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What Happens When Mood Disagrees with Financial News? Investors Underreact to Firm News Conflicting with Mood

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ABSTRACT

We use mood-generating events—proxied by big sports games—that contain no information on the firms' fundamentals but happen concurrently with earnings announcements to test the hypothesis that investors' attention shifts away from financial news that is incongruent with investors' mood states, thereby leading to underreaction. We empirically confirm the existence of conflicting-mood distractions. We find a stronger post-earnings announcement drift and delayed response ratio and weaker immediate volume reaction when the news (positive or negative) in a firm's earnings announcement is inconsistent with the mood generated by the win or loss of the investors' local sports team in a major game. This effect strengthens with a firm's proximity to the location of the mood source.

JEL classifications: *G12, G02, G14*

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I. INTRODUCTION

Although there are many studies of investor sentiment showing the impact of mood states on asset prices, there is little evidence from the finance literature on the impact of mood on investors' attention allocation. Specifically, past studies of investor attention allocation have focused solely on three main kinds of *mood congruent* effects: (1) the relationship of asset prices to exogenous mood shifters like sports events (e.g., Edmans et al., 2007), weather (e.g., Saunders, 1993), health related factors (e.g., Pantzalis and Ucar 2017), advertising (e.g., Lou, 2014), and religious factors (e.g., Pantzalis and Ucar, 2014); (2) mood-congruent judgment bias (e.g., Agarwal, Duchin and Sosyura, 2012), and (3) mood-congruent memory (e.g., Bodoh-Creed, 2015). Conversely, the behavioral sciences literature contains extensive psychological evidence on mood-induced attention changes and judgment biases (e.g., Isen, 1984; Tversky and Kahneman, 1973). We posit that mood can lead to investor distraction because it can cause cognitive biases through its influence on memory, evaluation, and behavior (e.g., Gardner, 1985; Forgas, 1992).

In this paper, we empirically investigate whether investor behavior reflects a human tendency to focus on mood-congruent content when the investor is processing information. In particular, we examine the role of investors' mood states that play in allocating attention to or ignoring new firm information. We extend the literature on investor inattention by introducing a new type of investor distraction, which we call *conflicting-mood investor distraction*, and by examining whether it can cause underreaction to earnings news that conflicts with investors' mood states. We use big sports events as a proxy for exogenous mood-generating shocks to investors' information environments and empirically test whether sports moods can serve as an affective background filter through which investors appraise relevant firm information contained in earnings announcements. We posit that investors experiencing a good sports mood state are looking at the world through rose-colored glasses (Schweitzer et al., 1992). When called upon to process earnings news, they will do so in a mood-congruent way, i.e., by emphasizing the positive and overlooking or discounting the negative pieces of information. In this case, we expect negative earnings news to be reflected in prices with delay, causing prices to display a negative post-earnings announcement drift (PEAD). Similarly, when investors experience a bad sports mood state, we posit that they will tend to focus more on the negative earnings news and less on the positive. In this case, we expect the underreaction to positive earnings news to be reflected in a positive PEAD.

Our results provide strong support for the *conflicting-mood distraction* hypothesis. We find high levels of delayed response to firms' news when the firms which are located near cities with teams competing in big sports events announce earnings around the day of the sports event and when the type of earnings news (positive or negative) differs from the sports mood-state experienced by local investors. This effect is both statistically and economically significant and on average accounts for up to an additional 9% of PEAD. Also consistent with the view that investors' mood states can cause a distraction in the form of inattention to mood-incongruent firm news, we find that trading volume declines around the time of the games for firms located around cities with teams competing in big sports events. Furthermore, the results are stronger for the subsamples of firms located closer to the home areas of teams competing in the big games, where sports mood is expected to be stronger. Since the conflicting-mood distraction effect manifests itself through a local investor base channel, our evidence also highlights the importance of the local component of stock pricing, which has not received sufficient attention in many other studies except those focusing on the local bias. Our findings essentially suggest that mood-generating news unrelated to and incongruent with the mood induced by the firm's news can shift attention away from the earnings announcement and thereby lead to underreaction to the announcement; we call these "conflicting-mood distraction effects."

Delayed-response ratio tests also show empirical findings similar to our PEAD tests. Earnings announcements by firms located close to cities with teams competing in big sports events (which generate a sports mood) have a large delayed portion of the stock response (i.e., up to 75% of the long-term response). The portion of the delayed price response declines with firm distance from the mood source, i.e., from the home cities of the teams competing in the big games. This finding is particularly pronounced among firms that display a combination of (1) *positive* earnings surprises and headquarters' locations close to cities hosting sports teams that *lost* in a big sports event, and to a lesser extent, (2) *negative* earnings surprises and headquarters' locations close to cities hosting teams that *won* in a big sports event. Thus, the *conflicting-mood distraction* effect is asymmetric and consistent with prior studies that show differences in the way information is processed under positive versus negative mood states (e.g., Forgas, 1992; Sinclair and Mark, 1992; Edmans et al., 2007).

We choose big sports events as the basis for this empirical analysis of mood-induced investor distraction for several reasons. First, it is well established that moods produced by big sports events can have a direct emotional effect on stock prices and economic outcomes. Second, sports events have an impact on a sizeable portion of society, and the sports-induced mood is observed at both the individual and the community levels (White, 1989; Wann et al., 2001). Big sports events can potentially trigger "socially induced" mood contagion stimulated through social interactions. Mood contagion may, in turn, stimulate similarity in changes of attention within a group (e.g., Hatfield et al., 1993). People are exposed to the subject of important sports events through their daily social interactions. For example, recent Gallup polls show that almost 60% of Americans are sports fans. This statistic highlights how big importance of sports in the U.S. In addition, "upper-income Americans (68%) [are] significantly more likely to be sports fans than those residing in lower-income (54%) and middle-income households (55%)." As upper-income people are expected to have higher stock market participation rates than lower-income people, sports news can be considered a good choice of an exogenous factor distracting investors, especially retail investors. Major sports events, such as the Super Bowl, are intensely followed by a large proportion of the population with substantial media coverage not only during the actual time of the games but also during pre- and post-game periods. For example, in 2017, the most-viewed TV show was the Super Bowl and eight of the top 10 most-viewed TV shows, including all of the top three, were sports games. Moreover, local fan bases are strong in the U.S: almost 90% of local populations in locations ranked top in terms of local football fans watched, attended or listened to their teams during a year, according to an online report on sports. The same report states that as much as 70%-80% of local populations support their football teams in the other top locations. Other sports have similarly strong local fan support (e.g., almost two-thirds of the local population watched, attended or listened to their local basketball team in the top location of local fans.) These statistics suggest that sports news related to local sports teams can create a strong mood effect on local people, including local investors. Third, sports events are appropriate for a study of investor distraction because, by definition, they do not produce any information that is either related to the firms' fundamentals or relevant for investment decisions. Consequently, finding underreaction to earnings news can only be interpreted as the result of big sports events' impacts on investors' information processing, in the form of inattention to earnings news which is inconsistent with investors' mood states.

