Disagreement, Short Sale Constraints, and Speculative Trading Before Earnings Announcements

June 2008

Henk Berkman
Department of Commerce
Massey University
Auckland, New Zealand
h.berkman@massey.ac.nz

Paul D. Koch
School of Business
University of Kansas
Lawrence, KS 66045
pkoch@ku.edu

We acknowledge helpful comments received at the national conferences of the Financial Management Association, the Multinational Finance Society, and the Eastern Finance Association.

Disagreement, Short Sale Constraints, and Speculative Trading Before Earnings Announcements

Abstract

Consistent with theoretical models of speculative trading, we show that abnormal trading activity increases before earnings announcements, especially for stocks with high dispersion of opinions. Moreover, consistent with Miller's (1977) theory and other disagreement models, for stocks that are also short sale constrained this increased speculative pressure is dominated by buyer-initiated trading. As a result, stocks that are already prone to Miller's overpricing (with high dispersion of opinions and binding short sale constraints) have a further price increase before earnings announcements. Finally, these same stocks have a predictable price reversal after the announcement that dominates the pre-announcement run-up, and is related to the abnormal trading activity before the announcement.

JEL Classification: D82, G14, G19.
Key Words: market efficiency, speculation, disagreement, dispersion of opinions, limits to arbitrage, institutional ownership, short sale restrictions, overpricing, earnings announcements.

Introduction

In a recent overview article, Hong and Stein (2007) state that a high priority in theoretical asset pricing is to account for the joint empirical behavior of stock prices and trading volume. They argue that the class of disagreement models – in which dispersion of beliefs plays a major role – holds the most promise for success in this area. A central prediction of these models is that increased disagreement results in increased trading volume and, when combined with short sale constraints, this leads to contemporaneous buying pressure, overpricing, and low future returns.[1]

This class of theoretical disagreement models assumes heterogeneous beliefs and short sale constraints, and derives empirical predictions that extend to several aspects of the trading process. However, most of the empirical work in this area focuses on either the perspective of disagreement or of short sale constraints, and examines only whether overpriced stocks have low future returns. For example, Jones and Lamont (2002), and Chen et al. (2002) find that stocks with more severe short sale constraints have temporarily higher prices and lower subsequent returns. Diether et al. (2002) focus on disagreement, showing that stocks with higher dispersion across analysts' earnings forecasts have lower returns over the following months. Similarly, Ang et al. (2006) find that stocks with higher firm-level volatility have lower future returns, while Brennan et al. (1998) document that stocks with higher trading volume have lower future returns.

Combining both perspectives, Boehme et al. (2006) find that stocks with binding short sale constraints and high dispersion of opinions underperform over the following months. Similarly, Nagel (2005) shows that stocks with both low institutional ownership (his proxy for binding short sale constraints) and high values of three proxies for disagreement (volatility, share turnover, and analyst forecast dispersion) have significant price declines over the following year.

---

1 See also Harrison and Kreps (1978), Hong, Scheinkman, and Xiong (2006), and Scheinkman and Xiong (2003).

Berkman et al. (2008) find that price corrections for these overpriced stocks are concentrated around earnings announcements, which are important events that reduce differences of opinion.

In this study we provide novel empirical support for the class of disagreement models, by focusing on the behavior of total trading activity, net initiated trading activity, and stock returns in the period just before earnings announcements. This period provides a unique natural experiment in which we expect speculators to be temporarily less willing to 'agree to disagree.' For example, in the model of He and Wang (1995), investors increase their speculative positions just before earnings announcements – especially for stocks with high dispersion of opinions – because they perceive a high expected return / risk ratio from speculating at this time.

A general characteristic of these disagreement models is that overpriced stocks are owned by investors who are too optimistic, whereas pessimists are kept out of the market because of short sale constraints. Optimistic investors holding such overpriced stocks have an incentive to further increase their positions just before an earnings release, to bet on its outcome. This incentive exists if the investor believes that some of his presumed private information – the source of the optimism – is likely to be partially revealed at the forthcoming announcement.[2] Because of the limited ability or willingness of other investors to sell these overpriced stocks, the additional demand from such optimists is not matched by an increase in supply from pessimists.

This discussion suggests that the buying pressure associated with high dispersion of opinions and short sale constraints, that allegedly underlies Miller's (1977) overpricing documented in prior research, should be amplified in the period just before an earnings release. These implications of disagreement models lead to the following four hypotheses:

2 Christensen and Feltham (2002) also argue that investors are likely to increase their long or short position immediately before earnings announcements, based on their presumed private information, and then reverse their positions after the information from the earnings release is impounded in prices. Empirical support for this behavior appears in Chordia et al. (2001), Morse (1981), and this paper.

(i) There should be an increase in total trading activity just before earnings announcements, especially for stocks with high dispersion of opinions;

(ii) For the subsample of these stocks that are overpriced (with both high dispersion and low institutional ownership), there should also be an increase in net initiated buying activity before the announcement;

(iii) For this subsample of stocks that are already prone to overpricing, this additional buying pressure should lead to further price increases ahead of the earnings announcement;

(iv) After the announcement, we expect a price decline for such overpriced stocks that dominates the pre-announcement price run-up, as the earnings release should reveal that investors in these stocks were too optimistic, on average. In addition, the magnitude of this price reversal should be related to the extent of the pre-announcement speculative trading activity.[3]

We test these hypotheses using a sample of 29,849 earnings announcements for which we have the precise date and time of the earnings release. This sample is available from WSJ.com over the five-year period, 2000 - 2004. We use return volatility, share turnover, and analyst forecast dispersion as proxies for dispersion of opinions, and we use low institutional holdings as a proxy for binding short sale constraints.[4]

Consistent with our hypotheses, we show that stocks with high dispersion of opinions experience increased abnormal trading activity on the days before the earnings announcement. Furthermore, for the subsample of these high disagreement stocks that also have low institutional holdings, there is increased net buying pressure and a concomitant price increase on the days before the announcement. Also consistent with our hypotheses, we find that these overpriced stocks experience a significant price decline on the days after the announcement which

3 This post-announcement reversal for overpriced stocks contrasts with the continued upward post-announcement drift for stock prices in general (for example, see Frazzini and Lamont (2007). For other recent empirical evidence of a temporary price run-up and reversal in the days around earnings announcements, see Aboody et al. (2007), Berkman et al. (2008), and Trueman et al. (2003). While Berkman et al. argue that the post-announcement reversal is due to a decline in dispersion of opinions following the earnings release, none of these studies analyze the role of trading activity before the announcement in explaining this behavior.

4 Turnover, volatility, and analyst dispersion have been used in previous work to proxy for dispersion of opinions (see Berkman et al., 2008, Boehme et al., 2006, Diether et al., 2002, and Gebhardt et al., 2001). Likewise, low institutional ownership has been used in prior work as a proxy for binding short sale constraints (see Ali et al., 2003, Almazan, 2004, Asquith et al., 2005, Berkman et al., 2008, Chen et al., 2002, D'Avolio, 2002, Lesmond, 2007, and Nagel, 2005).

dominates the pre-announcement price run-up, and is related to the magnitude of the pre-announcement buying pressure. Our results are robust across dispersion measures, and across different methodologies that include a portfolio approach and a regression approach which accounts for firm size and the earnings surprise.

The remainder of this study is organized as follows. Section 2 describes the data and research design, while section 3 offers descriptive sample statistics. Section 4 presents the main results and section 5 provides additional robustness tests. Section 6 summarizes and concludes.

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 apply to the short period just before 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. In this source, if earnings are announced before the market's open, the time entry is the actual time or 'BMO'; for after-hours announcements the time entry is the actual time or 'AMC'; and for announcements during the trading day, the hour and minute of the announcement are reported.

We want to analyze trading activity and price changes over comparable time intervals that span the entire trading day. We therefore drop earnings announcements that take place during the trading day (8% of the final sample). Since all announcements in our sample occur outside regular trading hours, we follow the convention in Trueman et al. (2003), to label the trading day immediately before (after) the earnings release as day -1 (+1).

Our initial sample consists of earnings announcements, issued by all firms in the Russell 3000 index as of 2004, that are available on WSJ.com over the five-year period from 2000

through 2004. This selection criterion includes stocks comprising more than 98% of the total U.S. market capitalization. After matching with TAQ-data, we are left with 29,849 earnings announcements, 14,029 of which take place after the close of trading. Appendix A provides a discussion of our sample selection procedure.

We also examine the robustness of our results by considering an earlier sample of more than 30,000 earnings announcements obtained from Compustat, for all stocks with data in both CRSP and Compustat over the 4-year period, 1996-1999. Here we assign the Compustat earnings announcement date as event day 0. It is important to note that this assignment leads to some unavoidable noise in our empirical analysis, since we do not have the precise time of the earnings release. As a result, we do not know whether the announcement occurred before, during, or after regular trading hours on event day 0. Thus, while event day -1 is accurately assigned (as one day before the market can respond) for announcements made before or during trading hours on day 0, event day -1 is inaccurately assigned (it is actually two days before the market can respond) for announcements made after the market close on day 0.[5]

2.2 Variable construction

Daily stock returns are obtained from the Center for Research in Securities Prices (CRSP). Intraday trade and quote (TAQ) data are used to generate measures of daily total trading activity and net initiated trading activity. Accounting data are taken 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. Data on institutional ownership are obtained from CDA Spectrum 13F filings. These data are used to construct our variables as follows.

5 Berkman and Truong (2008) report that, during 1995-1999, around 30 percent of all earnings announcements were released after the market close. They show that event study results around Compustat event day 0 can be profoundly affected by the misclassification of such after-hours announcements. For this reason, we focus our main analysis on the sample of announcements from WSJ.com, for which we have the precise time of the earnings release.

We use three established proxies for dispersion of opinions: turnover, volatility, and analyst forecast dispersion (see Diether et al., 2002, Boehme et al., 2006, and Gebhardt et al., 2001). Volatility (VOL) is the standard deviation across daily stock returns over the 45 trading days from day -55 through day -11, prior to the earnings announcement. Turnover (TURN) is average daily turnover for the same pre-announcement period (-55,-11), where daily turnover is defined as the number of shares traded per day divided by 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 during the overnight period between days -1 and +1, and the most recent analyst forecast prior to the earnings release, scaled by the stock price eleven days before the announcement. A more detailed description of the data used to construct ADISP and SURPRISE appears in Appendix B.[6]

Consistent with other recent work (see footnote 4), we use low institutional ownership to proxy for binding short sale constraints. Low institutional ownership is an effective proxy for limits to arbitrage on the sell side, since it embodies both direct and indirect costs of selling short (Nagel, 2005). Given the short time frames analyzed in this study, direct costs are likely to be small compared to other direct trading expenses (the spread, commission, and price impact). Thus, a more plausible reason why low institutional ownership is important in our study rests with the indirect short sale constraints. These involve institutional and cultural barriers that

6 We also consider alternative choices for the time frame before earnings announcements used to measure stock return volatility, share turnover, and analyst forecast dispersion. In addition, we examine 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 eleven days before the announcement. Results are robust.

effectively prevent short selling by institutional investors (Nagel, 2005). Because of these constraints, most professional investors simply never sell short, and thus cannot trade against overpriced stocks that they do not own (Almazan et al., 2004).

Data on institutional holdings are from CDA Spectrum 13F Filings. 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 quarterly 13F Filings.

For each quarter we calculate the percentage of institutional holdings (INST) for every firm as the aggregate shares held by institutions scaled by 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, Gompers and Metrick, 2001, and Nagel, 2005). A more detailed description of our construction of this variable appears in Appendix C.

We analyze daily size-adjusted abnormal returns, defined as the daily CRSP return minus the equally-weighted return for all NYSE/AMEX firms in the same size-decile, on the same day (see Bartov et al., 2000, and Battalio and Mendenhall, 2005). We then define Ret(t) as the size-adjusted abnormal stock return on day t relative to the earnings announcement.

Finally, we use the TAQ database to identify each trade as either buyer-initiated or seller-initiated. Trades are matched to quotes with a lag of one second throughout the day.[7] A trade is

7 Lee and Ready (1991) use a five-second lag when matching trades and quotes. Bessembinder (2003) suggests there is no need to allow for trade reporting lags when using data from recent periods. Our choice to match trades to

identified as buyer-initiated (seller-initiated) if it occurs at the ask price (bid price) of the prevailing quote, or if the trade occurs within the prevailing spread but is closer to the ask (bid). Trades at the midquote are classified as buyer-initiated if the last price change was positive, and seller-initiated if the last price change was negative. After classifying trades as either buyer-initiated or seller-initiated, we obtain the daily number of buyer- and seller-initiated trades. The daily total number of trades is the sum of the daily number of buyer-initiated and seller-initiated trades. The daily number of net initiated trades is the daily number of buyer-initiated trades minus the daily number of seller initiated trades. Finally, we define the abnormal number of total trades and the abnormal number of net initiated trades as follows:

> $ATT(t)_i$ = Abnormal number of total trades = actual number of total trades in stock i on day t minus the median daily number of total trades in stock i over days -55 through -11, divided by the median.
>
> $ANIT(t)_i$ = Abnormal number of net initiated trades = difference between the abnormal number of buyer-initiated trades and the abnormal number of seller-initiated trades. The abnormal number of buyer (seller-) initiated trades is defined as actual number of buyer-(seller-) initiated trades in stock i on day t minus the median daily number of buyer-(seller-) initiated trades in stock i over days -55 through -11, divided by the median.

