-sorted portfolios. We then calculate equally-weighted size-adjusted returns for each portfolio during every quarter. Finally, we report the mean returns of portfolios with the same characteristics, averaged across the 20 quarters. The corresponding t-statistics are based on the time-series standard errors, and thus do not suffer from any potential bias associated with clustering of events (see Fama and McBeth, 1973, and La Porta et al., 1997).

In our second set of tests, we use cross-sectional regression analysis to investigate the impact of institutional ownership in relation to each predictor variable on earnings announcement returns. This approach allows us to control for firm size, the level of institutional ownership, and the earnings surprise simultaneously. Controlling for the level of institutional ownership is important, since prior research suggests that institutional investors have superior stock picking

13 Similar results are obtained when we repeat the procedure above and use RIO two quarters preceding the earnings announcement. We have also repeated all tests using a sorting procedure where we first rank all firms into 5 groups based on firm size and then, within each size group, form 5 finer portfolios based on the level of institutional ownership (PCT_INST). The results using this procedure do not change any of the conclusions.

skills (see Baker et al., 2004, and Ali et al., 2004). Inclusion of firm size as an explanatory variable is also useful as a robustness check on the methodology in the first set of tests that incorporate residual institutional ownership. Finally, since stock returns around earnings announcements are strongly related to the earnings surprise, inclusion of this variable will enhance our insight into the relation between overpricing and earnings announcement returns, after accounting for the information content of each earnings release.

3. Results

In this section we first present descriptive statistics for our sample. Next we test our hypotheses by comparing size-adjusted returns around earnings announcements on different portfolios of stocks based on residual institutional ownership and each predictor variable. Finally, we present the results of regression analysis that allows us to investigate our hypotheses while controlling for the influence of other relevant variables.

3.1 Descriptive statistics

Table 1 provides descriptive statistics for the variables used in this study. The reported means and standard deviations in Panel A of Table 1 are calculated cross-sectionally for each quarter, and then averaged across the 20 quarters in our sample period. Also reported is the average number of observations per quarter for each of the variables. The number of observations per quarter ranges from 996 for ADISP to 1,861 for TURN, VOL, and the return measures.

The average institutional ownership (PCT_INST) is 56 percent of total shares outstanding, whereas average residual institutional ownership (RIO) is 0 by construction. Across the entire sample of earnings announcements, the average RetBefore is positive 0.2 percent, and

the average RetAfter is negative 0.1 percent, so they combine to yield an average RetTotal of 0.1 percent.

In Panel B of Table 1 we report the average correlations across the variables. Once again, we first calculate the cross-sectional correlation for each quarter, and then report the mean correlation across the 20 quarters in our sample period. We find a significant positive correlation between VOL and TURN of almost 50 percent, which is consistent with prior work (see Chan and Fong, 2000, and Jones et al., 1994). The correlations across all other pairs of the four predictor variables are substantially lower. As expected, firm size and institutional holdings (PCT_INSTO) are significantly positively correlated, whereas firm size is uncorrelated with RIO by construction.

Next consider the mean correlations of each return measure with the four predictor variables, and institutional ownership. While these bivariate correlations should be interpreted with caution, several interesting patterns emerge. First, TURN, VOL and ADISP are all significantly positively correlated with the 2-day return before the announcement (RetBefore), and significantly negatively correlated with the 2-day post-announcement returns (RetAfter). For MBK the correlations with RetBefore is insignificant, but there is a significant negative correlation between this predictor variable and RetAfter. Second, the 4-day total return around the announcement (RetTotal) is negatively correlated with each predictor variable at the 10-percent level or better. These negative correlations are consistent with earlier research that shows stock returns are negatively associated with trading volume, volatility, market-to-book ratios, and analyst forecast dispersion (see footnote 1).

Finally, consider the association between institutional ownership and stock returns around earnings announcements. The unadjusted percent of institutional ownership (PCT_INST)

is significantly negatively correlated with the 2-day pre-announcement return, and positively correlated with both the 2-day post-announcement return and the 4-day total return. After controlling for firm size, the correlation between RIO and the 2-day pre-announcement return becomes insignificant, but the positive correlation between RIO and both the return after the announcement and the total return around the announcement remain significantly positive. These positive correlations are consistent with prior research suggesting institutional investors have superior stock picking skills (see Baker et al., 2004, and Ali et al., 2004).

In the next sections we use a portfolio approach and cross-sectional regression analysis to formally investigate how return predictability around earnings announcements depends on institutional ownership and the four predictor variables.

3.2 Portfolios based on institutional ownership and each predictor variable

Table 2 reports the mean size-adjusted returns around earnings announcements for different portfolios formed based on quintiles of residual institutional ownership (RIO) and each of the four predictor variables. This procedure results in four different 5 X 5 portfolio stratification schemes. Panel A of Table 2 presents the mean 2-day pre-announcement abnormal returns (RetBefore) for these 5 X 5 portfolio stratifications. Panel B provides the analogous 2-day post-announcement returns (RetAfter), and Panel C provides the total 4-day returns around the announcement (RetTotal).

3.2.1 Abnormal returns before earnings announcements

First consider the pre-announcement size-adjusted returns in Panel A of Table 2. The left (right) column of each 5 X 5 partitioning in Panel A reports the 2-day returns for portfolios of

stocks with low (high) residual institutional ownership. As we move down each column, we go from stocks with low to high values of each predictor variable.

The bottom row of each 5 X 5 stratification scheme in Panel A is dominated by positive abnormal returns, with one or two abnormal returns significantly positive for each predictor variable. These results indicate substantive pre-announcement price increases for stocks with high values of all four predictor variables. The bottom left element in each 5 X 5 partitioning scheme in Panel A contains the largest or second largest positive abnormal return reported in each 5 X 5 partitioning scheme in Panel A. These 2-day abnormal returns are economically significant, ranging from 0.55 percent for the portfolio with low RIO combined with high ADISP (t-value is 1.4) to 0.89 percent for the portfolio with low RIO combined with high TURN (t-value is 2.3).

The mean difference t-test at the bottom of each column in Panel A tests whether the mean pre-announcement abnormal return for the portfolio with high values of the predictor variable exceeds that for the portfolio with low values, conditional on the level of institutional ownership. For all predictor variables except MBK, stocks with high values of that variable consistently outperform stocks with low values before the announcement. However, the outperformance is statistically significant only for the quintiles with the lowest or next to lowest level of institutional ownership.[14]

The results in Panel A are consistent with our first hypothesis. Stocks with high values of the predictor variables experience a significantly greater pre-announcement price run-up than stocks with low values of the predictor variables, and this outperformance is greatest for stocks with low institutional ownership. It is noteworthy that the significant pre-announcement positive

14 For low levels of institutional ownership, high MBK stocks also tend to outperform low MBK stocks, but this difference is not significant.

returns documented in Panel A are concentrated among stocks with, both, low institutional ownership and high predictor variables. This means that stocks which are already overpriced according to Nagel (2005), tend to become even more overpriced in the days before an earnings announcement.