We use earnings announcements as our test environment because they constitute firm news, which investors typically pay close attention to, and occur regularly on a quarterly basis but not always on the same calendar day. Also, any sports-induced mood state that affects stock price reaction to earnings news is expected to be more pronounced when the investor base overlaps with the sports fan base, i.e., among "local" firms located near the home city of the teams competing in the big game. Thus, if stock prices have a significant local component (Pirinsky and Wang, 2006), there should be more post-earnings announcement drift caused by conflicting-mood distraction for local firms around the time of big sports games.

Our paper is closer in spirit to the recent literature on investors' limited attention; these studies provide evidence of distracting effects associated with an array of different kinds of news (e.g., simultaneous news from other companies, timing/day of the corporate event, etc.) that are related to the primary corporate event. The main distinction between our paper and the earlier papers in the literature is that our paper presents evidence of investor distraction caused by limited attention to relevant information which conflicts with the mood generated by an exogenous factor, whereas the earlier papers show a distraction effect induced by factors that do not include any mood content that could cause judgment bias and/or cause an attention shift toward certain types of information. Moreover, our paper provides a novel approach to the investigation of mood effects on investor attention by focusing on exposure to sports news that by design is unrelated to investment decisions but is a source of mood. In a recent theoretical paper, Bodoh-Creed (2015) provides a model for the impact of mood-congruent memory on financial outcomes. Our results are in line with his model. Big sports events exogenously change investors' moods and cause attention allocation to shift toward mood-congruent financial news and to shift away from the financial news that conflicts with investors' mood states.

II. DATA AND SAMPLE SELECTION

We include earnings announcements of NYSE, AMEX and NASDAQ firms that issued earnings news within the (-1,+2) trading day window around dates of widely followed sports games in the U.S. Firm location information is crucial in terms of measuring a firm's proximity to the source of the mood induced by sports events in our paper. We use firm location information from the Compact Disclosure, which provides the firms' correct locations at any point in time and accounts for headquarter changes. We match available headquarter zip code information with the zip code information in Census files. After imposing these requirements, we end up with 97,304 earnings announcements occurring between 1989 and 2006.

Of this entire sample of quarterly earnings announcements, 5,096 announcements are within the (-1, +2) trading-day window around the dates of major sports events. We use Google web search and sports statistics websites to identify dates for the following major U.S. sports events: the Super Bowl, AFC and NFC championship games, NBA playoffs final games (if it is the 6^{th} or 7^{th} game of the best-of-seven series), MLB playoff final games (if it is 6th or 7th game of the best-of-seven series) and NCAA basketball playoff final games. We identify 80 such big-game dates for the years 1989-2006. We use Google web search and sports websites to obtain each team's stadium address, which is our proxy for team location. The distance between the firms' and teams' locations is calculated using longitudes and latitudes from the Census 2010 zip code data file.

We require our sample firms to have non-missing information from COMPUSTAT, CRSP, and I/B/E/S databases as well as Compact Disclosure. In particular, we follow the related literature and compute the cumulative abnormal returns (CARs) as the firm's "raw daily return from the CRSP minus the daily return on the portfolio of firms with approximately same size (the market value of equity from June) and book-to-market (B/M) ratio (from the prior December)" (Livnat and Mendenhall,2006 p. 186). The CAR between two consecutive earnings announcements, CAR (E_t,E_{t+1}), is defined as the cumulative abnormal return for the period starting two days after the current earnings announcement and ending one day after the next earnings announcement. We also require that firm size for the corresponding quarter end is larger than $5 million and stock price per share is greater than $1. We match I/B/E/S forecasts and COMPUSTAT earnings data and use the primary earnings definition from I/B/E/S. We measure earnings surprises by the forecast error which we define as $FE_{iq}=(E_{iq}-F_{iq})/P_{iq}$. FE_{iq} is calculated by subtracting analyst expectations (i.e., the median of forecasts reported to I/B/E/S in the 90 days prior to the earnings announcement) from actual earnings and then normalized by the price per share at the end of the quarter obtained from COMPUSTAT. In our tests, we use a bad (good) earnings news indicator variable for the lowest (highest) FE_{iq} quintile every fiscal quarter, which we call as FE1 (FE5). Our PEAD measures are CAR (E_t, E_{t+1}) and CAR (2, 75). The dependent variables in the immediate reaction regressions are CAR (-1, 1) and CAR (0, 1), where day 0 is the day of the earnings announcement. In some of our tests, we also use the delayed response, which is defined, following DellaVigna and Pollet (2009), as the delayed stock response to the long-term stock response ratio.

Our tests also control for other variables that can affect return performance, such as firm size, book-to-market ratio, earnings volatility, reporting lag, analyst coverage, and share turnover, as well as the day of the week, month, year, and two-digit SIC industry indicator variables. Consistent with Hirshleifer et al. (2009), *Earnings volatility* is computed as the standard deviation of the deviations of quarterly earnings computed over a four-year period ending with the quarter preceding the current earnings announcement. We require a minimum of four split-adjusted quarterly earnings to calculate this variable. *Share turnover* is the average monthly trading volume normalized by the average number of share outstanding for the one-year period that ends at the end of the corresponding fiscal quarter. *Reporting lag* is the number of days between the quarter end and earnings announcement day. *Log (1+ # of analysts)* is constructed by using the number of analysts that follow the firm during the corresponding quarter.