Lee (1992) and Battalio and Mendenhall (2005), use similar measures of abnormal trading activity, but scale by the mean number of trades. We use the median number of trades as a benchmark to scale, since pre-announcement trading activity has substantial upward outliers.[8]

2.3 Research design

The focus of our analysis is the behavior of abnormal total trading activity and abnormal net initiated trading activity in the days before the earnings announcement. We also examine stock

---

quotes with a one-second lag is based on evidence from NASD's Economic Research office, which has determined that a one-second lag is optimal in their automated electronic system.

8 Other studies that analyze the number of trades to measure trading activity include Jones et al. (1994) and Chan and Fong (2000). In our robustness tests we also report results using share turnover (percent of total shares outstanding traded) to measure total and net initiated trading activity. We also report results using the mean to scale ATT and ANIT. In all cases the results are similar to those using the measures of trading activity defined above.

price changes in the days before and after the announcement. We pursue two different methodologies to analyze this behavior.

2.3.1 Portfolio Approach

Our main analysis applies a portfolio approach in which we compare abnormal total trading activity, abnormal net initiated trading activity, and size-adjusted abnormal stock returns across portfolios partitioned according to size-adjusted institutional ownership and each dispersion measure, immediately before the earnings release. Every quarter, we control for firm size by first sorting firms into size terciles, based on market capitalization at the end of the prior quarter. Then, within each size tercile, we form three finer tercile portfolios based on the previous quarter's percentage institutional ownership. For every quarter, this procedure yields tercile subsamples of earnings announcements made by firms with low, medium, or high size-adjusted institutional ownership.[9] Within each size-tercile, we also independently rank the announcements into terciles based on each of the three dispersion measures. This procedure also yields subsamples of announcements characterized by low, medium, or high values of each size-adjusted measure of dispersion of opinions (volatility, turnover, or analyst forecast dispersion).

For every quarter, this approach produces a different 3 x 3 scheme of nine double-sorted portfolios based on both size-adjusted institutional ownership and each dispersion measure. This partitioning scheme enables us to test our hypotheses by comparing trading activity or stock prices across different portfolios of stocks at the intersection of the two independent sorts described above. If the model of He and Wang (1995) characterizes the speculative behavior

9 We control for firm size in this partitioning scheme, to address the well-documented association between size and institutional ownership (see Nagel, 2005). We find similar results when we do not adjust for firm size. We also find robust results when we repeat the procedure above based on firm size and institutional ownership taken two quarters before the announcement. We have also repeated all tests using Nagel's (2005) measure of residual institutional ownership, based on a quarterly regression of the percent of institutional ownership (after a logit transformation) on (the log of) firm size and firm size squared. The conclusions are unaffected by this choice.

ahead of earnings announcements, then we would expect higher abnormal total trading activity in the days before earnings announcements, especially for portfolios with higher dispersion of opinions. Furthermore, if the optimism bias hypothesized in Miller (1977) and other disagreement models characterizes behavior, then we would expect greater abnormal net initiated buying activity and higher stock returns before the announcement, for portfolios of stocks already prone to overpricing (with low institutional ownership and high differences of opinion).

Since many firms announce earnings on the same calendar date, standard t-tests applied to mean behavior across subsamples in this portfolio approach could be biased upward due to cross-correlation of the relevant measures on the same date (Bernard, 1987). We conduct tests that are not affected by this bias. Specifically, for each of the 20 quarters in our sample period, we first allocate stocks with earnings announcements during that quarter to one of our nine double-sorted portfolios. We then calculate equally-weighted average measures of daily abnormal trading activity and stock returns, for each portfolio during every quarter. Finally, we average the cross-sectional mean values of each measure across the 20 quarters, for portfolios of stocks with the same characteristics (i.e., within each of our nine double-sorted portfolios). The corresponding t-statistics are based on the standard errors of these time series averages across the 20 quarters, and thus do not suffer from any potential bias associated with cross-sectional clustering of events (Bernard, 1987, Fama and MacBeth, 1973).

2.3.2 Regression approach

In our second set of tests, we use regression analysis as an alternative method to investigate how total trading activity, net initiated trading activity, and stock returns are affected by institutional ownership and each dispersion measure, while also controlling for firm size and the earnings surprise. Inclusion of firm size as a separate explanatory variable in this regression framework is

a useful robustness check on the methodology in our portfolio approach that uses size-adjusted measures of institutional ownership and dispersion of opinions. Furthermore, since price movements around earnings announcements are strongly related to the earnings surprise, inclusion of this variable in a regression framework provides insight into the trading process for overpriced stocks, after accounting for the information content of each earnings release.

3. Descriptive Statistics and Correlations across Variables

3.1 Descriptive statistics

Panel A of Table 1 provides descriptive statistics for the main variables used in this study. The cross-sectional means are first obtained for the announcements made in each quarter. Panel A then reports the mean, median, and standard deviation of these quarterly means across the 20 quarters in our sample period. The average sample size for each quarter varies across the different variables, ranging from 1,015 earnings announcements for ADISP to 1,481 announcements for the return measures.

First consider the behavior of our proxies for dispersion of opinions and short sale constraints in Panel A of Table 1. Over the pre-announcement period (day -55 through day -11), mean daily turnover (TURN) is 0.82 percent of total shares outstanding, while average stock return volatility (VOL) is 2.8 percent and mean analyst forecast dispersion (ADISP) is 0.17 percent of total assets. Mean institutional ownership (INST) is 59 percent of total shares outstanding. This level of institutional ownership is higher than the 34 percent reported in Nagel (2005), presumably because our sample is limited to the larger firms in the Russell 3000. In addition, the average market capitalization of our sample stocks is 5.66 billion dollars. All these means are significantly greater than zero.[10]

10 In Table 1, all statistics that are significantly different from zero at the 5 percent level appear in bold.

Second consider the behavior of total trading activity before earnings announcements, in Panel A. The average abnormal number of total trades on the day before the announcement, ATT(-1), is 25 percent higher than the median daily number of trades over the 45-day period from day -55 through day -11. Two days before the announcement, mean ATT(-2) is 16 percent above the median, and over the previous 8 trading days the average daily ATT(-10,-3) is 13 percent above the median. All three measures of average daily abnormal trading are significantly greater than zero. This evidence indicates that total trading activity becomes more elevated closer to the earnings announcement, consistent with prior theory and evidence.[11]

Third consider net initiated trading activity prior to the announcement. The average abnormal number of net initiated trades on the day before the announcement, ANIT(-1), is 4 percent higher than the median daily number of net initiated trades over the pre-announcement period, (-55,-11). Two days before the announcement, mean ANIT(-2) is 3 percent above the median. These two measures are significantly greater than zero. Over the previous 8 trading days, average daily ANIT(-10,-3) is 2 percent above the median, but this average is not significantly different from zero. This evidence indicates a significant increase in net buying activity on the days just prior to the announcement.

Finally, Panel A of Table 1 indicates that the average abnormal stock return (Ret(t)) tends to be positive on the days both before and after the earnings announcement. Before the announcement, average Ret(-1) = 0.15%, average Ret(-2) = 0.05%, and average daily Ret(-10,-3) = .07%, with the first and third of these measures significantly greater than zero at the .05 level. After the announcement, mean Ret(+1) = 0.14%, Ret(+2) = 0.15%, and average daily Ret(+3,+10) = 0.05%, with the first two measures significantly greater than zero. The median values of Ret(t) are somewhat less than the means, indicating positive skewness in daily returns

11 See Chordia et al. (2001), Christensen and Feltham (2002), He and Wang (1997), and Morse (1981).

around earnings announcements. Together, this evidence is consistent with prior work that documents an earnings announcement premium in the days around the announcement.[12]

3.2 Correlations across variables

In Panel B of Table 1 we report the average correlations across each pair of variables. Once again, we first calculate the cross-sectional correlation for each pair of variables across all announcements made during each quarter. Then we report the time series average of these cross-sectional correlations across the 20 quarters in our sample period. While these bivariate correlations should be interpreted with caution, several interesting patterns emerge.

First consider the mean correlations across the three dispersion measures. We find a significant positive correlation between VOL and TURN of 53 percent, which is consistent with prior work (see Nagel, 2005). The correlations across the other two pairs of the three dispersion measures are also significantly positive, although smaller in magnitude.

Second, the three dispersion measures are significantly related to our proxy for short sale constraints. Volatility and analyst dispersion display a negative correlation with institutional ownership, whereas turnover is positively related to institutional ownership. It is likely that these overall tendencies partially reflect the influence of firm size, as smaller firms tend to have greater volatility and analyst dispersion, but lower levels of both turnover and institutional ownership.[13]

Third, examine the mean correlations of the three dispersion measures with the abnormal trading measures on the days before the announcement. First, all three dispersion measures are positively correlated with the abnormal number of total trades on the day before the announcement, ATT(-1). Second, two dispersion measures (VOL and ADISP) are significantly positively correlated with the abnormal number of net initiated trades on day -1, ANIT(-1).

12 For example, see Ball and Kothari (1991), Berkman et al. (2008), Bernard and Thomas (1989), and Frazzini and Lamont (2007).
13 This influence makes it important to control for firm size in our subsequent analyses (e.g., see Nagel, 2005).

These results suggest a tendency for greater dispersion of opinions to be associated with greater abnormal total trading and net initiated buying activity just before the announcement.

Fourth, consider the correlations across our dispersion measures and abnormal stock returns around the earnings announcement. Two of the three dispersion measures (VOL and ADISP) are significantly positively correlated with the abnormal return on the day before the announcement (Ret(-1)), and all three dispersion measures are significantly negatively correlated with the return on the day after the announcement (Ret(+1)). The former correlations are consistent with our hypothesis of a pre-announcement price run-up for overpriced stocks (with high dispersion of opinions and low institutional ownership). The latter correlations are consistent with prior work that finds stock returns are negatively associated with trading volume, volatility, and analyst dispersion.[14]

Fifth, institutional ownership (INST) is significantly negatively correlated with abnormal total trading (over days -10 through -3) and with abnormal net initiated buying (for day -1). Once again, these tendencies at least partially reflect the influence of firm size, as smaller firms tend to have both lower institutional ownership and greater abnormal total trading and net initiated buying just before earnings announcements. In addition, INST is significantly negatively related to the abnormal return just before the announcement (Ret(-1) and Ret(-10,-3)). This tendency for stocks with lower (higher) levels of institutional ownership to have higher (lower) abnormal returns before earnings announcements is consistent with our hypotheses. In contrast, INST is positively correlated with the post-announcement abnormal return (Ret(+1) and Ret(+2)). This tendency is consistent with prior research suggesting that institutional investors have superior stock picking skills (see Baker et al., 2004, and Ali et al., 2004), as well as with our hypothesis

14 For example, see Ang et al. (2006), Brennan et al. (1998), Diether et al. (2002) and Berkman et al. (2008).

which predicts that low institutional ownership is associated with binding short sale constraints, overpricing, and a resultant price decline after the earnings release.

Finally, observe that almost all of the abnormal trading activity measures, ATT(t) and ANIT(t)), are significantly positively correlated with one another. In addition, consider the correlations across these trading measures and abnormal stock returns. We find that the abnormal return before the announcement (Ret(-1), (-2), or (-10,-3)) is significantly positively correlated with both: (i) abnormal total trading (ATT(-1), (-2), or (-10,-3)), and (ii) abnormal net initiated buying (ANIT(-1), (-2), or (-10,-3)) measured over the same time frame before the announcement. These tendencies are consistent with our hypothesis that an increase in speculative trading results in higher stock prices before the announcement. Furthermore, also consistent with our hypothesis, we find the magnitude of pre-announcement net initiated buying activity is negatively correlated with the abnormal return one or two days after the announcement. This association is significant for ρ(ANIT(-1), Ret(+1)), ρ(ANIT(-2), Ret(+1)), and ρ(ANIT(-1), Ret(+2)).

4. Empirical Results

4.1 Portfolio approach: Abnormal trading activity for portfolios sorted by dispersion of opinions

Table 2 presents our initial application of the portfolio approach, in which we partition the sample of earnings announcements each quarter into terciles based on the firm's size-adjusted dispersion of opinions. For each tercile portfolio, we report the average abnormal number of total trades (ATT) in Panel A, and the abnormal number of net initiated trades (ANIT) in Panel B.