3.2.2 Abnormal returns after earnings announcements

Next consider the post-announcement 2-day abnormal returns provided in Panel B of Table 2. The bottom row of each 5 X 5 stratification scheme in Panel B is dominated by significant negative abnormal returns, indicating substantive price declines for stocks with high values of all four predictor variables. Once again, these price declines are most dramatic for stocks with low institutional ownership, in the bottom left corner of each stratification. These 2-day abnormal returns are economically significant, ranging from -2.1 percent for the portfolio with low RIO combined with high MBK (t-value is -5.8) to -3.3 percent for the portfolio with low RIO combined with high ADISP (t-value is -8.5). These results indicate that stocks which are prone to overpricing demonstrate a dramatic price decline in the days immediately following the release of value-relevant information.

The mean difference t-test at the bottom of each column in Panel B indicates a significant difference in 2-day post-announcement abnormal returns across most portfolios with high versus low values of the predictor variable. Once again, these differences are most dramatic when institutional ownership is low. These results are consistent with our second hypothesis, indicating that stocks with high values of the predictor variables significantly underperform similar stocks with low values of the predictor variables, and this underperformance is greatest for stocks with low institutional ownership.

3.2.3 Total abnormal returns before and after earnings announcements

Finally, Panel C of Table 2 presents the results for the 4-day total returns around the announcement (RetTotal). These results mirror those provided in Panel B, as the post-announcement 2-day price reversal in Panel B tends to dominate the pre-announcement 2-day price run-up in Panel A, especially for stocks that are prone to overpricing. In particular, the last row of each 5 X 5 stratification scheme in Panel C is dominated by price declines, which are significant for stocks with low institutional ownership. Once again, the bottom left cell is the largest negative abnormal return reported in each 5 X 5 stratification scheme. These 4-day abnormal returns for stocks with low institutional ownership combined with high predictor variables are economically significant, ranging from -1.3 percent for MBK (t-stat is -2.5) to -2.7 percent for ADISP (t-stat is -3.7).

The mean difference t-tests at the bottom of each column in Panel C, are consistent with our third hypothesis, and show that stocks with high values of the predictor variables have smaller (larger negative) total earnings announcement returns than stocks with low values of the predictor variables, especially when combined with low institutional ownership.

To summarize, the results in Table 2 are consistent with all three hypotheses we specify. In each case, the extreme performances before and after earnings announcements are concentrated among stocks with low institutional ownership combined with high values of the predictor variables. These results support the view that the predictable price changes in these stocks are due to overoptimism combined with limited ability of institutional investors to sell these stocks.

3.3 Cross sectional regressions

Table 3 presents the results of cross-sectional regression models in which we directly control for firm size, the level of institutional ownership, and the earnings surprise, as follows:

$$\text{Ret(Before, After, Total)}_i = a + b_1\,\text{size}_i + b_2\,\text{pct\_inst}_i + b_3\,\text{pred}_i + b_4\,\text{pred}_i\text{*size}_i + b_5\,\text{pred}_i\text{*pct\_inst}_i + b_6\,\text{surprise}_i + \varepsilon_i \quad (1)$$

The variable labelled, pred, refers to each predictor variable (VOL, TURN, MBK, or ADISP). All other variables are defined above. Since several explanatory variables have substantial outliers, we transform all explanatory variables into decile ranks each quarter. We then scale the decile-ranks to range from 0 to 1, to facilitate interpretation of the coefficients.[15]

Table 3 provides the mean coefficients and t-statistics obtained from estimating 20 different quarterly cross-sectional regressions over the 5-year period from 2000 through 2004. Panel A gives the results for the abnormal return in the 2 days before the earnings announcement. We are especially interested in the coefficients, b_3 and b_5. The former (b_3) reveals the association between each predictor variable and the 2-day pre-announcement return, while the latter (b_5) shows how this association is affected by the level of institutional ownership.[16]

Observe that b_3 is significantly positive in Panel A for regressions using three of the four predictor variables (VOL, TURN, and ADISP). This result indicates a greater pre-announcement price increase for deciles of stocks with higher levels of these three predictor variables. In addition, the coefficient, b_5, is negative for these predictor variables (and significantly so for

15 The same regression framework is used in Nagel (2005). Using raw measures (after log-transformation of the predictor variables) rather than decile ranks for the independent variables does not change any of the conclusions.

16 To see this, consider the model: Ret(before, after, total) = $\alpha + \beta_1$ size + β_2 pct_inst + β_3 pred + $\beta_4$surprise + ε. Suppose the association between the predictor variable and each return measure (β_3) depends on firm size and institutional ownership, as follows: $\beta_3 = \lambda_0 + \lambda_1$size + $\lambda_2$pct_inst. Then the model becomes: Ret(bef, after, total) = $\alpha + \beta_1$size + $\beta_2$pct_inst + ($\lambda_0 + \lambda_1$size + $\lambda_2$pct_inst)pred + $\beta_4$surprise + ε. Expanding this expression yields our regression model (1). The coefficients of the two interaction terms in (1) represent the influence of firm size and pct_inst, respectively, on the association between the predictor variable and the return measure (β_3).

VOL and TURN), implying that this pre-announcement price increase is *greater* for deciles with *lower* institutional ownership.

To illustrate the implications of this analysis, consider the results using volatility (VOL) as the predictor variable, provided in the first column of Panel A. The coefficient for VOL (b_3) is 1.9 percent, which implies that moving from the lowest to the highest VOL-decile increases the average 2-day return before earnings announcements by approximately 1.9 percent. The coefficient for the interaction term (b_5) is -1.2 percent, which indicates that moving from the lowest to the highest institutional ownership decile reduces this pre-announcement price increase to approximately 0.7 percent (1.9 percent minus 1.2 percent). The results for TURN and ADISP are analogous, showing that pre-announcement returns increase significantly in these predictor variables, and these price increases are smaller for deciles with higher institutional ownership.

Overall, the results in Panel A of Table 3 are consistent with those from the portfolio approach in Panel A of Table 2, and support our first hypothesis. Stocks which are prone to overpricing - with low institutional ownership combined with higher values of the predictor variables - tend to experience a greater price run-up before earnings announcements.

Another interesting result in Panel A is that the coefficient of the other interaction term, between SIZE and the predictor variable (b_4), is also significantly negative for three of the four predictor variables. For example, in the first column of Panel A b_4 is -1.4 percent, which indicates that moving from the lowest to the highest size decile reduces the pre-announcement price increase for high-VOL stocks to approximately 0.5 percent (1.9 percent minus 1.4 percent). This negative interaction term (b4) might reflect higher transaction costs for smaller firms, which would make arbitrage more expensive (see Sadka and Schrebina, 2006).

Panel B of Table 3 presents the analogous results for the 2-day post-announcement returns. Again, consistent with the portfolio approach in Table 2, we find that the post-announcement returns behave in the opposite way to the pre-announcement returns. In Panel B the coefficient, b_3, is significantly *negative* for all four predictor variables. This result indicates a greater post-announcement price decline for deciles of stocks with higher levels of the four predictor variables. In addition, the coefficient, b_5, is now significantly *positive* for all four predictor variables, implying that this post-announcement price decline is smaller for deciles with higher institutional ownership. Once again, consider the results using volatility (VOL) as the predictor variable, provided in the first column of Panel B. The coefficient for VOL (b_3) is now -3.9 percent, which implies that moving from the lowest to the highest VOL-decile is associated with a 3.9 percent larger 2-day price decline after earnings announcements. The coefficient for the interaction term (b_5) is 2.8 percent, which indicates that moving from the lowest to the highest institutional ownership decile attenuates this post-announcement price decline to approximately 1.1 percent (3.9 percent minus 2.8 percent).