III. SUMMARY STATISTICS AND CONFLICTING-MOOD DISTRACTION

A. Summary Statistics

Panel A of Table 1 reports summary statistics for the sample of firms whose earnings announcements occur on dates around big sports games. Panel B provides descriptive statistics for the subsample of firms whose earnings announcements occur on dates around major sports games and whose location is within 200 miles of a city with a sports team that competed in a big sports event. When comparing the two samples regarding means and medians, we do not see much difference across any of the variables except earnings volatility, which seems to be a bit lower in the subsample of firms located close to sports teams competing in the big games.

Table 1
Summary statistics

Panel A of Table 1 reports summary statistics of the subsample of firms whose earnings announcements occur on dates around big sports games. Panel B provides descriptive statistics for firms whose earnings announcements occur on dates around big sports games and whose location is within 200 miles of a city with a sports team that competed in a big sports event. This table reports the number of observations (N), mean, median, and the 10th and 90th percentile values for each variable. Size is company's market value. B/M is company's book to market ratio. Earnings volatility is measured as the standard deviation of the deviations of prior four-year quarterly earnings from the earnings one year ago. Share turnover is the average monthly trading volume normalized by the average number of shares outstanding for the one-year period that ends at the end of the corresponding fiscal quarter. Reporting lag is the number of days between the quarter end and earnings announcement day. Log (1+# of analysts) is the logarithm of the number of analysts that follow the firm during the corresponding quarter. The sample period is the years between 1989 and 2006.

Panel A: All Earnings announcements of firms around game times					
	N	Mean	p10	Median	p90
Size ($M)	5,096	3,318.01	68.55	549.70	5,865.57
B/M	5,096	0.563	0.138	0.457	1.029
Earnings Surprise	5,096	-0.0009	-0.0045	0.0003	0.0045
Earnings Volatility	5,088	6.59%	0.03%	0.13%	0.69%
Share Turnover	5,096	9.49%	1.90%	6.89%	19.83%
Reporting Lag	5,096	28.4	20	27	36
# Analysts	5,096	4.3	1	3	10
Panel B: Earnings announcements of firms within 200 miles of team cities around game times					
	N	Mean	p10	Median	p90
Size ($M)	943	3,065.64	76.98	572.92	6,136.23
B/M	943	0.53	0.12	0.44	1.01
Earnings Surprise	943	-0.0004	-0.0050	0.0003	0.0046
Earnings Volatility	943	1.25%	0.03%	0.14%	0.79%
Share Turnover	943	9.70%	1.97%	7.10%	20.30%
Reporting Lag	943	27.522	18	26	36
# Analysts	943	4.3	1	3	10

B. Conflicting-Mood Distraction

Recent studies in the limited investor attention literature suggest that factors such as timing/day of the corporate event can lead to investor distraction. These papers show distraction effects resulting from factors lacking mood content. In contrast, our empirical investigation employs distracting information signals unrelated to firm fundamentals, but which have mood content that affects investors' attention allocation and response. When distraction originates from an event with mood content, the degree of attention investors allocate to a firm's news depends on the combination of the mood and the type of earnings news. Investors receive firm news that can either be consistent or inconsistent with the mood state they are experiencing. When a firm's news is in agreement with the mood produced by the event, investors will allocate more attention to the earnings news. On the other hand, when the firm's news is incongruent with the current mood state, investors will pay less attention to the earnings report. Thus, the *conflicting-mood distraction* effect amounts to an asymmetric delayed stock price response to the firm news. When there is negative mood, there will be a more delayed response to good firm news and a less delayed response to the bad firm news. Similarly, when an event induces a positive mood, there will be a more delayed response to bad firm news and a less delayed response to the good firm news.

Figure 1 shows the time path of the stock responses (measured by mean cumulative abnormal returns over different event windows) for the two types of conflicting-mood investor distraction cases: (i) good firm news and concurrent unrelated news inducing a bad mood, and, in a similar manner, (ii) bad firms news and concurrent unrelated news inducing a good mood. Conflicting-mood distraction predicts that people who live in areas with a strong mood state will allocate their attention differently than other times because they experience a mood state which amounts to an exogenous shock to their attention allocation process. Consistent with our conflicting-mood distraction argument, Figure 1 shows that stock prices react with a delay to conflicting earnings news suggesting that investors allocate less attention to news that is incongruent with the mood state they experience.

Figure 1

Time-path of PEAD when earnings surprises are in conflict with sports mood

This figure shows the mean cumulative abnormal returns (CARs) for different event windows and different earnings surprise quintiles for the firms that are located near bad or good sports news (cities with losing or winning teams) for earnings news cases conflicting with mood. The depicted CAR event windows are [0,+1], [+2,+30], [+2,+45], [+2,+61], [+2,+75], and [+2,+90]. FE5 (FE1) is an indicator variable that takes the value of 1 for the FE=5 (FE=1) and value of 0 for everything else.

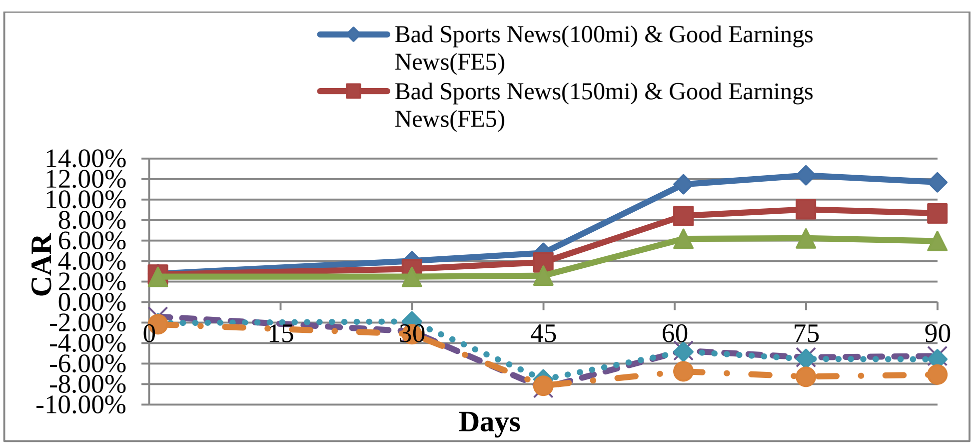
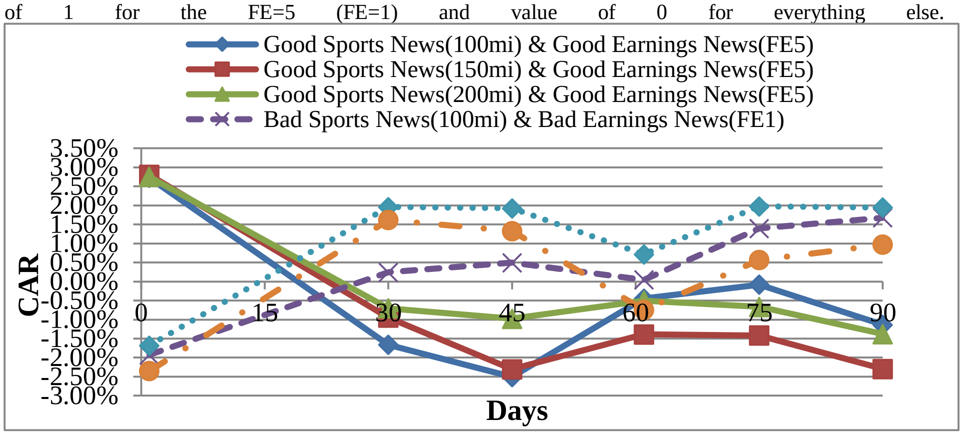