In both Panels A and B of Table 2 there are three sets of results (rows), corresponding to our three dispersion measures: volatility (VOL), turnover (TURN), and analyst forecast dispersion (ADISP). For each set of results we present three columns. The first column reports

the average abnormal number of total trades on the day before the announcement (ATT(-1)), the second column reports the analogous number two days before the announcement (ATT(-2)), and the third column reports the same number averaged over the 8-day period from ten to three days before the announcement (ATT(-10,-3)). As we move down each column, we go from stocks with low to high values of each dispersion measure. At the bottom of each column we provide the mean difference t-test across portfolios with high versus low dispersion of opinions.

4.1.1 Abnormal total trading activity

The first column in Panel A of Table 2 provides results for abnormal total trading activity on the day before the announcement. This column reveals that ATT(-1) is significantly positive for all three tercile portfolios based on dispersion of opinions, regardless of the dispersion measure used. These results imply a substantial increase in trading activity on day -1, relative to the median daily trading activity during the benchmark period from day -55 through day -11. For each dispersion measure, the bottom element in this column (the portfolio with high dispersion of opinions) displays the largest abnormal total trading activity on day -1. Furthermore, the mean difference t-test for this column indicates that the increased trading activity on day -1 is significantly higher for stocks with high versus low dispersion of opinions.

The second column of Panel A provides similar evidence of significant abnormal total trading activity two days before the announcement (ATT(-2)). However, the level of mean abnormal trading is lower on day -2 than it is on day -1. Furthermore, on day -2 there is less consistent evidence that mean ATT(-2) is significantly higher for stocks with high versus low dispersion of opinions (i.e., the mean difference t-test is only significant for ADISP).

The results in the third column are similar to those in column 2, when abnormal total trading is averaged over the 8-day period from day -10 through day -3. Once again we find

significant abnormal trading activity over this pre-announcement period, which is largest in magnitude for the tercile with high dispersion of opinions. However, this average daily abnormal trading is once again smaller than that on days -2 or -1. Furthermore, the mean difference t-test indicates that the difference in abnormal trading between stocks with high versus low dispersion of opinions is not significant.

The results in Panel A of Table 2 are consistent with our first hypothesis. Stocks experience a significant increase in abnormal total trading activity during the 2-week period immediately before earnings announcements. Furthermore, abnormal trading intensifies as we get closer to the announcement. Finally, stocks with high dispersion of opinions reveal the greatest increase in abnormal trading activity on the day before the announcement.

4.1.2 Abnormal net initiated trading activity

Panel B of Table 2 uses a similar structure to that in Panel A, to report the average daily abnormal number of net initiated trades before earnings announcements. As in Panel A, all cells in Panel B are positive, with most significantly positive. This result indicates a substantive increase in average buying pressure on the days before earnings announcements.

Once again, abnormal net initiated trading (ANIT) is consistently higher on the day before earnings announcements (day -1), than it is in the earlier periods (day -2 or days -10 through -3). Furthermore, once again abnormal net buying activity is generally greatest for stocks with high dispersion of opinions (the bottom cell in each column of Panel B). Finally, the mean difference t-test at the bottom of the first two columns indicates that net buying pressure on days -1 and -2 is significantly greater for stocks with high versus low dispersion of opinions, for two dispersion measures (VOL and ADISP). The same result holds for one dispersion measure (VOL) over the previous 8-day period, (days -10 through -3).

4.2 Portfolio approach: Abnormal trading activity and stock returns for portfolios double-sorted by dispersion of opinions and institutional ownership

In Table 3 we condition on both size-adjusted institutional ownership and each proxy for size-adjusted dispersion of opinions. In addition to total and net initiated trading activity before the announcement, we also document the behavior of stock returns in the days before and after the earnings announcement. We present 3 x 3 schemes of portfolio results for abnormal total trading (ATT) in Panel A, and for abnormal net initiated trading (ANIT) in Panel B. Panels C and D then provide the results for abnormal stock returns in the days before and after the announcement, respectively (Ret(t)).

Panel A of Table 3 again documents intensified abnormal total trading over the two weeks before the announcement. All cells in every 3 x 3 scheme of Panel A are significantly positive. In addition, like the earlier results in Table 2, we find abnormal total trading on the day before the announcement (ATT(-1)) is higher for stocks with high versus low dispersion of opinions. Furthermore, this mean difference is significant regardless of the level of institutional ownership. Similar patterns appear in the other 3 x 3 schemes in Panel A when we consider the earlier periods, two days before the announcement (ATT(-2)) and the prior eight days (ATT(-10,-3)). However, as we move to these earlier periods, the values are smaller in magnitude and the mean difference t-test is rarely significant.

Panel B of Table 3 shows the analogous results for abnormal net initiated trading. Once again, all cells in every 3 x 3 scheme of Panel B are positive, although not all cells in Panel B are significant. Also, abnormal net initiated buying on the day before the announcement (ANIT(-1)) is higher for stocks with high versus low dispersion of opinions. However, now this mean difference is significant only for the tercile with low institutional ownership. Again similar patterns appear in the earlier two periods, for ANIT(-2) and ANIT(-10,-3), but the values in these

schemes are smaller in magnitude and the mean difference t-test is less frequently significant. Finally, we note that the bottom left cell is the largest element in eight of the nine 3 x 3 schemes in Panel B. Together, these results indicate a strong tendency for net buying pressure to dominate the intensified trading activity over the two weeks before earnings announcements, especially for stocks with high dispersion of opinions and low institutional ownership.

Panel C of Table 3 provides evidence of positive abnormal stock returns just before earnings announcements, which reflects the intensified buying activity documented in Panel B. Once again, all schemes in Panel C are dominated by positive abnormal returns. Furthermore, the bottom row in nearly every scheme (with high values of the dispersion measure) contains the *largest* abnormal return in any given column. This outcome indicates that firms with high dispersion of opinions tend to *out*perform stocks with low dispersion on the days before earnings announcements. On the other hand, the mean difference t-test at the bottom of each column indicates that this *out*performance is statistically significant only on the day before the announcement (day -1), and then only for the tercile with low institutional ownership.

This result once again draws attention to the fact that the bottom left cell is the largest of each 3x3 scheme on the day before the announcement (day -1), in Panel C. These daily abnormal returns are also economically significant, ranging from 0.48 percent to 0.62 percent, depending on the proxy for dispersion used. These results provide direct support for our hypothesis that stocks with high values of each dispersion measure have a pre-announcement price run-up that makes them outperform stocks with low values, and this run-up is greatest for stocks with low institutional ownership. In other words, firms that are already subject to Miller's (1977) overpricing tend to become even more overpriced in the days just before an earnings release.

The analogous post-announcement abnormal returns are reported in Panel D of Table 3. It is noteworthy that the bottom row in most schemes of Panel D (with high values of the dispersion measure) now contains the *smallest* abnormal return in most columns (18 out of 27 columns). Furthermore, these abnormal returns in the bottom row of each scheme tend to be negative, especially for stocks that also have low institutional ownership. This outcome indicates that firms with high dispersion of opinions tend to *under*perform stocks with low dispersion on the days after earnings announcements, especially when there are binding short sale constraints. Once again, the mean difference t-test at the bottom of each column indicates that this underperformance is statistically significant for the tercile with low institutional ownership, on the first two days after the announcement (days +1 and +2).

Note that the bottom left cell in Panel D is now the largest negative abnormal return in each 3x3 scheme on the day after the announcement (day +1). These negative daily abnormal returns are economically significant, ranging from -.71 percent to -1.13 percent, depending on the proxy for dispersion used. Furthermore, the negative abnormal return in the bottom left cell of each 3 x 3 scheme on day +1, in Panel D, is larger in magnitude than the analogous positive abnormal return in the bottom left cell of each 3 x 3 scheme on day -1, in Panel C. Together, the results in Panels C and D indicate that the stocks most prone to overpricing before an announcement experience an additional significant pre-announcement price run-up which is dominated by a larger price correction after the announcement.[15]

The price correction documented in Panel D is not completed on the day after the announcement. The analogous 3x3 schemes for two days after the announcement (day +2) are similar to those for day +1, although the abnormal returns are smaller in magnitude. Once again,

15 Other studies that document a price run-up and correction around earnings announcements include Aboody et al. (2007), Berkman et al. (2008), and Trueman et al. (2005).

the bottom left cell in every scheme on day +2 contains the largest negative abnormal return, and the mean difference t-test at the bottom of each column indicates that stocks with high dispersion of opinions significantly underperform stocks with low dispersion, for the tercile with low institutional ownership, on day +2.

Together, the results in Table 3 paint a clear picture that supports all four of our hypotheses based on the predictions from disagreement models, combined with the implication of He and Wang (1995) that speculative trading activity increases in the period before earnings announcements.[16] This evidence indicates that the stocks most prone to overpricing (with high dispersion of opinions and low institutional ownership) experience intensified trading activity on the days before an earnings announcement, which is dominated by optimists who buy the stock. For these stocks, the resultant buying pressure leads to a significant price run-up in the days before the announcement. However, the earnings release provides information that is generally disappointing for the investors that own these overpriced stocks. The natural result is a price correction after the announcement which dominates the pre-announcement price run-up.

4.3 Cross-sectional regression approach

Table 4 presents the results of cross-sectional regression analysis, in which we estimate the association between each dispersion measure and several dependent variables that represent abnormal trading activity and stock returns before or after the earnings announcement. The regression model follows:

$$\text{Dependent Var}_i = b_0 + b_1 (DM_i) + b_2 (DM_i * INST_i) + b_3 \, SIZE + b_4 \, SURPRISE_i + \varepsilon_i. \quad (1)$$

16 See Harrison and Kreps (1978), Hong, Scheinkman, and Xiong (2006), Hong and Stein (2007), Miller (1977), and Scheinkman and Xiong (2003).

The four different dependent variables analyzed in this specification include abnormal total trading and net initiated trading on the day before the announcement (ATT(-1) and ANIT(-1)), and the abnormal return on the day before and the day after the announcement (Ret(-1) and Ret(+1)). The independent variable labelled, DM, refers to each dispersion measure (VOL, TURN, or ADISP) in the quarter before the earnings announcement. The variable labelled, INST, represents institutional ownership during the quarter preceding the announcement. Firm size (SIZE) refers to the announcing firm's size-decile ranking among all NYSE/AMEX firms in the quarter preceding the announcement. The earnings surprise (SURPRISE) is defined as the difference between actual quarterly earnings released and the most recent analyst forecast prior to the announcement, scaled by the stock price eleven days before the announcement. Each dispersion measure, institutional ownership, firm size, and the earnings surprise have substantial outliers. Thus, we transform these variables into decile ranks each quarter, and scale these decile-ranks to range from 0 to 1, in order to facilitate interpretation of the coefficients.[17]

Table 4 provides the mean regression coefficients and their t-statistics obtained from estimating 20 different quarterly cross-sectional regressions over the 5-year period from 2000 through 2004. Panel A of Table 4 presents the results using VOL as the dispersion measure, while Panels B and C provide the analogous results using TURN and ADISP.

The first column in all three Panels of Table 4 presents the results using the first dependent variable, abnormal total trading on the day before the earnings release, ATT(-1). First, observe that firm size is negatively related to ATT (-1) and that the earnings surprise is positively

17 The same regression framework is applied in Nagel (2005). Using raw measures (after log-transformation of the dispersion measures and firm size) does not change any of the conclusions. We have also included leverage in the model to test whether the option-effect discussed in Johnson (2004) can explain our findings. We find that the leverage variable is never statistically significant, and its inclusion does not change any of our conclusions. Similarly, our results are robust to inclusion of the market-to-book ratio and a momentum factor (based on past 12 months' returns).

and significantly related to ATT(-1), for all three dispersion measures. Next we note the positive and significant association between ATT(-1) and each dispersion measure in the first column of each Panel in Table 4. This outcome is consistent with the results in Tables 2 and 3, suggesting that greater dispersion of opinions is associated with greater total trading activity on the day before the announcement (ATT(-1)). The coefficient of the interaction term (DM_i * $INST_i$) is always insignificant, indicating that the association between dispersion of opinions and trading activity does not significantly depend on the level of institutional ownership.[18]

The second column in each Panel of Table 4 provides the analogous results for the regressions involving the second dependent variable, abnormal net initiated trading on the day before the earnings announcement, ANIT(-1). Now firm size is not statistically significant, for all three dispersion measures in the second column of each Panel in Table 4. However, we do find that ANIT(-1) is again positively related to the earnings surprise. This result may reflect the activity of informed investors who tend to buy (sell) more just before the earnings release, when earnings later turn out to be greater than (less than) expected.[19] Finally, consistent with the results in Table 3, we again find that net initiated trading is significantly positively related to dispersion of opinions. However, now this relation is significantly weaker for stocks with higher institutional ownership (i.e., b_2 is significantly < 0). These findings are consistent across all three dispersion measures.