The results in Panel B of Table 3 corroborate those from the portfolio approach in Panel B of Table 2, and support our second hypothesis. Stocks which are prone to overpricing – with low institutional ownership combined with higher values of the predictor variables - tend to experience a greater price decline after earnings announcements.

Finally, in Panel C of Table 3 we report the analogous results for the total returns in the four days around earnings announcements. As in Panel B, we find that total returns are significantly negatively related to all four predictor variables ($b_3 < 0$). This result supports the view that the price decline of overpriced stocks after the earnings announcement incorporates a correction that goes well beyond the short term price increase before the announcement. In

addition, the coefficient, b_5, is once again significantly positive for all four predictor variables, implying a smaller earnings-announcement price decline for stocks with higher levels of institutional ownership. These results provide additional corroborating support for our third hypothesis, indicating that stocks which are prone to overpricing experience a net correction in the days surrounding earnings announcements.

4. Robustness tests

In this section we present three sets of robustness tests. In the first set of tests we show that our results are robust to the choice of event window, the use of unadjusted returns or market-adjusted returns, and the exclusion of low-priced stocks. We also investigate whether our results are stronger for stocks with a high short interest ratio (Asquith et al., 2005). Our second robustness test develops a simple trading strategy based on the assumption that the price correction for overpriced stocks might take more than 1 quarter. The third set of robustness tests analyzes a larger sample of 259,486 earnings announcements over the 10-year period from 1995 through 2004. For this expanded sample we do not have the precise time of the announcement, so we focus only on total earnings announcement returns to investigate possible systematic behavior involving the interaction between institutional ownership and the four predictor variables. We also present the results of portfolio strategies based on other variables that have been shown to be effective in the cross-section of security returns: earnings-price ratio, the cash-flow-to-price ratio, past 6-month returns, and past earnings momentum (Basu, 1977, Jegadeesh and Titman, 1993, Chan et al., 1996, and Reinganum, 1981).

4.1 Alternative event windows, return measures, low-priced stocks, and high short interest

The first set of robustness tests are presented in Table 4. This table reports average abnormal returns before and after earnings announcements in Panels A and B, respectively. Results are provided for portfolios that are long the quintile of stocks with the highest values of the predictor variable and short the quintile of stocks with the lowest values of the predictor variable. For brevity, we only present the results for the subsets of stocks including the lowest, middle, and highest quintiles based on residual institutional ownership. The base-case provided in the first row of Panels A and B reproduces the results in Table 2, using size-adjusted abnormal returns for the 2 days before and after the announcement. In the subsequent tests we change only one aspect of the strategy, to facilitate comparison with the base case.

The second test provided in Panels A and B of Table 4 shows that, using one-day windows, we obtain similar results to the base case with 2-day windows. Before the announcement (in Panel A), quintiles with high values for the predictor variables outperform quintiles with low values when institutional ownership is low. After the announcement (in Panel B), this result reverses so that quintiles with high values of the predictor variables underperform quintiles with low values when institutional ownership is low. The third test in Panels A and B indicates that, using 5-day windows, the signs and the significance levels are also similar to the base case, but now the (absolute) returns on these zero-cost portfolios tend to be larger.

Next, the results of the fourth and fifth tests in Table 4 show that, when we use unadjusted returns or market-adjusted returns rather than size-adjusted returns, the results are robust compared to the base case. Moreover, the sixth test in Table 4 reveals that our results are robust when we exclude stocks with an average price of 5 dollars or lower during the pre-announcement period (from day -50 through day -5).

Finally, the last test in Panels A and B of Table 4 examines the impact of relative short interest on the performance of these portfolios. Relative short interest is defined as a stock's monthly average short interest (the number of shares shorted) divided by the total shares outstanding. According to Asquith et al. (2005), stocks are severely short sale constrained when demand for short selling is high (as evidenced by high relative short interest) and the supply of shares to short is limited (as evidenced by low institutional ownership). Asquith et al. argue that, based on this criterion, the overwhelming majority of stocks are not severely short sale constrained. They find stocks that are severely short sale constrained in this fashion underperform over subsequent months.

We investigate this issue by partitioning the sample of earnings announcements in each column of Table 4 into two finer subsamples. The first subsample is the decile of stocks in that column with the highest short interest ratio during the month prior to the earnings announcement, while the second subsample contains all other stocks in that column.[17] We expect severely short sale constrained stocks (with both low institutional ownership and high short-interest) to display a larger pre-announcement price run-up and a larger post-announcement price decline.

Results are provided in the bottom four rows of Panels A and B in Table 4. The first row gives the results for stocks with high short interest while the second row provides the results for all other stocks. The last two rows present the mean difference in the returns between these two groups, along with the corresponding t-statistic for this mean difference. The results in Panel A show that, for stocks with low institutional holdings, the pre-announcement price run-up tends to be larger for stocks with high short interest ratios, although this difference is never statistically significant. Similarly, Panel B indicates that the price decrease after the announcement is larger

17 As before, the groupings based on short interest are based on all observations within each quarter.

for stocks with high short interest, although this difference is not statistically significant.[18] Thus the results in our last robustness test are too weak to draw any firm conclusions regarding the impact of the short-interest ratio on earnings announcement returns.

4.2 Predicting the Earnings Announcement Price Pattern from One Quarter to the Next

The second robustness test is provided in Table 5. This test is based on the possibility that the price correction for overpriced stocks takes more than 1 quarter. In this case, we might expect stocks that display a pre-announcement price increase and post-announcement reversal around one quarterly earnings announcement to have a similar price pattern around the next quarterly earnings announcement. We therefore examine the performance of stocks that display substantial price increases (decreases) before (after) one earnings announcement, in the days around the subsequent earnings announcement.

Table 5 reports the returns before, after, and around earnings announcements for portfolios of stocks that were ranked in the top 50 (25, or 10) percent of all stocks based on the previous quarter's 2-day pre-announcement returns and the bottom 50 (25, or 10) percent based on the previous quarter's 2-day post-announcement returns. As before, we present these results for quintiles based on residual institutional ownership.

Table 5 clearly shows that, among stocks with low institutional holdings, the stocks that displayed a substantive price run-up and reversal around the previous earnings announcement tend to display the same pattern around the next announcement. According to the 50-percentile criterion in Table 5, the abnormal 2-day return for the group of stocks with low institutional ownership is a significant 0.55 percent in the 2 days before the subsequent announcement (Panel A) and a significant -1.36 percent in the 2 days after the subsequent announcement (Panel B).

18 When we follow Asquith et al., 2005, and only include the top 2.5 percent based on short interest, there are too few observations in the extreme portfolios to obtain reliable results.