Figure 1 shows that the mood-conflicting distraction effect is asymmetric, i.e., different for the cases of a good sport-related mood combined with bad earnings news and a bad sport-related mood combined with good earnings news. Although the magnitude of the conflicting-mood distraction effect, as captured by the delayed price response, is stronger for good firm news coupled with a bad sports mood, the evolution of PEAD is a bit slower than that of bad firm news coupled with a good sports mood. This result is indicative of a bad mood's greater persistence and significance compared to that of a good mood. It is also consistent with both the prediction of the prospect theory (Kahneman and Tversky, 1979) and the empirical evidence from numerous other studies documenting an asymmetry in the magnitudes of bad versus good mood effects (e.g., Carroll et al., 2002; White, 1989; Edmans et al., 2007).

Figure 2

Time-path of PEAD when earnings surprises are consistent with sports mood

This figure shows the mean cumulative abnormal returns (CARs) for different event windows and different earnings surprise quintiles for the firms that are located near bad or good sports news (cities with losing or winning teams) for mood-consistent earnings news cases. The depicted CAR event windows are [0,+1], [+2,+30], [+2,+45], [+2,+61], [+2,+75], and [+2,+90]. FE5 (FE1) is an indicator variable that takes the value of 1 for the FE=5 (FE=1) and value of 0 for everything else.



One can expect that investors will allocate more attention to a firm's news that is congruent with their current mood. Figure 2 displays stock responses for the two types of mood-consistent earnings news cases: (1) good earnings news occurring when investors experience a good mood emanating from news unrelated to the firm's fundamentals (e.g., sports), and (2) bad earnings news when there is a bad sports mood. We observe a reasonably strong short-term stock reaction to good earnings news that is announced when the sports mood is positive while the delayed response is in the opposite reaction of the short-term reaction. Similarly, there is some strong short-term stock reaction to bad earnings news issued when the sports mood is negative, again followed by a delayed response in the opposite reaction of short-term reaction. These findings imply some initial overreaction, possibly due to the greater attention allocated to mood-consistent firm news, and they support the notion that the mood-consistent information signals receive more attention and larger information processing resources. Overall, Figure 1 and Figure 2 support the notion that conflicting-mood distraction can cause investors to underreact to the mood-incongruent firm news. On the other hand, investors' tendencies to pay more attention to mood-congruent firm news may cause an overreaction.

IV. EMPIRICAL RESULTS

A. Conflicting-Mood Distraction and Stock Response

In this section, we examine conflicting-mood distraction using market response regression models whose main independent variables account for mood content emanating from unrelated news (e.g., big sports games), firms' news, and their interaction. We also control for many other factors that have been shown to matter for stock price responses to earnings news using the following model:

$$CAR=\beta_0+ \beta_1 Win+ \beta_2 Loss+ \beta_3 Win*FE5+ \beta_4 Loss*FE5+ \beta_5 Win*FE1+ \beta_6 Loss*FE1 + \beta_7 FE5 + \beta_8 FE1 + Controls \quad (1)$$

In the equation above, Win (Loss) represents a dummy variable that takes the value of 1 if a firm is located near a city with a winning (losing) team and the value of 0 otherwise. The control variables are firm size, book-to-market ratio, earnings volatility, reporting lag, analyst coverage, and share turnover as well as the day of the week, month, year, and two-digit SIC industry indicator variables. We estimate the model (1) separately for subsamples of firms located within three radiuses: 100, 150 and 200 miles from the aforementioned cities; we report the results for delayed stock response and immediate stock reaction to earnings announcements issued around game dates in our sample in Table 2, Panels A and B. In all of the regressions, the base group consists of firms located further away from both cities with winning teams and cities with losing teams.

Consistent with the earlier univariate evidence, the results in Panel A suggest a strong conflicting-mood investor distraction effect that gets stronger with greater exposure to sports mood. In particular, the coefficient of Loss*FE5 is economically and statistically significant, especially for firms that are close to cities with a sports team that plays in a big game. For example, a firm which reports a high earnings surprise (good earnings news) and is within 100 miles of a city with a losing team will exhibit a 9% to 10.5% higher post-earnings announcement drift. This effect is statistically significant for firms within 150 miles of a losing team's city when PEAD is measured by CAR (E_t, E_{t+1}) and up to 200 miles from a losing team's city when PEAD is measured by CAR (2, 75).

The coefficients of Win*FE1 are also consistent with the conflicting-mood distraction hypothesis. For example, a firm with a low earnings surprise (bad earnings news) that is within 100 miles of a city with a winning team has a 4.7% to 6.4% more negative PEAD. The effect persists for distances up to 200 miles for both alternative PEAD measures. Also, and similar to our earlier results, the magnitude of the delayed stock response to bad earnings news that conflicts with mood is smaller than the one for good earnings news that conflicts with mood. This result is in line with Hirshleifer et al. (2009) who show that distracting news has a stronger effect on companies that experience positive earnings surprises and also in line with the psychology literature's evidence of a stronger impact of negative mood on attention shifts and judgment biases. In line with the mood-consistent attention allocation argument, the coefficients of Loss*FE1 and Win*FE5 are in all but one model statistically insignificant.