The results in the third column of each Panel in Table 4 show that the abnormal return on the day before the announcement (Ret(-1)) is not significantly related to firm size, but is positively related to the earnings surprise. The latter outcome is also consistent with our results

18 To understand this interpretation of the interaction term, consider the specification: $y = \alpha + \beta x + \varepsilon$, where $dy/dx = \beta = \delta_0 + \delta_1 z$. Substituting for β, we have: $y = \alpha + (\delta_0 + \delta_1 z)\, x + \varepsilon = \alpha + \delta_0 x + \delta_1 (x^* z) + \varepsilon$. In this model, the coefficient of the interaction term, δ_1, reflects the impact of z on β (the association between x and y).
19 It is worth noting that most of our the sample period is after implementation of Regulation FD, which made it illegal for management to share information with only institutional investors before earnings announcements.

for ANIT(-1), and suggests informed trading just prior to the earnings release. In addition, consistent with Table 3, higher Ret(-1) is generally associated with higher levels of all three dispersion measures, but this association is weaker for stocks with higher institutional ownership. For example, the coefficient of VOL in Table 4 is 0.68 percent (t = 2.1), while the coefficient for VOL*INST is -0.60 (t = -2.3). These results are economically significant. The first coefficient implies that, for the decile of stocks with the lowest institutional holdings, moving from the lowest to the highest VOL-decile increases the average return on the day before earnings announcements by approximately 0.68 percent. However, for the decile with the highest institutional holdings, moving from the lowest to the highest VOL-decile increases the average return before the announcement by only (0.68 – 0.60) percent. This evidence is consistent with our finding in Table 3, indicating that the relation between dispersion of opinions and the return before the announcement is attenuated (exacerbated) for stocks with higher (lower) levels of institutional holdings.

Finally, the fourth column of Table 4 presents the regression results using abnormal returns on the day after earnings announcements (Ret(+1)) as dependent variable. Once again, consistent with Table 3, these results are opposite to those involving Ret(-1). In particular, we find Ret(+1) is generally lower for stocks with higher levels of our dispersion measures, but this relation is weaker for stocks with higher institutional ownership. For example, the coefficient for ADISP is -1.00 (t = -3.0), while the coefficient for ADISP*INST is 0.99 (t = 2.2). These results imply that, for the decile of stocks with the lowest institutional holdings, moving from the lowest to the highest ADISP-decile reduces the average return on the day after earnings announcements by approximately 1.00 percent. However, for the decile with the highest institutional holdings,

moving from the lowest to the highest ADISP-decile reduces the average return after the announcement by only (-1.00 + 0.99) percent.

Overall, the regression results in all three Panels of Table 4 corroborate the results in Tables 2 and 3 to reinforce our empirical support all four hypotheses.

5. Additional Tests

In the first part of this section we present several robustness tests for the main sample of earnings announcements. We show that our results are robust when we examine various subsamples of announcements and alternative measures of trading activity. In the second part of this section we also document robust results when we analyze an earlier sample of 37,413 earnings announcements from Compustat over the 4-year period, 1996 through 1999. In the third part of this section we relate the abnormal stock return after the announcement to the magnitude of total trading activity and net initiated trading activity before the announcement.

5.1 Robustness tests: Alternative subsamples and measures of trading activity

In Table 5 we provide several tests regarding the robustness of our main results in Table 3. For each test, Panel A of Table 5 reports results for the average abnormal number of total trades and net initiated trades on the day before the announcement, ATT(-1) and ANIT(-1). The analogous results for abnormal returns on the day before and the day after the announcement (Ret(-1)) and Ret(+1)) are presented in Panel B.

In these robustness tests, we summarize the relevant results for our hypotheses by focusing on the difference between the cells in the bottom versus the top row of each 3 x 3 portfolio scheme. Specifically, we analyze the abnormal trading and stock return behavior of zero-cost portfolios that are long the tercile with the highest values of each dispersion measure and short the tercile with the lowest values. For brevity, we only present results for the lowest

and highest terciles based on institutional ownership. The base-case provided at the top of each Panel in Table 5 reproduces the analogous results from Table 3. In each subsequent test (row) of Table 5, we change only one aspect of the analysis to facilitate comparison with the base case.

The results of our first robustness test appear in row 1, just below the base case in each Panel of Table 5. In this test we exclude low-priced stocks every quarter, whose average price is below $5 during the pre-announcement period (from day -55 through day -11). This analysis reveals robust results for each of our four variables, ATT(-1), ANIT(-1), Ret(-1), and Ret(+1).

In the second test we exclude the 10 percent of stocks each quarter with the highest raw return over the preceding 12 months. Once again, results in the second row of each Panel in Table 5 are not materially different from the base case. This robustness indicates that our results are distinct from the pattern of stock return behavior around earnings announcements that Aboody et al. (2007) attribute to momentum stocks.

Frazzini and Lamont (2007), show that the concentration of trading volume around earnings announcements is positively related to future earnings announcement period returns. To test if our results are robust to this trading volume-effect, the third test omits the 25 percent of stocks with the highest average daily volume around the four consecutive earnings announcements preceding the current fiscal quarter (aggregated over the three days around each prior announcement), divided by the average daily volume for the 250 trading days ending 10 days prior to the earnings announcement for current fiscal quarter. The results in row 3 are once again similar to the base case, indicating that the pattern of trading activity and stock returns around earnings announcements is not limited to those stocks with the greatest abnormal trading volume around prior announcements.

The fourth test in Table 5 investigates whether the basic results hold up after accounting for limits to arbitrage embodied in high transaction costs. In this row we exclude the 25 percent of stocks each quarter with the highest percentage effective half spread, averaged over the 5-day period from day -15 to day -11 before each announcement. In Panel A, the results for abnormal total trading activity do not materially change when we exclude these stocks, but the results for abnormal net initiated trading are attenuated, so that they are only significant for TURN and the tercile with low institutional ownership. Similarly, in Panel B the abnormal return for the zero-cost portfolio on the day before the announcement (Ret(-1)) is no longer statistically significant, while the analogous abnormal return on the day after the announcement (Ret(+1)) is smaller in magnitude than the base case, although it remains statistically significant at the 10 percent level or better for the tercile with low institutional ownership. These results suggest that transaction costs represent a limit to arbitrage that influences this overpricing behavior, and enables it to persist over our sample period.[20]

The fifth test in Table 5 accounts for further limits to arbitrage involving short sale constraints, beyond those embodied in low institutional ownership. Following the reasoning in Asquith et al. (2005), we exclude stocks in the decile with the highest short interest ratio during the month prior to the announcement.[21] The fifth row of Panel A reveals that, when we exclude these severely short sale-constrained stocks, there is still evidence of a significantly greater pre-announcement increase in total trading and net buying activity for stocks with high versus low dispersion of opinions, which is greatest for the tercile with low institutional ownership. The fifth

20 These results are consistent with recent evidence regarding the influence of transaction costs on the magnitude and persistence of overpricing (Lesmond, 2007, and Sadka and Scherbina, 2007).
21 Asquith et al. (2005) argue that stocks are more severely short-sale constrained when there is both strong demand to sell short (proxied by high short interest) and a limited supply of shares to borrow (proxied by low institutional ownership).

row in Panel B similarly reveals that abnormal returns for zero cost portfolios on the day before and the day after the announcement are also not materially different from the base case.

In the sixth row of Panel A in Table 5, we examine whether the basic results are robust to scaling our trading activity measures (ATT(-1) and ANIT(-1)) using the mean rather than the median value over the pre-announcement period. The results in the sixth row of Panel A are somewhat attenuated and less statistically significant than the base case results in Panel A. However, our conclusions remain that, on the day before earnings announcements, trading activity is higher for stocks with high versus low dispersion of opinions, and buying activity dominates selling activity for the subsample of these stocks with low institutional ownership.

In the last row of Panel A, we present the results using share turnover (rather than the number of trades) to measure abnormal total and net initiated trading activity, defined as follows:

> Abnormal total share turnover (i,t) = actual percent of total shares outstanding traded in stock i on day t minus the median daily percent of total shares outstanding traded in stock i over days -55 through -11.
>
> Abnormal net initiated share turnover (i,t) = actual percent of net initiated shares traded in stock i on day t minus the median daily percent of net initiated shares traded in stock i over days -55 through -11.

The last row of Panel A is once again consistent with the base case, when trading activity is measured using share turnover.

In summary, the empirical support for our four main hypotheses is robust to variations in research methodology that exclude low-priced stocks, past winners, stocks with high abnormal volume around previous earnings announcements, stocks with high transaction costs, or stocks with high short interest. In addition, the results are not sensitive to the use of a different scalar or share turnover to measure abnormal total trading activity and net initiated trading activity.

5.2 Robustness tests: Large sample evidence

In this section we further examine the robustness of our results, by analyzing a sample of earlier Compustat earnings announcements over the period, 1996-1999.[22] This sample includes 37,413 earnings announcements made by the largest 3,000 firms in terms of market capitalization at the start of each year during 1996-1999.

The use of Compustat earnings announcement dates allows us to expand the sample beyond the coverage of WSJ.com. However, Compustat earnings announcement dates suffer from two sources of measurement error that obscure the correct alignment of event day 0, and thereby introduce noise into our measures of abnormal trading activity and stock returns around the announcement. First, the Compustat earnings announcement date is inaccurate (i.e., different from the actual announcement date) for a substantial portion of all announcements made before 2000, and the accuracy declines for earlier years. We therefore limit our analysis to earnings announcements after 1995.[23] Second, even when the Compustat announcement date is accurate, Compustat does not record whether the earnings information was released before or after the market's close. Thus, for all announcements made after trading hours, the Compustat announcement date is one day before the market can respond to the earnings release. Such after-hours announcements constitute a substantial part of the Compustat sample, and further reduce our ability to accurately measure trading activity before the earnings release.[24]

22 Berkman et al. (2008) present similar results for stock returns in the days before and after earnings announcements, using a larger sample of Compustat earnings announcements since 1983.

23 Berkman and Truong (2008) find that the Compustat earnings announcement date is accurate for more than 98 percent of all announcements since 2000, 96 percent of announcements for 1999, and 93 percent for 1998. The accuracy rate declines to 80 percent for 1997 and 75 percent for 1996. The accuracy rate falls below 70 percent for the years before 1996.

24 See Berkman and Truong (2008). The need to accurately measure abnormal trading activity and abnormal returns before and after earnings announcements provides the rationale behind our focus on the sample of earnings announcements from WSJ.com, for which we have the precise time of the earnings release.

The evidence for this earlier sample of announcements is provided in Table 6, using the same format as Table 3. Similar to Table 3, Panel A of Table 6 provides evidence of intensified total trading activity over the two weeks before earnings announcements. All elements in every 3x3 scheme of Panel A are significantly positive, indicating a substantive increase in total trading over the two weeks before the announcement, in comparison with the previous 45 days.

Also similar to the earlier results in Panel A of Table 3, abnormal total trading on the day before the announcement is higher for stocks with high versus low dispersion of opinions. Furthermore, this difference is statistically significant regardless of the level of institutional ownership when TURN or VOL is used to proxy for dispersion of opinions, and is significant for stocks with low institutional holdings when ADISP is used.

Similar patterns appear in the other 3 x 3 schemes in Panel A of Table 6, when we consider the two days before the announcement (day -2) and the previous eight days (-10,-3). Once again, the measures of abnormal total trading activity for these earlier periods are statistically significant, although smaller in magnitude than on day -1. Furthermore, the mean difference t-test for each column is significant at the .01 level for most of the comparisons, when VOL or TURN is used, although it is rarely significant when ADISP is used.

Panel B of Table 6 provides the analogous results for abnormal net initiated trading activity, using the earlier sample of Compustat announcements. As in Table 3, all cells in each 3 x 3 scheme of Panel B are positive, with a number of cells significantly positive in each scheme. In addition, the bottom row contains the largest cell in each column for nearly all 3 x 3 schemes in Panel B, and the bottom left cell is typically the largest or second largest cell in each 3 x 3 scheme. Furthermore, the associated mean difference t-tests in Panel B show that abnormal net initiated trading is often significantly higher for stocks with high versus low dispersion,

especially on day -1 and for the tercile with low institutional holdings. Together, these results suggest a strong tendency for net buying pressure to dominate the intensified trading activity on the days before earnings announcements, especially on for stocks with high dispersion of opinions and low institutional ownership.

Overall, our analysis of the earlier sample of Compustat earnings announcements in Table 6 reveals that, despite the inaccuracy in the alignment of event days, the results for the period 1996-1999 corroborate the results in Table 3, using the more recent sample of announcements from WSJ.com, for which we have the precise time of the earnings release.

5.3 Trading activity before the announcement and price reversals after the announcement

Thus far, our evidence indicates that the subsample of overpriced stocks – with low institutional ownership and high dispersion of opinions – experiences significant increases in trading activity, buying pressure, and stock prices before earnings announcements. These overpriced stocks also have a significant price reversal following the announcement which dominates the price run-up before the announcement. In this section we directly test whether greater increases in pre-announcement trading activity and buying pressure are associated with larger post-announcement price reversals, for the subsample of overpriced stocks.