For the next lowest quintile based on institutional ownership, these 2-day returns have the same signs but are closer to zero and less statistically significant. For the other three quintiles with higher levels of institutional ownership, there is no obvious pattern in the returns before and after earnings announcements.

When we use more stringent criteria to select overpriced stocks, the returns in both the pre- and post-announcement periods tend to become more pronounced. For example, using the 10 percent-criterion, the 210 stocks in the low institutional ownership group show an average price increase of 1.86 percent in the 2 days before the subsequent announcement, and an average price decrease of 2.88 percent in the 2 days after the subsequent announcement.

These results reinforce the previous support for our three hypotheses, and indicate a potential for abnormal profits from trading on this behavior. In particular, this predictable price pattern suggests a trading strategy in which an investor purchases the stocks in these portfolios two days before their subsequent earnings announcement, and closes out these long positions at the close on the day before the announcement. Then the investor immediately shorts the same stocks, and closes out these short positions two days after that announcement.[19] For example, using the 50% criterion for selecting stocks in Table 5, an investor who followed this strategy would have earned a size-adjusted abnormal return of 1.91% (.55% + 1.36%)) over the four days around these earnings announcements, ignoring transactions costs. Similarly, an investor who followed the same strategy using the 25% or 10% criterion would have earned a size-adjusted abnormal return of 3.48% (1.06% + 2.42%) or 4.74% (1.86% + 2.88%).

4.3 Large sample evidence: 1995-2004

19 Implementation of this strategy might be problematic because the date of forthcoming earnings announcements is not known with certainty. Furthermore, the most profitable short positions are for stocks with low institutional ownership where short selling might be difficult or expensive.

The final set of robustness tests are applied to the broader sample of 259,486 earnings announcements during the period 1995 through 2004. Since we do not know the precise time for these announcements, we focus on the total return in the 4-day period from day -2 through day +1, for quintiles of stocks based on residual institutional ownership. Results are provided in Table 6 for zero-cost portfolios that are long in the highest quintile predictor variable and short in the lowest quintile predictor variable.

The first four rows of Table 6 provide results for the predictor variables we have already analyzed. Similar to the results in Panel C of Table 2, where the sample contains only Russell 3000 stocks, we find that total returns around earnings announcements for the zero-cost portfolios in this broader sample are lowest for the two quintiles with the lowest institutional ownership. As we move to higher institutional ownership quintiles the abnormal returns become smaller negative numbers with less statistical and economic significance. Despite the inclusion of many smaller firms in this extended sample, the average abnormal returns in Table 6 are similar to the corresponding portfolios in Panel C of Table 2.

The next two sets of results provided in Table 6 examine the performance of overpriced portfolios from partitioning schemes based on other predictor variables that have been considered in the literature: the earnings-to-price ratio and the cash flow-to-price ratio.[20] The magnitudes of the abnormal returns for each institutional ownership quintile based on these two ratios are similar to those for the market-to-book ratio. This outcome is not surprising given that all three ratios relate a fundamental valuation component to the stock price.

The final two sets of results provided at the bottom of Table 6 investigate the performance of two 'loser'-portfolios that are expected to have negative abnormal returns at the

20 To ensure a continuous variable, the price is in the denominator for these ratios. To make the results comparable to the other trading strategies, the zero-cost portfolio of interest is long the lowest quintile stocks and short the highest quintile stocks, based on each ratio.

upcoming earnings announcement, based on negative price momentum or earnings momentum. The first loser-portfolio is formed based on the stock return in the previous 6 months, and the second loser portfolio is formed based on the stock return around the previous earnings announcement (from day -2 through day +1). In this case we go long the quintile of stocks with the worst stock price performance over the previous six months, or with the lowest 4-day earnings announcement returns in the previous quarter. Consistent with the other results, we expect that the price declines around earnings announcements for these loser portfolios are concentrated among the stocks with low institutional ownership. We create a zero-cost portfolio by going short the stocks in quintile 3 (the middle group in terms of momentum).[21] The results are provided in the last four rows of Table 6. Consistent with our expectations, the loser strategies yield the largest negative return for stocks with the lowest institutional ownership.

In summary, using a large sample of earnings announcements from 1995 through 2004, we find that overpriced stocks tend to underperform around earnings announcements, and this underperformance is greatest for stocks with low institutional ownership.

5. Summary and conclusions.

This paper analyzes stock returns in the days around earnings announcements. In the days before the announcement, we find that stocks which are likely to be overpriced already - stocks with low institutional ownership combined with high turnover, volatility, or analyst forecast dispersion - experience further price increases. However, in the days after earnings announcements these same stocks generate negative abnormal returns that outweigh the positive

21 Since our focus is on the impact of institutional ownership on the predictability of prices around earnings announcements for overpriced stocks, the portfolio is short 'neutral' stocks (quintile 3) and not 'winners' (quintile 5). The results of portfolios that are long 'losers' and short 'winners' lead to the same conclusions.

returns before the announcement. The net result is a significant downward price correction around earnings announcements for stocks that are prone to be overpriced already.

Our results are consistent with the optimism bias hypothesized in Miller (1977). If speculators increase their positions just prior to the announcement to bet on its outcome, as predicted in He and Wang (1995), stocks with binding short sale constraints will experience an increase in buying pressure by overly optimistic investors before the announcement. As a result, stocks that were already overpriced due to short sale constraints and differences of opinion could experience further price increases before an impending earnings announcement. The decline in price after earnings announcements for these overpriced stocks is consistent with two forces at work: First, investors unwind their temporarily intensified speculative positions after the announcement. Second, the new earnings information should resolve uncertainty about earnings and reveal that investors in these stocks were too optimistic, on average, leading to a further price decrease after the announcement.

Our results confirm the finding in Nagel (2005) that short sales constraints help explain cross-sectional return predictability. Our results also show that the optimism bias hypothesized in Miller (1977) manifests itself in stock prices over a much shorter time-frame than is suggested in previous work.

Appendix A: Sample Selection.

We begin with a sample of 53,080 quarterly earnings announcements from WSJ.com, made by all stocks in the Russell 3000 as of the end of 2004. The sample period starts in the first quarter of 2000, when WSJ.com first reports earnings announcement dates and times for 2,115 of these Russell 3000 stocks. The sample period ends at the fourth quarter of 2004, when WSJ.com reports earnings information for 2,882 firms in the Russell 3000 index.

We delete 8,447 earnings announcements because WSJ.com has no time entry, leaving 43,690 observations. Next, we exclude multiple observations for the same quarterly earnings announcement, retaining the first observation in each case. This screen leaves 42,203 earnings announcements. Finally, we only keep events with identical announcement dates reported in WSJ.com and Compustat. These requirements reduce our sample to 37,219 observations. In some of our tests we use IBES data. For these tests we also require that the earnings announcement dates reported in Compustat and I/B/E/S are no more than 2 days apart.

Appendix B: Construction of I/B/E/S Variables

We use unadjusted I/B/E/S data on actual earnings and analyst earnings forecasts, to correct for the problem of rounding error in the regular, split-adjusted I/B/E/S data (for discussion of this problem, see Boehme et al. (2006), Diether et al. (2002), and Payne and Thomas (2003)). We drop all analyst forecasts that appear in the I/B/E/S exclusions file, since they are deemed stale by I/B/E/S. We base our measures of SURPRISE and ADISP on the most recent forecast made by each analyst covering the stock, within the 45 calendar days prior to every quarterly earnings announcement. These data include new forecasts made by analysts that begin coverage of a firm during this period, or revisions of earlier forecasts made by analysts that update their coverage (see Johnson 2004).