Table 2

Earnings announcements around game times

The dependent variables in this table are CAR (Et, Et+1) and CAR (2,75) in Panel A and CAR (-1,1) and CAR (0,1) in Panel B. Distance to Team City shows the distance to the sports mood source, which is the distance to the location of a winning (losing) team competing in the big sports game. Win (Loss) takes the value of 1 if the firm that issued an earnings announcement is headquartered within a specific distance from a location with a sports team that won (lost) a big game and zero otherwise. Day 0 represents the day of earnings announcement in all CAR event window definitions. CAR (Et, Et+1) is the cumulative abnormal return between current earnings announcement and the next one. FE is a rank variable that represents (1 to 5) earnings surprise quintiles. FE5 is an indicator variable that takes the value of 1 for the FE=5 and value of 0 for everything else. FE1 is an indicator variable that takes the value of 1 for the FE=1 and value of 0 for everything else. This table controls for Size, B/M ratio, Log (1+ #of analysts), Reporting Lag, Earnings Volatility, and Share Turnover. These variables are defined in Table 1. This table also includes controls of two-digit SIC, the day of the week, month, and year indicator variables. Control variables are not shown for brevity. Standard errors are adjusted for heteroscedasticity, clustered by the day of the announcement. Robust p-values are in parentheses (* significant at 10%; ** significant at 5%; *** significant at 1%).

Panel A: Delayed Response (PEAD) Regressions						
Dependent Variable	CAR (Et,Et+1)			CAR (2,75)		
Distance to Team Location:	100 miles	150 miles	200 miles	100 miles	150 miles	200 miles
Win	0.0215	0.0092	0.0075	0.0207	0.0101	0.0108
	(0.237)	(0.547)	(0.671)	(0.239)	(0.475)	(0.460)
Loss	0.0195	0.0187	0.0088	0.0191	0.0171	0.0079
	(0.094)*	(0.084)*	(0.365)	(0.287)	(0.250)	(0.442)
Win*FE5	-0.0382	-0.0376	-0.0222	-0.0242	-0.0282	-0.0262
	(0.149)	(0.090)*	(0.451)	(0.332)	(0.221)	(0.427)
Loss*FE5	0.0899	0.0581	0.0420	0.1049	0.0703	0.0473
	(0.034)**	(0.079)*	(0.121)	(0.026)**	(0.068)*	(0.071)*
Win*FE1	-0.0469	-0.0313	-0.0415	-0.0635	-0.0589	-0.0783
	(0.013) **	(0.055)*	(0.013)**	(0.003)***	(0.042)***	(0.034)***
Loss*FE1	-0.0103	-0.0010	-0.0076	-0.0076	0.0020	-0.0053
	(0.796)	(0.974)	(0.832)	(0.873)	(0.961)	(0.889)
FE5	0.0347	0.0355	0.0352	0.0369	0.0377	0.0389
	(0.008)***	(0.006)***	(0.009)***	(0.008)***	(0.007)***	(0.004)***
FE1	0.0186	0.0177	0.0199	0.0244	0.0244	0.0276
	(0.191)	(0.235)	(0.201)	(0.121)	(0.143)	(0.103)
Constant	0.0126	0.0161	0.0144	0.0140	0.0181	0.0172
	(0.597)	(0.517)	(0.579)	(0.394)	(0.253)	(0.322)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5088	5088	5088	5088	5088	5088
R-squared	0.036	0.035	0.034	0.039	0.038	0.037

Table 2 (continued)

Panel B: Immediate Reaction Regressions

Dependent Variable	CAR (-1,1)			CAR (0,1)		
Distance to Team Location	100 miles	150 miles	200 miles	100 miles	150 miles	200 miles
Win	0.0054	0.0048	0.0035	0.0031	0.0026	0.0028
	(0.004)***	(0.205)	(0.046)**	(0.246)	(0.501)	(0.172)
Loss	-0.0021	0.0009	-0.0016	0.0002	0.0022	0.0009
	(0.439)	(0.632)	(0.478)	(0.912)	(0.196)	(0.467)
Win*FE5	0.0087	0.0145	0.0137	0.0080	0.0100	0.0078
	(0.161)	(0.100)	(0.043)**	(0.386)	(0.140)	(0.379)
Loss*FE5	0.0191	0.0129	0.0127	0.0108	0.0085	0.0075
	(0.347)	(0.344)	(0.325)	(0.580)	(0.462)	(0.513)
Win*FE1	0.0159	0.0083	0.0083	0.0124	0.0070	0.0050
	(0.162)	(0.311)	(0.307)	(0.453)	(0.611)	(0.711)
Loss*FE1	0.0118	0.0108	0.0046	0.0109	0.0122	0.0054
	(0.300)	(0.285)	(0.604)	(0.141)	(0.037)**	(0.347)
FE5	0.0193	0.0188	0.0184	0.0160	0.0157	0.0157
	(0.005)***	(0.006)***	(0.007)***	(0.005)***	(0.005)***	(0.004)***
FE1	-0.0339	-0.0339	-0.0335	-0.0303	-0.0306	-0.0299
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
Constant	0.0666	0.0657	0.0657	0.0441	0.0440	0.0437
	(0.007)***	(0.006)***	(0.006)***	(0.015)**	(0.016)**	(0.015)**
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5088	5088	5088	5088	5088	5088
R-squared	0.070	0.070	0.070	0.064	0.064	0.064

Next, in Panel B, we look at the immediate reaction to earnings announcements using the model shown in equation (1). The dependent variable is CAR (-1, 1) in first three columns of Panel B and CAR (0, 1) in last three columns. The immediate reaction regression results are in line with the prior evidence. The FE5 coefficient suggests that there is about a 1.6% to 2% higher return as an immediate reaction to high earnings surprises, regardless of the firm's distance to the city with a team competing in a big sports game. The FE1 coefficient suggests that the immediate reaction to low earnings surprises for all firm/team-city distances amounts to about a 3% to 3.4% lower return.

The coefficient of Win*FE5 for the immediate reaction is also positive but statistically significant only for firms located within 200 miles of cities with a winning team suggesting that there may be a strong initial reaction to mood-consistent information. In line with this notion, the Win*FE5 coefficient is negative in some of the PEAD regressions, indicating the possibility of correction of some initial overreaction to positive mood-consistent earnings news.