According to traditional theoretical models of trading activity, changes in overall trading are not expected to result in predictable price changes (see, for example, Kandel and Pearson (1995), Kim and Verrechia (1991, 1994), and Harris and Raviv (1993)). In contrast, predictions from the class of disagreement models suggest that, for overvalued stocks, increased speculative trading on the days before the earnings announcement should be dominated by increased buying pressure that results in further overvaluation just before the announcement, which is corrected

after the earnings announcement.[25] In line with these predictions, we use the following regression model to empirically investigate the nature and extent of this relation between the magnitude of intensified trading before the announcement and the price reversal after the announcement:

$$\text{Ret}(+1)_i = b_0 + b_1 \text{ATT}(-10,-1)_i * \text{NON\_OVERVAL} + b_2 \text{ATT}(-10,-1)_i * \text{OVERVAL} + b_4 \text{SIZE} + b_5 \text{SURPRISE}_i + \varepsilon_i . \quad (2)$$

The variable, $\text{ATT}(-10,-1)_i$, refers to average daily abnormal total trading measured as before, except over the ten days before the earnings announcement.[26] The variable, OVERVAL, is a dummy variable assigned a value of 1 if the stock is in the subsample most prone to Miller's (1977) overvaluation (i.e., in the lowest tercile by institutional holdings and the highest tercile based on each dispersion measure), and takes a value of zero for all other stocks. NON_ OVERVAL, is a complementary dummy variable assigned a value of 1 if the stock is not in the subsample most prone to overvaluation (i.e., all stocks except those in the lowest tercile by institutional holdings and the highest tercile based on each dispersion measure), and zero for all other stocks. We are especially interested in the coefficient, b_2, which measures the association between abnormal total trading activity before earnings announcements (ATT(-10,-1)) and the abnormal return after the announcement (Ret(+1)), for the subsample of overpriced stocks.

We also test an alternative specification that replaces abnormal total trading activity before the announcement ($\text{ATT}(-10,-1)_i$) with abnormal net initiated trading activity over the same ten-day period before the announcement ($\text{ANIT}(-10,-1)_i$), as follows:

25 See Harrison and Kreps (1978), Hong, Scheinkman, and Xiong (2006), Hong and Stein (2007), and Scheinkman and Xiong (2003). For some evidence consistent with these predictions, see Berkman et al. (2008).
26 The regression results are robust to the use of alternative windows to measure pre-announcement trading activity and the post-announcement return.

$$Ret(+1)_i = b_0 + b_1 ANIT(-10,-1)_i * NON\_OVERVAL + b_2 ANIT(-10,-1)_i * OVERVAL + b_3 SIZE + b_4 SURPRISE_i + \varepsilon_i . \quad (3)$$

This specification allows us to test whether greater abnormal net initiated order flow on the days before the announcement results in pre-announcement price changes that are more likely to be *transient*, and reverse after the announcement, for the subsample of overpriced stocks. Note that this conjecture is in sharp contrast to the implications of traditional microstructure models, where net initiated order flow is expected to result in *permanent* price changes.[27]

Results are presented in Table 7. Similar to the analysis in Table 4, we transform the measures of trading activity, size, and the earnings surprise into decile ranks each quarter, and scale these decile-ranks to range from 0 to 1. This transformation facilitates comparison and interpretation of the regression coefficients.

First consider the evidence in Panel A of Table 7, using abnormal total trading activity before the announcement. This evidence is consistent with our predictions. For all three measures of dispersion of opinions, b_1 is not significantly different from zero. This result implies that, for stocks which are not overvalued, there is no significant relation between pre-announcement trading activity and the return after the announcement. In contrast, for all three measures of dispersion, b_2 is significantly less than zero. This result indicates that overvalued stocks with higher abnormal total trading activity before the announcement experience a larger price reversal after the announcement.

To illustrate the economic significance of this evidence, consider the results for ADISP in the third column of Panel A. The estimate for the interaction term (b_2) is -2.35 (t = -4.9). This coefficient indicates that overvalued stocks in the decile with the highest pre-announcement

27 For example, see Glosten and Milgrom (1985), Kyle (1985), and Hasbrouck (1991).

abnormal total trading activity experience a price decline after the announcement that is 2.35 percent larger than overvalued stocks in the decile with the lowest abnormal trading activity.

Panel B of Table 7 provides the analogous results using abnormal net initiated trading activity before the announcement. The results are similar to Panel A, indicating that overvalued stocks which experience more intense buying pressure before the announcement tend to experience a stronger price reversal after the announcement.

In summary, the evidence in Table 7 indicates that, for the subsample of overvalued stocks, greater pre-announcement abnormal trading activity or net initiated buying pressure result in larger post-announcement price reversals. These results are consistent with the implications of disagreement models combined with models that predict increased speculative trading activity before earnings announcements, as in He and Wang (1995).

6. Summary and conclusions.

This study contributes to the literature on disagreement models. We argue that earnings announcements provide a natural experiment to analyze several implications of disagreement models. At the heart of this paper are four testable hypotheses regarding the trading behavior ahead of earnings announcements: (i) investors increase their speculative positions before earnings announcements, especially for stocks with high dispersion of opinions (He and Wang, 1995); (ii) for stocks that are also short sale constrained, the increased speculative pressure before the announcement leads to an increase in buyer-initiated order flow that outstrips seller-initiated order flow (Miller, 1977, Hong and Stein, 2007); (iii) this increased buying pressure leads to a further price run-up before the announcement for stocks that are already prone to Miller's overpricing (i.e., those with high dispersion of opinions and binding short sale constraints), and (iv) for these overpriced stocks, the earnings release should reduce dispersion

of opinions and lead to a price reversal whose magnitude dominates the pre-announcement run-up, and is related to the extent of pre-announcement abnormal trading activity.

Our empirical evidence supports all four hypotheses. Robustness tests reveal consistent, corroborating support for these hypotheses, when we consider alternative samples of announcements, and alternative measures of abnormal trading activity before the announcement. In particular, we find robust results when we omit low-priced stocks, past winners, stocks with high abnormal volume around prior earnings announcements, stocks with high transaction costs, or stocks with high relative short interest. In addition, these results hold up when we use share turnover to measure abnormal trading activity before the announcement, and when we apply alternative scaling to our abnormal trading measures.

This study also contributes to the literature on cross-sectional return predictability. We show that stock returns before and after earnings announcements are predictable, based on the previous behavior of dispersion of opinions (volatility, turnover, or analyst forecast dispersion). Furthermore, this return predictability takes the form of overpricing, and is concentrated among stocks with low institutional ownership. Finally, this evidence indicates that the forces modelled in Miller (1977) and other disagreement models contribute to opposing price movements in the periods before and after earnings announcements. Thus, in contrast to most previous work, we show how Miller's optimism bias can affect stock price movements both away from and back toward fundamental values, and we document how these price changes manifest themselves over short time frames.

Appendix A: Sample Selection.

We begin with a sample of 50,110 quarterly earnings announcements from WSJ.com, made by all stocks in the Russell 3000 index 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 in the fourth quarter of 2004, when WSJ.com reports earnings announcement information for 2,882 firms in the Russell 3000 index.

We delete 9,628 announcements because WSJ.com has no time entry, leaving 40,482 observations. Next, we exclude multiple observations for the same quarterly earnings announcement, retaining the first observation in each case. This screen leaves 38,826 earnings announcements. Then, we only keep events with identical announcement dates reported in both WSJ.com and Compustat. These requirements reduce our sample to 37,793 observations. Finally, we lose 7,949 earnings announcements when we merge our TAQ data, leaving a final sample of 29,849 earnings announcements.

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 a 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 address problems and inconsistencies in the quarterly 13F filings data from Thomson Financial Institutional Holdings (see Asquith et al., 2005, Gompers and Metrick, 2001, Han and Wang, 2006, and Nagel, 2005). For example, one problem arises due to occasional 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 has to do with stock splits, which 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 following 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 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 stock dividends). We find that 2.5 percent of all firm-quarters in our 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. Still, we have followed several procedures to investigate the impact of this potential problem. First, we have omitted from our analysis all observations during firm-quarters when a stock split or stock dividend occurs. Second, we have dropped all firm-quarters when a split occurred during the subsequent quarter. Third, we have dropped all firm-quarters when either a stock split occurs during the quarter of record, or during the subsequent quarter. Fourth, we have replaced 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 robust results. Our results are robust when we exclude announcements during such quarters.

References

Aboody, David, Reuven Lehavy, and Brett Trueman, "Earnings Announcement Returns of Past Stock Market Winners,", 2007, Working Paper.

Ang, Andrew, Robert J. Hodrick, Yuhang Xing, and Xiaoyan Zhang, "The Cross-Section Of Volatility and Expected Returns," *Journal of Finance*, 2006, v61(1,Feb), 259-299.

Ali Ashiq, Lee-Seok Hwang, and Mark A. Trombley, "Arbitrage Risk and the Book-to-Market Mispricing," *Journal of Financial Economics*, 2003, v69, 355-373.

Ali, Ashiq, Cindy Durtschi, Baruch Lev and Mark Trombley. "Changes In Institutional Ownership And Subsequent Earnings Announcement Abnormal Returns," *Journal of Accounting, Auditing & Finance*, 2004, v19(3,Summer), 221-248.

Almazan, Andres, Keith C. Brown, Murray Carlson and David A. Chapman. "Why Constrain Your Mutual Fund Manager?," *Journal of Financial Economics*, 2004, v73(2,Aug), 289-321.

Asquith, Paul, Parag Pathak, and Jay Ritter, "Short Interest, Institutional Ownership, and Stock Returns," *Journal of Financial Economics*, 2005, v78 (Issue 2), 243-276.

Baker, Malcolm, Lubomir Litov, Jessica Wachter, and Jeffrey Wurgler. "Can Mutual Fund Managers Pick Stocks? Evidence from Their Trades Prior to Earnings Announcements." NBER Working Paper Series, No. w10685, 2004

Ball, Ray and S. P. Kothari. "Security Returns Around Earnings Announcements," *The Accounting Review*, 1991, v66(4), 718-738.

Bartov, E. Radhakrishnan, and S. Krnsky, I., "Investor Sophistication and Patterns in Stock Returns after Earnings Announcements," *Accounting Review*, 2000, v75 (No. 1), 43-64.

Battalio, Robert H. and Richard R. Mendenhall. "Earnings Expectations, Investor Trade Size, And Anomalous Returns Around Earnings Announcements," *Journal of Financial Economics*, 2005, v77(2,Aug), 289-319.

Berkman, Henk, Valentine Dimitrov, Prem Jain, Paul Koch, and Sheri Tice, "Sell on the News: Differences of Opinion, Short Sale Constraints, and Returns around Earnings Announcements," forthcoming *Journal of Financial Economics*, 2008.

Berkman, Henk, and Cameron Truong, "Event Day Zero? After-hours Earnings Announcements" Working Paper, 2008.

Bernard, Victor, "Cross-sectional dependence and problems in inference in market-based accounting research," *Journal of Accounting Research*, 1987, v25, l-48.

Bernard, Victor, and Jacob Thomas, "Post-Earnings Announcement Drift: Delayed Price Response or Risk Premium?" *Journal of Accounting Research*, 1989, v27 (Supplement), 1-36.

Bessembinder, H., "Issues in Assessing Trade Execution Costs," *Journal of Financial Markets*, 2003, v6, 233-257.

Boehme, R., B. Danielsen, and S. Sorescu, "Short sale constraints, differences of opinion, and overvaluation," *Journal of Financial and Quantitative Analysis*, 2006, v41 (Issue 2), 455-477.

Brennan, Michael J., Tarun Chordia, and Avanidhar Subrahmanyam, "Alternative Factor Specifications, Security Characteristics, and the Cross-Section of Expected Stock Returns," *Journal of Financial Economics*, 1998, v49, 345-373.

Chan, Kalok, and Wai-Ming Fong, "Trade Size, Order Imbalance, and the Volume-Volatility Relation," *Journal of Financial Economics*, 2000, v57, 247-273.

Chen, Joseph, Harrison Hong, and Jeremy C. Stein, "Breadth of Ownership and Stock Returns," *Journal of Financial Economics*, 2002, v66 (Nos. 2-3), 171-205.

Chordia, Tarun, Richard Roll and Avanidhar Subrahmanyam. "Market Liquidity And Trading Activity," *Journal of Finance*, 2001, v56(2,Apr), 501-530.

Christensen, Peter O., and Gerald A. Feltham, *Economics of Accounting: Volume I - Information in Markets*, 2002, Kluwer Academic Publishers: Hingham, MA.

D'Avolio, Gene., "The Market for Borrowing Stock," *Journal of Financial Economics*, 2002, v66 (Nos. 2-3), 271-306.

Diether, Karl, Christopher Malloy, and Anna Sherbina, "Differences of Opinion and the Cross-Section of Stock Returns," *Journal of Finance*, 2002, v57 (No. 5), 2113-2141.

Easley, David, Nicholas M. Kiefer and Maureen O'Hara. "One Day In The Life Of A Very Common Stock," *Review of Financial Studies*, 1997, v10(3,Fall), 805-835.