Appendix C: Data Collection for Institutional Holdings

Following other researchers, we examine the quarterly 13F filings data from Thomson Financial Institutional Holdings for problems and inconsistencies (see Asquith et al., 2005, Gompers and Metrick, 2001, Han and Wang, 2006, and Nagel, 2005). For example, one problem arises due to missing or inaccurate data in the 13F filings on the number of shares outstanding at the end of the filing quarter. We resolve this problem by replacing the end-of-quarter shares outstanding from the Thomson Financial Institutional Holdings database with the analogous variable from CRSP. This value is then used to construct our measure of the percent of outstanding shares held by institutions at the end of each quarter.

Another potential problem with these data has to do with stock splits. Splits can cause inaccuracies in the institutional holdings data in at least two ways. First, institutions may simply report split-adjusted holdings and trading records incorrectly during a quarter when there is a split. Second, an institution may submit a late 13F filing after the 45-day deadline imposed by the SEC after the end of a quarter, when a stock split occurred during this 45-day grace period. In this situation, CDA Spectrum adjusted the institutional holdings record even though it should not have been adjusted for the record date. In such cases there are inaccuracies due to the failure of CDA Spectrum to properly synchronize the institutional holdings data with the split-adjustment.

We find the magnitude of these potential problems is small for our sample period. We use CRSP data to document all firm-quarters from 1996 through 2004 when a stock split occurred in the dataset on 13F filings (this includes all quarters that experience changes in shares outstanding due to stock splits, or adjustments due to stock or option grants, etc). We find less than two percent of all firm-quarters in this dataset occurred during quarters with stock splits. This evidence suggests that the potential problem associated with stock splits and late 13F filings is

likely to have a minimal impact on our results for this sample period. Still, we follow several procedures to investigate the impact of this potential problem. First, we drop all observations on firm-quarters when a stock split occurs. Second, we drop all firm-quarters when a split occurred during the subsequent quarter. Third, we drop all firm-quarters when either a stock split occurs during the quarter of record, or during the subsequent quarter. Fourth, we replace all quarterly observations with stock splits in either the same quarter, or the subsequent quarter, or both, with the lagged value of the percent of institutional ownership for that firm. All these procedures lead to results that are nearly identical to the results with the entire sample. These results are available upon request.

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Table 1. Summary Statistics and Correlations across Variables

The sample comprises 37,219 earnings announcements from the earnings calendar on WSJ.com, from 2000 through 2004. The sample is limited to stocks in the 2004 Russell 3000 index. Event day 0 is the announcement date if it occurs before the close of trading, and one trading day later if it occurs after the close. TURN is average daily turnover during the pre-announcement period covering days (-50,-5) prior to the event day (0), where daily turnover is the number of shares traded per day divided by total shares outstanding. Volatility (VOL) is the standard deviation across daily returns over days (-50, -5). The market-to-book ratio (MBK) is the market value of equity divided by the book value at the end of the fiscal year. We form portfolios in June of each year, using MBK from the prior fiscal year-end. We only use stocks with positive MBK. Analyst forecast dispersion (ADISP) is the standard deviation across all analyst forecasts made within 45 days prior to the announcement, scaled by total assets per share. The percent of institutional holdings (PCT_INST) is computed from 13F Filings as aggregate shares held by institutions as a percent of total shares outstanding. Residual institutional ownership (RIO) is the residual from quarterly cross-sectional regressions of PCT_INST (after a logit transformation) on the log of firm size and the log of firm size squared, where firm size (SIZE) is market capitalization. Our size-adjusted abnormal return measures are calculated as the actual return minus the return on the corresponding size-decile portfolio over the same period. RetBefore is the cumulative abnormal return over days -2 and -1. RetAfter is the cumulative abnormal return over days 0 and +1. RetTotal is the total abnormal return over days -2 through +1. T All descriptive statistics are calculated by computing the cross-sectional means for each quarter, and then averaging these means across the 20 quarters in the sample period. The standard deviation across the 20 quarterly mean observations is used to construct the t-test for each statistic below.

Panel A: Descriptive Statistics

	TURN	VOL	log MBK	ADISP	PCT_INST	RIO	log SIZE	RetBefore	RetAfter	RetTotal
MEAN	.006	2.961	.919	.002	.556	.000	6.978	.198	-.082	.116
STD	.022	1.698	.833	.005	.279	2.812	1.575	4.859	9.098	9.947
N	1861	1861	1746	996	1860	1822	1822	1861	1861	1861

Panel B: Correlations

	TURN	VOL	log MBK	ADISP	PCT_INST	RIO	log SIZE	RetBefore	RetAfter	RetTotal
TURN	1.000									
VOL	.484 ***	1.000								
log MBK	.037 *	.131 ***	1.000							
ADISP	.218 ***	.288 ***	.148 ***	1.000						
PCT_INST	-.118 **	-.176 ***	.081 ***	-.058 ***	1.000					
RIO	-.091 **	-.059 ***	.020 **	-.019	.788 ***	1.000				
log SIZE	-.172 ***	-.337 ***	.328 ***	-.114 ***	.231 ***	.000	1.000			
RetBefore	.047 **	.057 **	-.008	.021 *	-.038 ***	-.010	-.043 ***	1.000		
RetAfter	-.065 ***	-.070 ***	-.036 ***	-.044 ***	.041 ***	.037 ***	.006	-.086 ***	1.000	
RetTotal	-.036 **	-.035 *	-.036 ***	-.029 *	.019 **	.029 ***	-.015 *	.402 ***	.875 ***	1.000

* indicates statistical significance at the .10 level; ** at the .05 level; and *** at the .01 level.

Table 2. Abnormal Returns around Earnings Announcements: Portfolio Approach

This table reports average size-adjusted abnormal returns for four different 5 X 5 schemes of portfolios created by sorting all stocks independently into quintiles, based on residual institutional ownership (RIO) and each of the four predictor variables. Moving right across columns in each 5 X 5 scheme considers portfolios with greater values of RIO. Moving down across rows considers portfolios with greater values of each predictor variable. At the bottom of each column we provide the mean-difference t-test across portfolios with high versus low values of that predictor variable, given RIO. All variables are defined in Table 1.