B. Conflicting-Mood Distraction and Delayed Response Ratio

Having provided strong PEAD results in support of the conflicting-mood hypothesis, we now perform delayed response ratio tests and report their results in Table 3. In Panel A, delayed response ratios of the conflicting good earnings news effect (Loss*FE5 effect) and the conflicting bad earnings news effect (Win*FE1 effect) are one at a time contrasted with those of all other announcements. Following DellaVigna and Pollet (2009), we define the delayed response ratio as the ratio of the delayed stock response (CAR (E_t, Et_{+1}) and CAR (2, 75)) to the long-term stock response (CAR (-1, Et_{+1}) and CAR (0, 75), respectively). We estimate delayed stock response and long-term stock response from extreme earnings news quintiles only as in the following model:

$$CAR=\beta_0 + \beta_1 Win + \beta_2 Loss + \beta_3 Win*Top + \beta_4 Loss*Top + \beta_5 Top + Controls \qquad (2)$$

This model is estimated by using the same control variables used in Panel A and Panel B and in a similar way. Only the extreme earnings surprise (FE5 and FE1) announcements are included in estimations. In the above model, Top is a dummy variable that takes the value of 1 if the earnings surprise is in the highest surprise quintile (FE=5) and the value of 0 if it is in the lowest surprise quintile (FE=1). For example, in the last three columns of Panel A where we use CAR (2,75) and CAR (0,75) for the delayed response ratio computation, the delayed response ratio of conflicting good firm news (Loss*FE5 effect) is [$(\beta_2^{(2,75)} + \beta_5^{(2,75)}) / (\beta_2^{(0,75)} + \beta_5^{(0,75)})$], whereas the delayed response ratio of conflicting bad firm news (Win*FE1 effect) is [$(\beta_1^{(2,75)} + \beta_5^{(2,75)}) / (\beta_1^{(0,75)} + \beta_5^{(0,75)})$]. For all other announcements, i.e., those by firms that are not located near cities with a winning or losing sports team, the delayed response ratio is [$\beta_5^{(2,75)} / \beta_5^{(0,75)}$].

Panel A shows that up to 72% of the long-term response is delayed for earnings news announced during big sports events by firms located near the losing teams' cities. The delayed response effect gets larger with proximity to the losing teams' cities. In contrast, only about 21% to 26% of the long-term response is delayed in the case of announcements made by firms not located near cities with a sports team competing in big sports games. Moreover, the difference between negative conflicting-mood distraction announcements and other announcements without mood content is statistically significant, especially for the subsamples of firms located nearer to the mood source. Delayed response ratios calculated based on CAR (Et, Et+1) show smaller magnitudes for earnings news issued around game dates by firms located near winning teams' cities. One possible explanation for this is that CAR (E_t, E_{t+1}) captures drift up to the next earnings announcement date whereas CAR (2,75) accounts for the PEAD over a fixed period which ends by the 75th day after the announcement.

In Panel B, we compare cases that contain conflicting-mood earnings announcements with all other announcements that lack any mood content. This analysis is accomplished by combining the conflicting-mood distraction effects in one group while keeping the mood-consistent effects in another group as in the model shown below:

$$CAR=\beta_0 + \beta_1 GameDist + \beta_2 *ConflictingMood*Top + \beta_3 *MoodConsistent*Top + \beta 4Top + Controls \qquad (3)$$

Table 3

Delayed response ratio tests

Dependent variables are delayed response ratios of [CAR (Et,Et+1) / CAR (-1,Et+1)] in first three columns and [CAR (2,75) / CAR (0,75)] in last three columns. Delayed response ratios are constructed by following DellaVigna and Pollet (2009). This table includes only announcements with good (depicted by FE5) and bad (depicted by FE1) in delayed response ratio tests. This table controls for Size, B/M ratio, Log (1+ #of analysts), Reporting Lag, Earnings Volatility, and Share Turnover. This table also includes controls of two-digit SIC, the day of the week, month, and year indicator variables. Variable definitions are provided in the paper as well as Table 1 and Table 2. Control variables are not shown for brevity. Standard errors are adjusted for heteroscedasticity, clustered by the day of the announcement. Standard errors are calculated by using the Delta method. Robust p-values are in parentheses (* significant at 10%; ** significant at 5%; *** significant at 1%).

	Ratio of the Delayed Stock Response to the Long-Term Stock Response					
Response Ratio Representation	[CAR (Et,Et+1) / CAR (-1,Et+1)]			[CAR (2,75) / CAR (0,75)]		
Distance to Team City	100 miles	150 miles	200 miles	100 miles	150 miles	200 miles
Panel A: Analysis of Response Ratios of Conflicting-Mood Distraction Effects Separately						
Announcements subject to Negative conflicting-mood distraction (Loss*FE5 effect)	0.6108	0.5606	0 .4837	0.7204	0.6595	0.5846
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
Announcements subject to Positive conflicting-mood distraction (Win*FE1 effect)	0.2892	0.1174	0.3391	0.5245	0.4441	0.5478
	(0.522)	(0.852)	(0.235)	(0.047)**	(0.082)*	(0.002)***
Other announcements without mood content	0.2344	0.2391	0.2645	0.2321	0.2357	0.2102
	(0.055)**	(0.038)**	(0.025)**	(0.117)	(0.116)	(0.203)
Difference between Negative conflicting-mood distraction announcements & Other announcements without content	0.3763	0.2825	0.3018	0.4883	0.4238	0.3744
	(0.020)**	(0.111)	(0.104)	(0.006)***	(0.028)**	(0.079)*
Difference between Positive conflicting-mood distraction announcements & Other announcements without content	0.0548	-0.1333	0.1167			
	(0.907)	(0.784)	(0.710)			

Table 3 (continued)

Panel B: Analysis of Response Ratios of Conflicting-Mood Distraction Effects in One Combined Distraction Effect						
Announcements subject to conflicting-mood distraction (Loss*FE5 & Win*FE1 effects)	0.6499	0.6015	0.5869	0.7599	0.7156	0.6761
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
Other announcements without content	0.2233	0.2396	0.2119	0.2177	0.2216	0.2012
	(0.077)*	(0.055)*	(0.119)	(0.159)	(0.158)	(0.237)
Difference between conflicting-mood distraction announcements & Other announcements without content	0.4266	0.3619	0.3619	0.5422	0.4940	0.4748
	(0.004)***	(0.020)**	(0.020)**	(0.001)***	(0.005)***	(0.012)**