Fama, Eugene F., and James MacBeth, "Risk, return and equilibrium: Empirical Tests," *Journal of Political Economy*, 1973, v81, 607-636.

Frazzini, Andrea, and Owen Lamont, "The Earnings Announcement Premium and Trading Volume," NBER Working Paper #13090, 2007.

Gebhardt, William R., Charles M. C. Lee and Bhaskaran Swaminathan. "Toward An Implied Cost Of Capital," *Journal of Accounting Research*, 2001, v39(1,Jun), 134-176.

Glosten, Lawrence R. and Paul R. Milgrom. "Bid, Ask And Transaction Prices In A Specialist Market With Heterogeneously Informed Traders," *Journal of Financial Economics*, 1985, v14(1), 71-100.

Hasbrouck, Joel. "Measuring The Information Content Of Stock Trades," *Journal of Finance*, 1991, v46(1), 179-208.

Jones, Charles, Gautam Kaul, and Marc Lipson, "Transactions, Volume, and Volatility," *Review of Financial Studies*, 1994, v7 (No. 4), 631-652.

Gompers, P., and Metrick, A., "Institutional investors and equity prices," *Quarterly Journal of Economics*, 2001, v116, 229–259.

Han, Bing, and Qinghai Wang, "Institutional Investment Constraints and Stock Prices," 2004, Dice Center Working Paper No. 2004-24.

Harrison, J. Michael, and David M. Kreps, "Speculative Investor Behavior in a Stock Market with Heterogeneous Expectations," *Quarterly Journal of Economics*, 1978, v6, 473-506.

Harris, Milton, and Artur Raviv, "Differences of Opinion Make a Horse Race," *Review of Financial Studies*, 1993, v6(3), 473-506.

He, H. and J. Wang, "Differential Information and Dynamic Behavior of Stock Trading Volume," *Review of Financial Studies*, 1995, v8, 919-972.

Hong, Harrison, Jose Scheinkman, and Wei Xiong, "Asset Float and Speculative Bubbles," *Journal of Finance*, 2006, v61, 1073-1117.

Hong, Harrison, and Jeremy Stein, "Differences of Opinion, Short-Sales Constraints, and Market Crashes," *Review of Financial Studies*, 2003, v16 (No. 2, Summer), 487-525.

_____, "Disagreement and the Stock Market," *Journal of Economic Perspectives*, 2007, v21, 109-128.

Johnson, Timothy C., "Forecast Dispersion And The Cross Section Of Expected Returns," *Journal of Finance*, 2004, v59(5,Oct), 1957-1978.

Jones, C., and Owen Lamont, "Short Sales Constraints and Stock Returns," *Journal of Financial Economics*, 2002, v66 (Nos. 2-3), 207-239.

Kandel, E., and N. Pearson, "Differential Interpretation of Public Signals and Trade in Speculative Markets," *Journal of Political Economy*, 1995, v103 (Aug.), 831-872.

Kim, Oliver and Robert E. Verrecchia. "Trading Volume And Price Reactions To Public Announcements," *Journal of Accounting Research*, 1991, v29(2), 302-321.

_____. "Market Liquidity And Volume Around Earnings Announcements," *Journal of Accounting and Economics*, 1994, v17(1/2), 41-67.

_____. "Pre-Announcement And Event-Period Private Information," *Journal of Accounting and Economics*, 1997, v24(3,Dec), 395-419.

Kyle, Albert S. "Continuous Auctions And Insider Trading," *Econometrica*, 1985, v53(6), 1315-1336.

Lee, C. M. C., "Earnings News and Small Traders: An Intraday Analysis," *Journal of Accounting and Economics*, 1992, v15 (June/September), 265-302.

Lee, Charles M. C. and Mark A. Ready. "Inferring Trade Direction From Intraday Data," *Journal of Finance*, 1991, v46(2), 733-746.

Lesmond, David A., "The Micro and Macro of Accrual Based Trading Strategies," Working Paper, 2007.

Miller, Edward M. "Risk, Uncertainty, and Divergence of Opinion," *Journal of Finance*, 1977, v32, 1151-1168.

Morse, Dale, "Price and Trading Volume Reaction Surrounding Earnings Announcements: A Closer Examination," *Journal of Accounting Research*, 1981, v19 (Autumn), 374-383.

Nagel, Stefan, "Short Sales, Institutional Investors and the cross-section of stock returns, *Journal of Financial Economics*, 2005, v78 (Issue 2), 277-309.

Payne, Jess and Wayne B. Thomas. "The Implications Of Using Stock-Split Adjusted I/B/E/S Data In Empirical Research," *Accounting Review*, 2003, v78(4,Oct), 1049-1067.

Sadka, Ronnie, and Anna Scherbina, "Analyst Disagreement, Mispricing, and Liquidity," *Journal of Finance*, 2007, v62, 2367-2403.

Scheinkman J., and W. Xiong, "Overconfidence and Speculative Bubbles," *Journal of Political Economy*, 2003, v111, 1183-1219.

Trueman, B., M. Wong, and X. Zhang, "Anomalous Stock Returns Around internet Firms' Earnings Announcements," *Journal of Accounting and Economics*, 2003, v34, 249-271.

Table 1. Descriptive Statistics and Correlations across Variables

The sample comprises 29,849 earnings announcements from the earnings calendar on WSJ.com over the period, 2000 through 2004. All announcements in our sample occur outside (either before or after) regular trading hours. For after-hours announcements, event dates are adjusted forward one day. We label the trading day immediately before (after) the earnings release as day -1 (+1). The sample is limited to stocks in the 2004 Russell 3000 index. TURN is average daily share turnover during the pre-announcement period (times 1000), covering days (-55,-11) prior to the announcement, where daily turnover is defined as the number of shares traded per day divided by total shares outstanding. Volatility (VOL) is the mean absolute size-adjusted return over days (-55,-11). 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 (times 100). The percent of institutional holdings (INST) is computed from 13F Filings as aggregate shares held by institutions as a percent of total shares outstanding. SIZE is market capitalization (in billions of dollars). RSIZE is the size-decile rank based on all NYSE/AMEX firms. ATT(t) is the abnormal number of total trades on day t relative to the earnings announcement. For each day it is defined as a stock's actual number of trades minus the median daily number of trades in that stock over the period covering days (-55,-11), divided by the median. ANIT(t) is the difference between the abnormal number of buyer-initiated trades and the abnormal number of seller-initiated trades on day t. The abnormal number of buyer- (seller-) initiated trades is defined as the actual number of buyer- (seller-) initiated trades on day t minus the median daily number of buyer- (seller-) initiated trades over the period, (-55,-11), divided by the median. The size-adjusted abnormal return (Ret(t)) is calculated as the actual return on day t minus the return on the corresponding size-decile portfolio. 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 time series standard deviation across the 20 quarterly mean observations is used to construct the t-test for each statistic below.

Panel A: Descriptive Statistics

	Dispersion of Opinions					ATT(t)			ANIT(t)			Ret(t)					
	TURN	VOL	ADISP	INSTO	SIZE	(-1)	(-2)	(-10,-3)	(-1)	(-2)	(-10,3)	(-1)	(-2)	(-10,-3)	(+1)	(+2)	(+3,+10)
MEAN	**.82**	**2.77**	**.17**	**.59**	**5.66**	**.25**	**.16**	**.13**	**.04**	**.03**	.02	**.15**	.05	**.07**	**.14**	**.15**	.05
MEDIAN	.82	2.68	.16	.59	1.14	.25	.16	.14	.03	.01	.01	.06	.02	.04	.11	.11	.03
STD	.92	1.58	.45	.27	20.2	.59	.56	.36	.48	.46	.23	3.43	3.21	1.11	7.30	3.68	1.44
N	1476	1473	1015	1481	1481	1476	1476	1476	1476	1476	1476	1481	1481	1481	1481	1481	1481

All measures that are significantly different from zero at the .05 level appear in bold.

Table 1, continued

Panel B: Correlations

	Dispersion of Opinions					ATT(t)			ANIT(t)			Ret(t)					
	TURN	VOL	ADISP	INSTO	RSIZE	(-1)	(-2)	(-10,-3)	(-1)	(-2)	(-10,3)	(-1)	(-2)	(-10,-3)	(+1)	(+2)	(+3,+10)
TURN	1.00																
VOL	**.53**	1.00															
ADISP	**.17**	**.28**	1.00														
INST	**.18**	**-.10**	**-.04**	1.00													
RSIZE	.03	**-.27**	**-.11**	**.14**	1.00												
ATT(-1)	**.07**	**.09**	**.06**	.00	**-.08**	1.00											
ATT(-2)	.01	.03	**.03**	-.02	**-.06**	**.57**	1.00										
ATT(-10,-3)	.00	.04	**.03**	**-.03**	**-.07**	**.45**	**.50**	1.00									
ANIT(-1)	.00	**.04**	**.02**	**-.03**	**-.03**	**.12**	**.05**	.02	1.00								
ANIT(-2)	.00	.02	.01	-.01	-.03	**.09**	**.12**	**.03**	**.20**	1.00							
ANIT(-10,-3)	-.01	.03	.00	-.02	-.02	**.08**	**.08**	**.10**	**.24**	**.25**	1.00						
Ret(-1)	.01	**.05**	**.04**	**-.02**	**-.02**	**.08**	**.02**	.01	**.36**	-.01	-.01	1.00					
Ret(-2)	.01	.02	.00	.00	**-.02**	**.05**	**.07**	.01	.00	**.35**	-.01	**-.05**	1.00				
Ret(-10,-3)	.03	.07	-.01	**-.03**	-.02	**.07**	**.07**	**.09**	-.01	.00	**.24**	**-.05**	**-.05**	1.00			
Ret(+1)	**-.03**	**-.03**	**-.02**	**.03**	-.01	-.01	-.02	-.01	**-.02**	**-.02**	-.01	**-.06**	**-.05**	**-.03**	1.00		
Ret(+2)	-.01	-.02	-.02	**.03**	-.01	.01	.00	.01	**-.02**	-.01	.00	**-.04**	**-.04**	**-.02**	**.09**	1.00	
Ret(+3,+10)	-.02	-.10	.10	.01	.00	.00	.01	.01	.00	-.01	-.01	-.01	-.01	.01	**.04**	**-.02**	1.00

All measures that are significantly different from zero at the .05 level appear in bold.

Table 2. Portfolio Approach: Abnormal Trading Activity and Dispersion of Opinions before Earnings Announcements

Panel A reports the abnormal number of total trades (ATT(t)) over three periods: one day before the announcement (day -1), two days before the announcement (day -2), and the previous 8 days (-10,-3). Panel B presents the abnormal number of net initiated trades (ANIT(t)) over the same three periods. Each quarter, we partition the entire sample of earnings announcements into terciles based on the firm's three measures of size-adjusted dispersion of opinions (VOL, TURN, and ADISP). At the bottom of each column we provide the mean-difference t-test across portfolios with high versus low values of each dispersion measure. All variables are defined in Table 1.

		Panel A. Abnormal Number of Total Trades			Panel B. Abnormal Number of Net Initiated Trades		
Dispersion Measure		ATT(-1)	ATT(-2)	ATT(-10,-3)	ANIT(-1)	ANIT(-2)	ANIT(-10,-3)
VOL	Low	.201 ***	.150 ***	.128 ***	.026 *	.017	.007
	Med	.251 ***	.158 ***	.130 ***	.043 ***	.020 *	.013
	High	.311 ***	.177 ***	.140 ***	.061 ***	.040 **	.029 **
	High-Low	.110 ***	.027	.012	.036 ***	.023 ***	.022 **
	T-stat	4.8	1.1	.7	4.1	2.7	2.4
TURN	Low	.206 ***	.151 ***	.132 ***	.040 **	.025	.019
	Med	.234 ***	.158 ***	.125 ***	.038 **	.026 *	.015
	High	.322 ***	.174 ***	.140 ***	.052 ***	.028 **	.018 **
	High-Low	.116 ***	.023	.008	.012	.002	-.001
	T-stat	7.3	1.2	.6	1.0	.3	-.1
ADISP	Low	.230 ***	.143 ***	.143 ***	.027 **	.007	.022
	Med	.246 ***	.160 ***	.126 ***	.030 ***	.024 **	.015 *
	High	.288 ***	.191 ***	.147 ***	.047 ***	.041 **	.021 **
	High-Low	.058 ***	.048 **	.004	.019 **	.034 **	-.001
	T-stat	3.3	2.2	.3	2.4	2.0	-.2

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

Table 3. Portfolio Approach: Abnormal Trading Activity, Stock Returns, Dispersion of Opinions, and Institutional Ownership

Panel A reports the abnormal number of total trades (ATT(t)) over three periods: one day before the announcement (day -1), two days before (day -2), and the previous 8 days (-10,-3). Panel B presents the abnormal number of net initiated trades (ANIT(t)) over the same three periods. Panel C (Panel D) gives the abnormal size-adjusted return (Ret(t)) for the analogous three periods before (after) the announcement. Each panel presents nine 3 X 3 double-sorted schemes of portfolios. In each scheme, we independently double-sort the sample into terciles based on the firm's size-adjusted institutional ownership (INST) and each size-adjusted dispersion measure (VOL, TURN, and ADISP). As we move to the right across columns in each scheme, we consider portfolios with greater institutional ownership. As we move down across rows in each 3 X 3 scheme, we consider portfolios with greater dispersion of opinions. At the bottom of each column we provide the mean-difference t-test across portfolios with high versus low values of that dispersion measure, conditional on institutional ownership. All variables are defined in Table 1.