Panel A: Size-adjusted Abnormal Return in the 2 days before Earnings Announcements

		Residual Institutional Ownership (RIO)				
		Low	2	3	4	High
VOL	Low	-0.10	-0.04	0.04	0.00	-0.06
	2	0.04	0.04	0.01	0.04	-0.04
	3	0.23	-0.08	0.10	0.07	-0.03
	4	0.33	0.06	0.10	0.02	0.11
	High	0.83 **	1.02 **	0.37	0.27	0.50
	High-Low	0.93	1.06	0.33	0.27	0.56
	T-stat	2.04 **	2.64 ***	0.98	0.82	1.55
TURN	Low	-0.07	-0.01	0.17	0.07	0.09
	2	0.19	0.11 *	-0.07	-0.13	0.05
	3	0.12	0.08	0.04	0.00	-0.09
	4	0.36	0.04	0.07	0.09	0.07
	High	0.89 **	0.84 **	0.39	0.37	0.44
	High-Low	0.96	0.85	0.22	0.29	0.35
	T-stat	2.36 **	1.93 *	0.62	0.82	1.22
MBK	Low	0.39 **	0.22	0.15	0.11	0.22 *
	2	0.16	0.12	0.22	0.32 ***	0.05
	3	0.07	0.24 *	0.09	0.15	-0.05
	4	-0.10	0.21	0.15	-0.05	0.02
	High	0.76 **	0.41	-0.24	-0.01	0.18
	High-Low	0.37	0.20	-0.39	-0.12	-0.04
	T-stat	0.90	0.69	2.67 ***	0.64	0.13
ADISP	Low	-0.30 *	-0.02	0.08	0.02	0.11
	2	-0.05	0.03	0.13	0.05	0.08
	3	0.33	-0.23	0.08	-0.18	0.08
	4	0.23	-0.18	0.22	-0.15	0.03
	High	0.55	0.57 *	0.04	0.04	0.54
	High-Low	0.84	0.59	-0.03	0.02	0.43
	T-stat	1.99 *	1.81	-0.09	0.07	1.65

* indicates statistical significance at the .10 level, ** at the .05 level, and *** at the .01 level.

Table 2, continued

Panel B: Size-adjusted Abnormal Return in the 2 days after Earnings Announcements

		Residual Institutional Ownership				
		Low	2	3	4	High
VOL	Low	0.13	0.37 ***	0.12	0.30 **	0.64 ***
	2	-0.20	0.38 **	0.44 **	0.52 **	0.14
	3	-0.11	0.17	0.41 *	0.43 **	0.60 ***
	4	-0.57 *	-0.22	0.56	-0.27	-0.35
	High	-3.19 ***	-1.60 ***	-0.42	-0.93 **	-0.07
	High-Low	-3.32	-1.97	-0.54	-1.23	-0.71
	T-stat	7.02 ***	4.47 ***	1.12	2.52 ***	1.20
TURN	Low	0.04	0.26 **	0.21	0.30 *	0.52 ***
	2	-0.22	0.26 *	0.45 ***	0.31 *	0.10
	3	-0.21	0.38	0.16	0.31	0.40
	4	-1.65 ***	-0.02	0.33	0.37	0.07
	High	-3.20 ***	-1.72 ***	-0.06	-1.35 ***	-0.25
	High-Low	-3.24	-1.98	-0.27	-1.65	-0.77
	T-stat	6.39 ***	4.00 ***	0.62	3.76 ***	1.29
MBK	Low	-0.38	0.32	0.45	0.30	0.33
	2	-0.67 ***	0.51 **	0.10	0.16	0.01
	3	0.03	-0.10	-0.02	-0.08	0.05
	4	-0.77 **	-0.12	0.41	0.32	0.11
	High	-2.10 ***	-0.77 **	-0.13	-0.19	-0.05
	High-Low	-1.72	-1.09	-0.59	-0.49	-0.38
	T-stat	3.71 ***	3.53 ***	1.55	1.24	0.72
ADISP	Low	0.16	0.14	0.39 *	0.42	0.22
	2	0.71 *	0.60 *	0.44	0.14	0.17
	3	0.09	0.46	0.40	0.57	-0.53
	4	-0.74 *	0.43	-0.63	0.61 **	0.30
	High	-3.28 ***	-1.12 **	-0.64	-1.35 **	-0.16
	High-Low	-3.44	-1.26	-1.03	-1.77	-0.38
	T-stat	4.85 ***	2.23 **	1.60	3.92 ***	0.67

Table 2, continued

Panel C: Size-adjusted Abnormal Return in the 4 days around Earnings Announcements

		Residual Institutional Ownership				
		Low	2	3	4	High
VOL	Low	0.03	0.33 **	0.16	0.30 *	0.58 ***
	2	-0.16	0.42 **	0.45 **	0.55 **	0.10
	3	0.12	0.09	0.51 *	0.51 **	0.58 **
	4	-0.24	-0.16	0.66	-0.25	-0.24
	High	-2.36 ***	-0.58	-0.05	-0.66	0.43
	High-Low	-2.39	-0.91	-0.21	-0.96	-0.15
	T-stat	3.27 ***	1.18	0.31	1.54	0.21
TURN	Low	-0.03	0.25 *	0.37 **	0.37 *	0.61 ***
	2	-0.02	0.37 **	0.38 *	0.19	0.15
	3	-0.09	0.47	0.20	0.31	0.31
	4	-1.29 ***	0.02	0.40	0.47	0.14
	High	-2.31 ***	-0.88	0.33	-0.99 *	0.19
	High-Low	-2.29	-1.14	-0.05	-1.36	-0.41
	T-stat	2.91 ***	1.55	0.67	2.19 **	0.58
MBK	Low	0.01	0.54 *	0.60 *	0.41	0.55 *
	2	-0.51 **	0.63 ***	0.32	0.48 *	0.06
	3	0.10	0.15	0.07	0.07	0.00
	4	-0.87 **	0.09	0.55	0.27	0.13
	High	-1.34 **	-0.36	-0.38	-0.21	0.13
	High-Low	-1.35	-0.90	-0.98	-0.61	-0.41
	T-stat	2.30 **	1.85 *	2.31 **	1.46	0.90
ADISP	Low	-0.13	0.12	0.46 *	0.44	0.33
	2	0.66	0.63	0.57	0.19	0.25
	3	0.42	0.23	0.48 *	0.39	-0.46
	4	-0.50	0.25	-0.42	0.46	0.33
	High	-2.73 ***	-0.54	-0.60	-1.31 **	0.38
	High-Low	-2.60	-0.67	-1.06	-1.75	0.05
	T-stat	3.25 ***	1.04	1.46	3.35 ***	0.08

Table 3. Abnormal Returns around Earnings Announcements: Regression Approach

This table presents mean coefficients and t-statistics across 20 quarterly regressions from 2000 through 2004. 'Pred' refers to each predictor variable. All variables except 'Surprise' are defined in Table 1. The earnings surprise is the difference between actual earnings released on day 0 and the most recent analyst forecast prior to day 0, scaled by the closing price on day -10. Each quarter we transform the explanatory variables into decile ranks and scale them to range from 0 to 1.