In the equation above, GameDist represents a dummy variable that takes the value of 1 if a firm is located within a certain distance (e.g., within 100 miles or 200 miles) of a city with a winning or losing team and the value of 0 otherwise. ConflictingMood is an indicator variable that takes a value of 1 if either Loss*FE5 or Win*FE1 is equal to 1 and the value of 0 otherwise. MoodConsistent is an indicator variable that takes a value of 1 if either Loss*FE1 or Win*FE5 is equal to 1 and a value of 0 otherwise. The estimation of the delayed response ratios in Panel B is similar to the one in Panel A. The results in Panel B show that the difference between announcements conflicting with mood and those that lack any mood content in terms of response ratios is significant across all distance subsamples and increases with proximity to the source of the distraction. In sum, the evidence in Table 2 and Table 3 provides strong support for the conflicting-mood investor distraction hypothesis.

Next, we turn our attention to the subsample of firms that are located near areas exposed to the sports mood to test whether the sports mood can produce more pronounced and clear patterns of the conflicting-mood distraction effect. We use the following regression model:

$$CAR=\beta_0+\beta_1 Loss+\beta_2 Loss*FE5+\beta_3 FE5+\beta_4 Loss*FE1+\beta_4 FE1+Controls \quad (4)$$

Since the test sample includes only the firms in or near cities with winning or losing teams, we do not include both win and loss dummies and their interactions in this model. We choose to include the Loss rather than the Win dummy variable because, based on our results thus far, the distraction effect is expected to be stronger among firms located near a losing team's city.

In Table 4, we show the regression results for the model in equation (4) estimated using subsamples defined by the distance of the firm's headquarters from the home cities of teams competing in big sports events. For the subsample of firms only within 100 miles of cities with a sports team that plays a big game, a high earnings surprise combined with a negative mood associated with a home team loss results in 13.5% to 14% higher drift. The Loss*FE5 effect declines from 13.5%-14% to 8.6% as the firm distance increases from 100 miles to 200 miles but remains statistically significant in all subsamples, except in the 200-mile distance subsample when PEAD is measured by CAR (2, 75). The coefficient of Loss*FE1 is not statistically significant in any of the different distance subsamples.

Correspondingly, Panel B displays the immediate reaction results for the subsample of firms that are close to cities with a losing or winning team. As expected, FE5 (FE1) shows a significant 3.5% to 4.3% higher (1.8% to 2.5% lower) immediate reaction for positive (negative) earnings surprises across most distance subsamples. Overall, our results in this subsection also point out that the distraction effect of a bad sports mood coupled with good earnings news is more pronounced than the corresponding distraction effect of a good sports mood coupled with bad earnings news.

Table 4

Subsample tests - firms located near the source of big sports news

The dependent variables in this table are CAR (Et, Et+1) and CAR (2,75) in Panel A and CAR (-1,1) and CAR (0,1) in Panel B. This table includes only the subsample of firms that are located close to the cities with teams participating in a big sports game and with announcements around big sports news. In this table, Loss takes the value of 1 if the firm that issued an earnings announcement is headquartered within a specific distance from a location with a sports team that lost a big game and zero if the firm that issued an earnings announcement is headquartered within a specific distance from a location with a sports team that won. This table controls for Size, B/M ratio, Log (1+ #of analysts), Reporting Lag, Earnings Volatility, and Share Turnover. This table also includes controls of two-digit SIC, the day of the week, month, and year indicator variables. Variable definitions are provided in the paper as well as Table 1 and Table 2. Control variables are not shown for brevity. Standard errors are adjusted for heteroscedasticity, clustered by the day of the announcement. Robust p-values are in parentheses (* significant at 10%; ** significant at 5%; *** significant at 1%).

Panel A: Delayed Response (PEAD) Regressions

Dependent Variable	CAR (Et,Et+1)			CAR (2,75)		
Distance to Team City	100 miles	150 miles	200 miles	100 miles	150 miles	200 miles
Loss	0.0095	0.0152	0.0006	0.0095	0.0100	-0.0048
	(0.540)	(0.499)	(0.977)	(0.309)	(0.606)	(0.758)
Loss*FE5	0.135	0.0991	0.0761	0.1403	0.1049	0.0861
	(0.025)**	(0.025)**	(0.151)	(0.026)**	(0.017)**	(0.093)*
Loss*FE1	-0.0082	-0.0135	0.0105	0.0204	0.0210	0.0466
	(0.790)	(0.460)	(0.453)	(0.708)	(0.613)	(0.222)
FE5	0.0118	-0.0002	0.0107	0.0323	0.0138	0.0164
	(0.677)	(0.991)	(0.628)	(0.439)	(0.657)	(0.582)
FE1	0.0076	0.0172	-0.0029	-0.0003	-0.0012	-0.0261
	(0.479)	(0.004)***	(0.756)	(0.986)	(0.955)	(0.216)
Constant	-0.1507	0.0992	-0.0562	-0.1362	0.0010	-0.1551
	(0.081)*	(0.228)	(0.459)	(0.234)	(0.987)	(0.221)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	581	739	943	581	739	943
R-squared	0.182	0.154	0.124	0.186	0.154	0.130

Table 4 (continued)

Panel B: Immediate Reaction Regressions						
Dependent Variable:	CAR (-1,1)			CAR (0,1)		
Distance to Team City	100 miles	150 miles	200 miles	100 miles	150 miles	200 miles
Loss	-0.0037	-0.0044	-0.0068	0.0018	-0.0006	-0.0031
	(0.716)	(0.436)	(0.045)**	(0.877)	(0.932)	(0.214)
Loss*FE5	0.0058	-0.002	0.0007	-0.0033	-0.0033	0.0012
	(0.801)	(0.833)	(0.967)	(0.920)	(0.767)	(0.943)
Loss*FE1	-0.011	-0.0024	-0.0025	-0.0111	-0.0016	-0.0008
	(0.596)	(0.838)	(0.766)	(0.450)	(0.876)	(0.947)
FE5	0.0435	0.0419	0.0354	0.0429	0.0362	0.0287
	(0.000)***	(0.002)***	(0.004)***	(0.038)**	(0.010)***	(0.027)**
FE1	-0.009	-0.0184	-0.025	-0.0051	-0.0153	-0.0223
	(0.076)*	(0.037)**	(0.012)**	(0.619)	(0.267)	(0.109)
Constant	0.0837	0.1146	0.0797	0.0639	0.0635	0.0568
	(0.117)	(0.050)**	(0.090)*	(0.351)	(0.061)*	(0.119)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	581	739	943	581	739	943
R-squared	0.165	0.139	0.124	0.167	0.143	0.127