Panel A: Abnormal Number of Total Trades Before Earnings Announcements

		ATT(-1)			ATT(-2)			ATT(-10,-3)		
	INST:	Low	Med	High	Low	Med	High	Low	Med	High
	Low	.184 ***	.202 ***	.223 ***	.139 ***	.146 ***	.169 ***	.137 ***	.117 ***	.130 ***
VOL	Med	.251 ***	.241 ***	.260 ***	.164 ***	.147 ***	.164 ***	.149 ***	.116 ***	.128 ***
	High	.323 ***	.298 ***	.316 ***	.192 ***	.174 ***	.166 ***	.147 ***	.140 ***	.134 ***
	High-Low	.139 ***	.096 ***	.093 ***	.052 *	.028	-.003	.010	.023	.005
	T-stat	4.7	3.6	3.4	1.9	.9	-.1	.5	1.0	.3
	INST:	Low	Med	High	Low	Med	High	Low	Med	High
	Low	.215 ***	.197 ***	.204 ***	.157 ***	.148 ***	.143 ***	.144 ***	.119 ***	.122 ***
TURN	Med	.263 ***	.222 ***	.226 ***	.175 ***	.140 ***	.167 ***	.138 ***	.119 ***	.123 ***
	High	.333 ***	.321 ***	.325 ***	.174 ***	.180 ***	.176 ***	.150 ***	.136 ***	.140 ***
	High-Low	.118 ***	.124 ***	.121 ***	.016	.032	.033	.006	.018	.018
	T-stat	4.1	5.4	5.8	.6	1.2	1.2	.3	1.1	1.3
	INST:	Low	Med	High	Low	Med	High	Low	Med	High
	Low	.218 ***	.211 ***	.259 ***	.144 ***	.139 ***	.147 ***	.145 ***	.135 ***	.146 ***
ADISP	Med	.236 ***	.238 ***	.259 ***	.165 ***	.144 ***	.174 ***	.132 ***	.119 ***	.128 ***
	High	.297 ***	.274 ***	.296 ***	.191 ***	.182 ***	.200 ***	.151 ***	.131 ***	.160 ***
	High-Low	.080 ***	.063 **	.037 *	.047	.043	.053	.006	-.003	.014
	T-stat	3.0	2.3	1.9	1.4	1.0	1.8	.2	-.2	.9

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

Table 3, continued

Panel B: Abnormal Number of Net Initiated Trades Before Earnings Announcements

		ANIT(-1)			ANIT(-2)			ANIT(-10,-3)		
	INST:	Low	Med	High	Low	Med	High	Low	Med	High
VOL	Low	.016	.041 **	.021	.020	.019	.014	.009	.008	.004
	Med	.052 ***	.046 **	.033 **	.019	.034 *	.008	.016	.014	.012
	High	.093 ***	.048 **	.040 **	.054 **	.029 *	.034 *	.037 **	.027 **	.021 **
	High-Low	.078 ***	.008	.019	.035 ***	.010	.020 **	.028 ***	.019 *	.017 *
	T-stat	6.9	.6	.9	2.7	1.3	2.0	2.7	1.7	1.7
	INST:	Low	Med	High	Low	Med	High	Low	Med	High
TURN	Low	.047 **	.042 **	.024	.031	.036 **	-.002	.025	.013	.012
	Med	.054 **	.040 **	.025 *	.037 **	.021	.024 *	.018	.016	.011
	High	.077 ***	.054 ***	.041 **	.039 **	.027 *	.022	.023 **	.020 *	.014 *
	High-Low	.030 ***	.013	.016	.008	-.008	.024	-.003	.008 *	.002
	T-stat	2.7	.8	.7	.8	-.9	1.4	-.3	.9	.2
	INST:	Low	Med	High	Low	Med	High	Low	Med	High
ADISP	Low	.010	.047 **	.020	.004	.006	.012	.010	.023	.026
	Med	.031 *	.030 **	.027 **	.036 *	.030 *	.012	.017	.017	.013
	High	.077 ***	.039 **	.025 **	.051 **	.036 **	.036 *	.030 **	.018 **	.015
	High-Low	.066 ***	-.008	.004	.047 **	.031	.024	.020	-.005	-.011
	T-stat	2.9	-.4	.3	2.5	1.6	1.2	1.4	-.4	-1.0

Table 3, continued

Panel C: Abnormal Return Before Earnings Announcements

		Ret(-1)			Ret(-2)			Ret(-10,-3)		
	INST:	Low	Med	High	Low	Med	High	Low	Med	High
VOL	Low	.039	.117	.052	.015	.033	-.042	.009	-.010	-.017
	Med	.075	.108 **	.034	-.043	-.010	-.015	.050	.050	.018
	High	.553 **	.202	.081	.124	.104	.244	.219 *	.161	.133
	High-Low	.514 **	.085	.029	.108	.072	.286 *	.210	.171	.149
	T-stat	2.3	.5	.2	.7	.7	1.8	1.6	1.3	1.5
	INST:	Low	Med	High	Low	Med	High	Low	Med	High
TURN	Low	.115	.048	-.068	.028	.068	.009	.032	-.005	-.031
	Med	.137	.149 *	.000	.034	-.031	-.012	.112 **	.045 **	.017
	High	.616 **	.238	.145	.073	.114	.161	.227 *	.151	.091
	High-Low	.501 **	.189	.213	.045	.046	.152	.196	.156	.123
	T-stat	2.3	.4	1.5	.3	.4	1.2	1.5	1.3	1.5
	INST:	Low	Med	High	Low	Med	High	Low	Med	High
ADISP	Low	-.133	.157 **	.080	-.006	-.054	.034	-.019	.000	.052
	Med	.208	.149	-.069	.016	.122	.049	.085	.104 *	.070
	High	.480 **	.209	.131	.041	-.048	.222	.084	.069	.009
	High-Low	.613 **	.053	.052	.047	.006	.188	.103	.069	-.043
	T-stat	2.5	.3	.3	.3	.1	.9	1.3	.7	-.8

Table 3, continued

Panel D: Abnormal Return After Earnings Announcements

		Ret(+1)			Ret(+2)			Ret(+3,+10)		
	INST:	Low	Med	High	Low	Med	High	Low	Med	High
	Low	.123 **	.162	.206	.060 *	.256 **	.256 **	.065	.089	.063
VOL	Med	.181	.426 **	.451 **	.156	.325 **	.296 **	.027	.093	.068
	High	-.705 ***	.225	.295	-.248 *	.169	.089	-.015	-.080	.035
	High-Low	-.828 ***	.063	.090	-.308 **	-.087	-.168	-.080	-.169	-.028
	T-stat	-3.2	.3	.4	-2.1	-.6	-.9	-.7	-.1	-.3
	INSTO	Low	Med	High	Low	Med	High	Low	Med	High
	Low	.168 **	.145	.252 **	.059	.296 ***	.328 ***	.047	.107 *	.074
TURN	Med	.025	.331 ***	.441 **	.087	.207 ***	.266 ***	.019	.119	.078
	High	-1.130 ***	.309	.264	-.340 **	.253	.134	-.033	.032	.028
	High-Low	-1.298 ***	.164	.013	-.399 **	-.043	-.193	-.080	-.075	-.046
	T-stat	-3.6	.6	.1	-2.2	-.3	-1.4	-.8	-.9	-1.1
	INSTO	Low	Med	High	Low	Med	High	Low	Med	High
	Low	.350	.340	.311 *	.229 **	.281 ***	.215 *	-.019	.002	.052
ADISP	Med	.540 **	.490 ***	.275 **	.135	.194	.216 **	.085	.104	.069
	High	-.768 **	-.139	.164	-.272 **	.206	.236	.083	.069	.009
	High-Low	-1.118 ***	-.479	-.147	-.501 ***	-.076	.021	.102	.067	-.043
	T-stat	-2.9	-1.5	-.6	-3.8	-.5	.2	.2	.6	.9

Table 4. Regression Approach: Abnormal Trading Activity, Stock Returns, Dispersion of Opinions, and Institutional Ownership

This table presents mean coefficients and t-statistics across 20 quarterly cross-sectional regressions between 2000 and 2004. The model relates each measure of trading activity or stock returns to dispersion of opinions, firm size, and the earnings surprise, as follows:

$$\text{Dependent Var}(i) = b0 + b1\,(DMi) + b2\,(DMi * INSTi) + b3\,SIZEi + b4\,SURPRISEi + \varepsilon i. \quad (1)$$

We analyze the following four dependent variables: (1) abnormal number of total trades on the day before the announcement, ATT(-1); (2) abnormal number of net initiated trades on the day before the announcement, ANIT(-1); (3) size-adjusted abnormal return on the day before the announcement, Ret(-1); and (4) size-adjusted abnormal return on the day after the announcement Ret(+1). 'DM' refers to each dispersion measure. The three Panels (A, B, and C) in this Table provide reults for all four dependent variables, using each of the three dispersion measures as independent variable (DM = VOL, TURN, and ADISP). 'INST' refers to institutional ownership, and 'SIZE' refers to the firm's market capitalization, all taken in the quarter prior to the announcement. The earnings surprise (SURPRISE) is the difference between actual earnings and the most recent analyst forecast prior to the earnings release, scaled by the closing price on day -11. Each quarter we transform the explanatory variables, DM, INST, SIZE, and SURPRISE, into decile ranks and scale them to range from 0 to 1. All variables are defined in Table 1.

Dispersion Measure (DMi):	Panel A: Return Volatility (VOL)				Panel B: Share Turnover (TURN)				Panel C: Analyst Forecast Dispersion (ADISP)			
Dependent Var:	ATT(-1)	ANIT(-1)	Ret(-1)	Ret(+1)	ATT(-1)	ANIT(-1)	Ret(-1)	Ret(+1)	ATT(-1)	ANIT(-1)	Ret(-1)	Ret(+1)
Intercept	.17	.01	-.32	-2.66	.21	.04	-.25	-2.43	.28	.02	-.27	-2.61
T-stat	5.3	0.7	-3.6	-8.6	6.8	1.6	-2.7	-9.3	11.7	0.8	-1.7	-7.5
DM	.18	.08	.68	-.59	.17	.05	.70	-1.45	.09	.05	.57	-1.00
T-stat	4.1	4.0	2.1	-1.5	5.1	2.5	1.8	-3.2	2.9	2.6	1.7	-3.0
DM * INST	-.02	-.07	-.60	.68	-.04	-.06	-.62	1.10	.00	-.07	-.53	.99
T-stat	-0.5	-3.2	-2.3	1.6	-1.1	-3.0	-2.2	2.5	0.2	-2.9	-1.7	2.2
SIZE	-.05	-.02	.11	1.13	-.11	-.04	.01	1.22	-.15	-.01	.13	1.14
T-stat	-1.7	-1.0	1.4	3.5	-2.8	-1.6	0.1	4.0	-4.2	-0.3	0.7	3.1
SURPRISE	.06	.03	.42	4.62	.06	.03	.41	4.66	.04	.03	.34	4.69
T-stat	4.9	2.9	3.6	16.0	4.7	2.8	3.7	15.9	3.0	2.1	3.0	14.4
Avg Adj R-Square	.033	.013	.014	.053	.029	.011	.014	.054	.027	.014	.015	.052
Avg # firms / qtr	1239	1239	1239	1239	1241	1241	1241	1241	1004	1004	1004	1004

Table 5. Robustness Tests: Alternative Subsamples and Measures of Trading Activity

Panel A reports results of robustness tests for abnormal total and net initiated trading activity on the day before earnings announcements (ATT(-1) and ANIT(-1)). Panel B presents the size-adjusted abnormal returns on the day before and the day after the announcement (Ret(-1) and Ret(+1)). In each cell we provide the mean difference of trading activity or stock returns across portfolios that are long the tercile with high values of each dispersion measure and short the tercile with low values, conditional on institutional ownership. For brevity, we report only results for the low and high terciles based on institutional ownership. The base-case in the top row reproduces the analogous mean difference t-tests from Table 3. In each subsequent test (row) we change only one aspect of the analysis to facilitate comparison with the base case. We present results for subsamples that exclude: 1. low-priced stocks; 2. past winners; 3. the 25% of stocks with highest abnormal volume around the prior four announcements; 4. the 25% of stocks with highest effective half spread; and 5. stocks in the top decile based on relative short interest. In addition we provide results using alternative measures of trading activity that: 6. use the mean rather than median as scalar; and 7. use share turnover rather than number of trades.