Panel A. Dependent Variable: 2-Day Abnormal Return before Earnings Announcements

		VOL	TURN	MBK	ADISP
intercept	a	-0.746	-0.388	0.324	-0.644
		-4.5 ***	-2.5 **	2.3 **	-2.5 **
Size	b_1	0.375	0.133	-0.697	0.444
		2.5 **	0.8	-2.2 **	1.1
Pct_Insto	b_2	0.178	-0.013	-0.526	0.365
		1.5	-0.1	-2.2 **	1.0
Pred	b_3	1.880	1.375	0.095	1.169
		3.5 ***	2.7 ***	0.3	2.3 **
Pred*Size	b_4	-1.420	-1.004	0.272	-1.166
		-3.8 ***	-2.5 **	0.6	-2.0 **
Pred*Pct_Insto	b_5	-1.201	-0.973	0.058	-0.930
		-2.7 ***	-2.2 **	0.1	-1.5
Surprise	b_6	0.636	0.623	0.678	0.549
		6.0 ***	6.0 ***	6.5 ***	4.1 ***
		R^2 = .02; N = 1,485	R^2 = .02; N = 1,485	R^2 = .01; N = 1,423	R^2 = .02; N = 946

Panel B. Dependent Variable: 2-Day Abnormal Return after Earnings Announcements

intercept	a	-1.272	-1.662	-2.185	-1.634
		-4.3 ***	-6.5 ***	-4.5 ***	-4.0 ***
Size	b_1	-0.667	-0.562	-0.717	0.000
		-2.2 **	-2.0 **	-1.3	0.0
Pct_Insto	b_2	-0.425	0.081	-0.243	-1.125
		-1.4	0.2	-0.5	-2.3 **
Pred	b_3	-3.927	-3.739	-3.121	-3.207
		-6.2 ***	-7.9 ***	-5.0 ***	-4.0 ***
Pred*Size	b_4	0.445	0.458	2.713	0.846
		0.7	0.7	3.0 ***	1.0
Pred*Pct_Insto	b_5	2.769	2.480	2.137	3.638
		3.4 ***	3.2 ***	3.0 ***	3.9 ***
Surprise	b_6	5.863	5.874	5.685	5.370
		19.6 ***	19.2 ***	20.0 ***	15.5 ***
		R^2 = .06; N = 1,485	R^2 = .06; N = 1,485	R^2 = .05; N = 1,423	R^2 = .06; N = 946

Panel C. Dependent Variable: 4-Day Abnormal Return around Earnings Announcements

intercept	a	-2.018	-2.050	-1.861	-2.278
		-6.6 ***	-8.2 ***	-3.5 ***	-7.7 ***
Size	b_1	-0.293	-0.429	-1.414	0.444
		-0.8	-1.3	-1.9 *	1.0
Pct_Insto	b_2	-0.247	0.067	-0.769	-0.760
		-0.8	0.2	-1.5	-1.6
Pred	b_3	-2.047	-2.365	-3.026	-2.038
		-2.2 **	-3.3 ***	-3.9 ***	-2.6 **
Pred*Size	b_4	-0.975	-0.546	2.986	-0.320
		-1.2	-0.6	2.6 **	-0.3
Pred*Pct_Insto	b_5	1.569	1.507	2.196	2.708
		1.9 *	2.1 **	2.5 **	2.8 ***
Surprise	b_6	6.499	6.497	6.363	5.918
		26.8 ***	26.2 ***	25.5 ***	19.3 ***
		R^2 = .06; N = 1,485	R^2 = .06; N = 1,485	R^2 = .06; N = 1,423	R^2 = .06; N = 946

* indicates statistical significance at the .10 level, ** at the .05 level, and *** at the .01 level.

Table 4. Robustness Tests: Alternative Windows and Market-Adjustment, Low Priced Stocks, and High Short Interest Stocks

This table presents robustness tests focusing on portfolios that are long the quintile of stocks with the highest values of the predictor variable and short the quintile with the lowest values, conditional on residual institutional ownership. We only present results for the low, middle, and high quintiles based on residual institutional ownership. The base-case provided in the first row provides abnormal returns for the 2 days before or after the announcement (as in Table 2). In each subsequent test we change only one aspect of the strategy to facilitate comparison with the base case. We present results using a 1-day window, a 5-day window, unadjusted returns, market-adjusted returns, and a sample excluding stocks with an average price of 5 dollars or less over days (-50, -5). Finally, we split all stocks into two groups based on the short-interest ratio. The first group is the decile with the highest short interest ratio in the month preceding the announcement, and the second group contains all other stocks. The last two rows present the mean difference t-test across these 2 groups.

Panel A: Abnormal Returns before Earnings Announcements

	High - Low Volatility			High - Low Turnover			High - Low Market-to-Book			High - Low Analyst Dispersion		
Residual Institutional Ownership :	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High
1. Base Case	.93	.33	.56	.96	.22	.35	.37	-.39	-.04	.84	-.03	.43
	2.04 **	.98	1.55	2.36 **	.62	1.22	.90	-2.67 ***	-.13	1.99 *	-.09	1.65
2. 1-day window	.64	.30	-.04	.52	.19	-.01	.23	-.20	-.24	.51	.24	.10
	2.25 **	1.20	-.19	1.96 **	.80	-.07	.78	-2.17 **	-1.10	2.16 **	.79	.38
3. 5-day window	1.68	1.24	1.09	2.01	1.09	.72	.45	-.15	.40	.78	-.37	.35
	2.07 **	1.46	1.71 *	2.57 **	1.48	1.37	.82	-.41	.77	1.31	-.52	.90
4. Unadjusted	1.46	.77	.99	1.21	.71	.66	.58	-.39	-.02	.79	.19	.61
Returns	3.13 ***	2.13 **	2.58 **	3.03 ***	1.83 *	1.99 **	1.13	-2.31 **	-.06	2.10 **	.49	1.81 *
5. Market-Adjusted	1.41	.66	.85	1.18	.60	.57	.45	-.40	-.05	.86	.15	.45
Returns	2.89 ***	1.93 *	2.19 **	2.71 ***	1.65 *	1.79 *	1.02	-2.38 **	-.15	2.16 **	.42	1.51
6. No Low-Priced	.87	.02	.64	.74	.21	.44	.26	-.46	-.13	.70	-.16	.27
Stocks	2.08 **	.06	1.68 *	2.08 **	.77	1.19	.53	-2.11 **	-.41	2.07 **	-.48	1.14
7. High Short Int.	1.56	-.68	.39	1.89	-.04	.24	1.51	-.14	-1.01	1.90	-.22	1.37
Other Stocks	1.00	.48	.67	.83	.45	.42	.54	-.24	-.07	.91	-.02	.13
Difference	-.83	1.16	.37	-1.10	.49	.18	-.98	-.10	.95	-1.26	.21	-1.24
t-statistic	1.34	1.15	.46	1.58	.50	.16	.98	.08	.93	1.16	.30	1.64

* indicates statistical significance at the .10 level, ** at the .05 level, and *** at the .01 level.