Panel A.	Abnormal Total Trading Activity (ATT(-1))						Abnormal Net Initiated Trading Activity (ANIT(-1))					
Dispersion Measure:	VOL		TURN		ADISP		VOL		TURN		ADISP	
Inst. Ownership:	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
Base Case	.14	.09	.12	.12	.08	.04	.08	.02	.03	.02	.07	.00
t-ratio	4.7 **	3.4 **	4.1 **	5.8 **	3.0 **	1.9	6.9 **	.9	2.7 **	.7	2.9 **	.3
1. No low-priced stocks	.16	.10	.13	.12	.10	.07	.06	.03	.03	.02	.05	.00
(with avg P < $5)	4.5 **	4.3 **	4.7 **	6.1 **	4.2 **	3.7 **	4.4 **	1.7	2.1 *	.7	2.3 *	.2
2. No past winners	.17	.14	.12	.12	.09	.07	.08	.03	.03	.02	.05	.00
(top 10% 12-month ret)	4.1 **	4.9 **	4.2 **	5.4 **	3.8 **	4.1 **	4.9 **	1.7	2.1 *	.8	2.5 *	.3
3. No stocks with high	.17	.10	.10	.06	.06	.06	.08	.04	.02	.02	.06	-.01
announcement volume	3.9 **	3.6 **	4.4 **	3.2 **	2.4 *	3.4 **	4.7 **	2.1 *	0.8	0.8	3.4 **	-0.5
4. No stocks with high	.17	.10	.16	.11	.12	.07	.02	.00	.03	.02	.01	-.02
Transaction Costs	4.8 **	4.3 **	4.6 **	4.4 **	5.4 **	4.1 **	1.4	.0	3.3 **	1.0	.8	-.9
5. No stocks with	.17	.14	.12	.12	.09	.07	.08	.03	.03	.02	.05	.00
High Short Interest	4.1 **	4.9 **	4.2 **	5.4 **	3.8 **	4.1 **	4.9 **	1.7	2.1 *	.8	2.5 *	.3
6. Using the Mean	.06	.03	.06	.07	.06	.02	.05	.01	.02	.01	.05	.01
as Scalar	2.3 *	1.4	2.6 *	4.2 **	2.6 *	1.1	4.6 **	0.4	2.4 *	0.2	2.7 **	0.4
7. Using share turnover	.26	.38	.43	.43	.17	.13	.03	.01	.05	.04	.02	-.01
(not # of trades)	9.2 **	12.1 **	8.7 **	13.8 **	5.4 **	3.8 **	10.1 **	2.1 *	8.7 **	7.8 **	3.3 **	-.8

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

Table 5, continued

Panel B.	Abnormal Returns Before Announcement (Ret(-1))						Abnormal Returns After Announcement (Ret(+1))					
Dispersion Measure:	VOL		TURN		ADISP		VOL		TURN		ADISP	
Inst. Ownership:	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
Base Case	.51	.03	.50	.21	.61	.05	-.83	.09	-1.30	.01	-1.12	-.15
t-ratio	2.3 *	.2	2.3 *	1.5	2.5 *	.3	-3.2 **	.9	-3.6 **	.1	-2.9 **	-.6
1. No low-priced stocks	.38	.11	.33	.15	.45	.00	-.47	-.17	-1.08	.02	-.88	-.15
(with avg P < $5)	2.0 *	.8	1.9	1.1	2.0 *	.0	-1.7	-.7	-3.5 **	.1	-2.7 **	-.5
2. No past winners	.56	.14	.42	.17	.57	.01	-.75	-.80	-1.30	.03	-.95	-.12
(top 10% 12-month ret)	2.5 *	.8	2.2 *	1.1	2.3 *	.3	-2.7 **	-.1	-3.7 **	.2	-2.4 *	-.4
3. No stocks with high	.53	.05	.44	.07	.52	-.09	-.94	-.18	-1.25	-.13	-1.09	-.21
announcement volume	2.3 *	.4	1.9	.5	2.3 *	-.8	-3.8 **	-.6	-4.3 **	-.7	-3.2 **	-.8
4. No stocks with high	.11	.00	.15	.15	.26	.05	-.58	-.23	-1.09	.14	.74	-.32
Transaction Costs	.5	.3	.8	1.0	1.8	.3	-1.8	-1.3	-3.0 **	.9	-2.8 **	-1.3
5. No stocks with	.56	.13	.42	.17	.57	.01	-.75	-.09	-1.24	.03	-.95	-.12
High Short Interest	2.5 *	.9	2.2 *	1.1	2.3 *	.1	-2.7 **	-.4	-3.7 **	.2	-2.4 *	-.4

Table 6. Portfolio Approach: Abnormal Trading Activity and Stock Returns before Compustat Earnings Announcements from 1995-1999

Panel A reports the abnormal number of trades on the day before the earnings announcement (ATT(-1)), two days before the earnings announcement (ATT(-2)), and over the previous eight days (ATT(-10,-3)). Panel B provides the analogous information for the abnormal number of net initiated trades (ANIT(-1), ANIT(-2), and ANIT(-10,-3)). Each panel presents nine double-sorted 3 X 3 schemes of portfolios. The sample includes 37,413 earnings announcements made by the largest 3,000 firms in terms of market capitalization at the start of each year during 1996-1999. In each 3 X 3 partitioning scheme, we double-sort the sample into terciles based on the firm's size-adjusted institutional ownership (INST) and each of the three size-adjusted dispersion measures (VOL, TURN, and ADISP). As we move to the right across columns in each 3 X 3 scheme, we consider portfolios with greater values of institutional ownership. As we move down across rows in each 3 X 3 scheme, we consider portfolios with greater values of each dispersion meası
At the bottom of each column we provide the mean-difference t-test across portfolios with high versus low values of that dispersion measure, conditional on size-adjusted institutional ownership. All variables are defined in Table 1.

Panel A: Abnormal Number of Total Trades Before Earnings Announcements

		ATT(-1)			ATT(-2)			ATT(-10,-3)		
	INST:	Low	Med	High	Low	Med	High	Low	Med	High
	Low	.290 ***	.312 ***	.305 ***	.180 ***	.178 ***	.199 ***	.173 ***	.174 ***	.157 ***
VOL	Med	.411 ***	.472 ***	.386 ***	.272 ***	.258 ***	.259 ***	.296 ***	.222 ***	.196 ***
	High	.540 ***	.657 ***	.573 ***	.376 ***	.446 ***	.329 ***	.351 ***	.322 ***	.284 ***
	High-Low	.250 ***	.346 ***	.268 ***	.197 ***	.269 ***	.129 ***	.178 ***	.148 ***	.127 ***
	T-stat	5.9	4.2	7.6	4.7	5.4	4.4	5.8	6.7	5.3
	INST:	Low	Med	High	Low	Med	High	Low	Med	High
	Low	.364 ***	.336 ***	.341 ***	.254 ***	.196 ***	.268 ***	.253 ***	.200 ***	.201 ***
TURN	Med	.390 ***	.514 ***	.324 ***	.251 ***	.312 ***	.207 ***	.288 ***	.223 ***	.175 ***
	High	.513 ***	.599 ***	.546 ***	.336 ***	.380 ***	.312 ***	.296 ***	.301 ***	.254 ***
	High-Low	.149 ***	.263 ***	.205 ***	.083 ***	.184 ***	.044	.042	.101 ***	.053 ***
	T-stat	4.2	7.0	5.2	2.8	6.2	1.5	1.3	3.9	2.7
	INST:	Low	Med	High	Low	Med	High	Low	Med	High
	low	.337 ***	.315 ***	.359 ***	.211 ***	.208 ***	.206 ***	.234 ***	.165 ***	.183 ***
ADISP	Med	.365 ***	.430 ***	.320 ***	.200 ***	.220 ***	.209 ***	.188 ***	.202 ***	.222 ***
	High	.455 ***	.362 ***	.393 ***	.296 ***	.239 ***	.237 ***	.277 ***	.225 ***	.208 ***
	High-Low	.118 **	.047	.035	.085	.030	.032	.043	.060 **	.025
	T-stat	2.0	1.0	.9	1.5	.8	.8	1.0	2.2	.8

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

Table 6, continued

Panel B: Abnormal Number of Net Initiated Trades Before Earnings Announcements

		ANIT(-1)			ANIT(-2)			ANIT(-10,-3)		
	INST:	Low	Med	High	Low	Med	High	Low	Med	High
VOL	Low	.034	.070 **	.071 **	.041	.020	.031	.029	.015	.008
	Med	.154 ***	.127 ***	.130 ***	.089 ***	.094 ***	.100 ***	.056 ***	.061 ***	.055 ***
	High	.167 ***	.151 ***	.132 ***	.138 ***	.134 ***	.092 ***	.110 ***	.102 ***	.081 ***
	High-Low	.133 ***	.081 **	.061 **	.098 ***	.114 **	.061 **	.081 ***	.087 ***	.073 ***
	T-stat	4.8	2.3	2.2	4.3	3.3	2.1	3.9	4.3	4.9
	INST:	Low	Med	High	Low	Med	High	Low	Med	High
TURN	Low	.113 ***	.095 ***	.067	.085 **	.030	.046	.048 **	.026	.003
	Med	.078 ***	.093 **	.098 ***	.079 **	.106 ***	.057 **	.069 ***	.059 ***	.042 ***
	High	.171 ***	.163 ***	.143 ***	.113 ***	.117 ***	.106 ***	.095 ***	.098 ***	.074 ***
	High-Low	.058 **	.067 **	.076 **	.028	.086 ***	.060	.047 **	.072 ***	.072 ***
	T-stat	2.1	2.4	2.5	1.0	3.7	1.4	2.1	3.6	3.2
	INST:	Low	Med	High	Low	Med	High	Low	Med	High
ADISP	Low	.050	.078	.114 **	.065 **	.053 *	.072 *	.063 **	.040 **	.057 **
	Med	.077 **	.109 ***	.073 ***	.035	.040	.054 *	.044 *	.058 ***	.078 ***
	High	.130 ***	.131 ***	.095 ***	.082 ***	.097 ***	.086 ***	.070 ***	.092 ***	.062 ***
	High-Low	.080 ***	.052	-.019	.017	.044	.014	.007	.052 ***	.005
	T-stat	2.8	1.1	.6	.6	1.2	.3	.4	2.9	.3

Table 7: Post-Announcement Return in Relation to Pre-Announcement Trading Activity

This table presents mean coefficients and t-statistics across 20 quarterly cross-sectional regressions between 2000 and 2004. The model relates the size-adjusted abnormal stock return on the day after the earnings announcement (Ret(+1)) to our measures of total or net initiated trading activity, for subsamples of stocks that are overvalued (i.e., with both low institutional ownership and high dispersion of opinions), as follows:

$$Ret(+1)_i = b0 + b1\ TRADE(-10,-1)_i * NON\_OVERVAL + b2\ TRADE(-10,-1)_i * OVERVAL + b3\ SIZE + b4\ SURPRISE_i + \varepsilon_i. \quad (2)$$

The dependent variable is the size-adjusted abnormal return on the day after after the earnings announcement. Panel A (Panel B) reports the results using abnormal total trading activity (abnormal net initiated trading activity) over the ten days before the earnings announcement as the measure of trading activity (TRADE). OVERVAL is a dummy variable that assumes a value of 1 each quarter, if the stock is in the lowest tercile by institutional holdings and the highest tercile based on each dispersion measure, and assumes a value of zero for all other stocks. The variable, NON_OVERVAL, is the complementary dummy variable that assumes a value of 1 if the stock is not in the lowest tercile by institutional holdings and the highest tercile based on each dispersion measure, and zero for all other stocks. Each quarter we transform the pre-announcement trading activity measure (ATT or ANIT), Size, and Surprise, into decile ranks and scale them to range from 0 to 1. All other variables are defined in Table 1.

		Panel A. Total Trading (ATT(-10,-1))			Panel B. Net Initiated Trading (ANIT(-10,-1))		
		VOL	TURN	ADISP	VOL	TURN	ADISP
Intercept	b_0	-2.60	-2.58	-2.72	-2.66	-2.64	-2.89
T-stat		-8.0	-8.2	-6.9	-9.9	-10.0	-8.8
TRADING * NON_OVERVAL	b_1	-.22	-.34	.04	-.07	-.22	.33
T-stat		-1.0	-1.5	0.1	-0.4	-1.4	1.4
TRADING * OVERVAL	b_2	-1.34	-2.55	-2.35	-1.61	-2.99	-2.27
T-stat		-3.8	-3.7	-4.9	-5.1	-5.2	-5.5
SIZE	b_3	1.11	1.19	1.06	1.13	1.22	1.15
T-stat		3.8	4.1	3.1	3.9	4.2	3.4
SURPRISE	b_4	4.65	4.65	4.67	4.64	4.64	4.63
T-stat		16.0	16.1	13.7	16.0	16.0	13.8
Avg Adjusted R-Square		.052	.055	.054	.052	.054	.052
Avg # Firms / Qtr		1239	1241	1004	1239	1241	1004