Table 4, continued

Panel B: Abnormal Returns after Earnings Announcements

	High - Low Volatility			High - Low Turnover			High - Low Market-to-book			High - Low Analyst Dispersion		
Institutional Ownership :	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High
1. Base Case	-3.32	-.54	-.71	-3.24	-.27	-.77	-1.72	-.59	-.38	-3.44	-1.03	-.38
	-7.02 ***	-1.12	-1.20	-6.39 ***	-.62	-1.29	-3.71 ***	-1.55	-.72	-4.85 ***	-1.60	-.67
2. 1-day window	-2.45	-.55	-.43	-2.60	-.53	-.63	-1.09	-.64	-.32	-2.36	-.71	-.36
	-7.08 ***	-1.60	-.92	-6.66 ***	-1.87 *	-1.55	-2.39 **	-2.57 **	-.69	-3.69 ***	-1.19	-1.11
3. 5-day window	-4.12	-.96	-.63	-4.08	-.62	-.51	-2.02	-.54	-.03	-3.02	-1.39	.09
	-5.25 ***	-1.25	-.71	-4.76 ***	-.96	-.58	-3.28 ***	-1.23	-.05	-3.27 ***	-2.05 **	.18
4. Unadjusted	-2.38	.06	.25	-2.48	.33	.02	-1.23	-.53	.02	-2.48	-.60	-.11
Returns	-5.54 ***	.13	.40	-4.83 ***	.81	.04	-2.78 ***	-1.36	.04	-3.77 ***	-.85	-.21
5. Market-Adjusted	-2.41	.03	.27	-2.45	.27	.01	-1.27	-.41	.11	-2.42	-.55	-.13
Returns	-5.37 ***	.08	.44	-4.51 ***	.65	.02	-2.83 ***	-1.05	.20	-3.61 ***	-.85	-.29
6. No Low-Priced	-1.97	-.27	-.20	-1.82	.18	-.40	-1.23	-.48	-.14	-2.14	-.81	-.28
Stocks	-5.01 ***	-.65	-.45	-3.25 ***	.45	-.91	-2.80 ***	-1.29	-.26	-3.53 ***	-1.28	-.69
7. High Short Int.	-5.04	-1.32	-.01	-3.73	-2.03	.45	-.25	1.99	.66	-4.59	-1.73	-2.10
Other	-2.99	-.44	-.75	-2.86	.09	-.42	-1.45	-.68	-.02	-2.99	-.22	-.28
Difference	2.27	.87	-.72	.74	2.12	-.87	-1.20	-2.67	-.42	1.42	1.50	1.65
t-statistic	1.43	.55	.27	.49	1.13	.37	.79	1.45	.25	.77	.83	.86

Table 5. Robustness Tests: Trading Strategy based on Previous Announcement

This table reports abnormal returns before, after, and around earnings announcements for stocks that were ranked in the top (bottom) 50, 25, or 10 percent based on the previous quarter's 2-day pre announcement returns (2-day post-announcement returns or 4-day total returns). We present these results for quintiles based on residual institutional ownership, as defined in table 1.

Panel A: Abnormal Returns in the Two Days before Earnings Announcements

		Residual Institutional Ownership				
		Low	2	3	4	High
50% Criterion:	AR	.55	.22	.11	.08	.11
	t-statistic	4.42 ***	1.72 *	.94	.74	.93
	N	2068	1929	1891	1949	1841
25% Criterion:	AR	1.06	.69	.21	-.02	.05
	t-statistic	3.87 ***	2.14 **	.76	-.08	.21
	N	675	588	567	619	636
10% Criterion:	AR	1.86	1.97	1.16	-.41	-.26
	t-statistic	3.41 ***	1.79 *	1.44	-.72	-.44
	N	210	137	130	139	127

Panel B: Abnormal Returns in the Two Days after Earnings Announcements

		Residual Institutional Ownership				
		Low	2	3	4	High
50% Criterion:	AR	-1.36	-.47	.31	-.02	.28
	t-statistic	-6.27 ***	-2.32 **	1.50	-.08	1.28
	N	2068	1929	1891	1949	1841
25% Criterion:	AR	-2.42	-1.46	.42	-.32	.65
	t-statistic	-5.14 ***	-3.01 ***	.88	-.71	1.56
	N	675	588	567	619	636
10% Criterion:	AR	-2.88	-2.94	.29	-.58	2.20
	t-statistic	-3.49 ***	-2.28 **	0.28	-0.45	1.95 *
	N	210	137	130	139	127

Panel C: Abnormal Returns in the Four Days around Earnings Announcements

		Residual Institutional Ownership				
		Low	2	3	4	High
50% Criterion:	AR	-.81	-.25	.42	.06	.38
	t-statistic	-3.30 ***	-1.10	1.86 ***	0.25	1.63
	N	2068	1929	1891	1949	1841
25% Criterion:	AR	-1.36	-.77	.63	-.34	.70
	t-statistic	-2.58 **	-1.39	1.15	-0.72	1.55
	N	675	588	567	619	636
10% Criterion:	AR	-1.02	-.98	1.45	-.99	1.94
	t-statistic	-1.06	-0.61	1.20	-0.76	1.65 *
	N	210	137	130	139	127

* indicates statistical significance at the .10 level, ** at the .05 level, and *** at the .01 level.

Table 6. Robustness Tests: Large Sample of Earnings Announcements, 1995 - 2004

In this table we examine the robustness of our results by considering a broader sample of 259,486 earnings announcements, for all stocks with data in both CRSP and Compustat over the ten-year period from 1995 through 2004. For this expanded sample, we use the Compustat announcement date as event day 0, and we focus on the total return in a 4-day window from day -2 through day +1. We present average abnormal returns for zero-cost portfolios that are long the quintile of stocks with high values of each predictor variable and short the quintile of stocks with low values of each predictor variable, for every quintile based on residual institutional ownership. The first four sets of results are for the predictor variables we have already considered. The next two sets of results are for the earnings-to-price ratio and the cash flow-to-price ratio. For these two ratios we create a continuous variable by placing the price in the denominator. We make the results comparable to the other trading strategies by going long the quintile with the lowest ratio and short the quintile with the highest ratio. In the last two sets of rows we investigate the performance of two 'loser'-portfolios, where we go short the quintile of stocks with the worst stock price performance in the previous six months or the lowest 4-day earnings announcement returns in the previous quarter. In each case we create a zero-cost portfolio by going long quintile 3 (the middle group in terms of momentum).

Residual Institutional Ownership:	Low	2	3	4	High
TURN	-2.05	-2.09	-1.67	-.60	.01
	-5.54 ***	-5.21 ***	-4.65 ***	-1.73 *	.03
VOL	-2.60	-3.06	-1.77	-.85	-.09
	-6.45 ***	-7.23 ***	-6.37 ***	-3.52 ***	-.35
MBK	-1.75	-.81	-.45	-.65	-.20
	-4.11 ***	-1.86 *	-1.05	-1.88 *	-.55
ADISP	-1.64	-1.38	-1.09	-.70	.16
	-5.99 ***	-3.86 ***	-3.70 ***	-2.65 **	.69
E / P	-1.23	-1.26	-1.08	-.43	-.03
	-3.71 ***	-4.28 ***	-3.73 ***	-1.88 *	-.17
CF / P	-1.60	-1.35	-1.29	-.45	-.27
	-4.86 ***	-4.17 ***	-3.64 ***	-1.53	-1.09
Loser Portfolio: Price Momentum	-1.61	-1.41	-1.09	-.50	-.13
	-4.73 ***	-4.50 ***	-4.26 ***	-1.79 *	-.44
Loser Portfolio: Earnings Momentum	-1.90	-1.62	-1.05	-.74	-.33
	-4.88 ***	-5.99 ***	-4.33 ***	-1.50	-1.32

* indicates statistical significance at the .10 level, ** at the .05 level, and *** at the .01 level.