C. Volume Response Tests

Investor distraction implies that there will be less trading volume response to earnings surprises (e.g., DellaVigna and Pollet, 2009; Hirshleifer et al., 2009). We first use the following regression model to test this hypothesis for conflicting-mood distraction:

$$AbnormalVol[0,1]=\beta_0+\beta_1 Game+\beta_2 Game*ExtFE+\beta_3 ExtFE+Controls \quad (5)$$

We define AbnormalVol[0,1] consistent with the prior studies (e.g., Hirshleifer et al., 2009). It is equal to the average of the abnormal trading volume on the earnings announcement date and the next day. Abnormal trading volume for a given day t is calculated by subtracting the average log dollar daily volume from the (-41,-11) window relative to the day t from the log dollar volume on day t. As the previous studies suggest, a higher level of trading volume is expected around both good and bad earnings news. Therefore in our model (5), we use an indicator variable of extreme earnings surprise (FE1 or FE5), ExtFE. We also use its interaction with a dummy variable, Game, that takes the value of 1 if a firm is located within a certain distance (from 100 miles up to 200 miles) from a city with a sports team playing a big game and the value of 0 otherwise. We use the same control variables that we use in the multivariate tests of the previous section. Also, following Hirshleifer et al. (2009) we control for the impact of market-wide abnormal trading volume, which we define as the average abnormal trading volume of all CRSP firms.

Table 5
Trading volume response regressions

The dependent variable is AbnormalVol [0,1], which is equal to the average of abnormal trading volume on the earnings announcement date and of the abnormal trading on the next day. In Panel A, Game takes the value of 1 if a firm is within a certain "distance" to "big sports game city" and the value of 0 for everything else. Panel B divides game distance into two categories based on stock market reaction results of the distraction effect as follows: GameDistractionExtFE takes the value of 1 if Win*FE1=0 or Lost*FE5=0 and the value of 0 for everything else. GameOtherExtFE takes the value of 1 if Win*FE5=0 or Lost*FE1=0 and the value of 0 for everything else. This table controls for Size, B/M ratio, Log (1+ #of analysts), Reporting Lag, Earnings Volatility, and Share Turnover along with two-digit SIC, the day of the week, month, year indicator variables. This table also controls for market-wide abnormal trading volume defined as "the average abnormal trading volume of all CRSP firms." Control variables are not shown for brevity. Standard errors are adjusted for heteroscedasticity, clustered by the day of the announcement. Robust p-values are in parentheses (* significant at 10%; ** significant at 5%; *** significant at 1%).

Panel A: Overall Effect for Games			
Dependent Variable	AbnormalVol [0,1]		
Distance to Team City	100 miles	150 miles	200 miles
Game*ExtFE	-0.253	-0.152	-0.005
	-0.163	-0.286	-0.972
Game	0.079	0.050	-0.004
	-0.634	-0.746	-0.972
ExtFE	0.195	0.188	0.167
	(0.001)***	(0.001)***	(0.001)***
Constant	0.696	0.689	0.688
	-0.173	-0.176	-0.171
Controls	Yes	Yes	Yes
Observations	5088	5088	5088
R-squared	0.064	0.064	0.064

Panel B: Distraction Effect of Games vs. Other Effect of Games			
Dependent Variable	AbnormalVol [0,1]		
Distance to Team City	100 miles	150 miles	200 miles
GameDistractionExtFE	-0.363	-0.220	-0.047
	(0.017)**	(0.013)**	-0.562
GameOtherExtFE	-0.156	-0.097	0.035
	-0.492	-0.692	-0.890
Game	0.075	0.051	-0.005
	-0.650	-0.745	-0.967
ExtFE	0.194	0.188	0.166
	(0.001)***	(0.001)***	(0.001)***
Constant	0.689	0.688	0.685
	-0.171	-0.172	-0.165
Controls	Yes	Yes	Yes
Observations	5088	5088	5088
R-squared	0.064	0.064	0.064

Panel A of Table 5 presents the trading volume response regressions' results for subsamples of various firms' distances to the city of a big sports game. The coefficient of Game*ExtFE is negative across all distance definitions, and its magnitude declines with distance. Although the coefficient's sign is in line with the distraction argument, and the decline in the magnitude of the coefficient with distance is consistent with our earlier results, it is statistically insignificant. This result is similar to the one in DellaVigna and Pollet (2009) where the distraction effect becomes statistically insignificant after controlling for aggregate market volume. More importantly, it is possible that the lower statistical power could be attributed to limitations of the regression model (5)—specifically, to the inability of the Game*ExtFE variable to distinguish earning news conflicting with mood and earnings news consistent with mood. To further explore this possibility and to account for a distraction effect, we estimate the following new model:

$$\text{AbnormalVol}[0,1]=\beta_0+\beta_1\text{Game}+\beta_2\text{GameDistractionExtFE}+\beta_3\text{GameOtherExtFE} +\beta_4\text{ExtFE}+\text{Controls} \quad (6)$$

Model (6) is essentially similar to model (5), but it includes the variables GameDistractionExtFE and GameOtherExtFE in place of Game*ExtFE. GameDistractionExtFE is an indicator variable that takes the value of 1 if Win*FE1=1 or Loss*FE5=1, and therefore indicates cases of earnings news conflicting with mood. GameOtherExtFE is an indicator variable that takes the value of 1 if Win*FE5=1 or Loss*FE1=1. Panel B reports the results for regression model (6). The coefficient of GameDistractionExtFE is negative across all distance definitions, and its magnitude declines with distance to the source of the sports mood. It is statistically significant for firms within 100-150 miles of cities with a sports team, consistent with the conflicting-mood distraction effect, which predicts lower abnormal trading volume for firms whose earnings news is incongruent with the sports mood experienced by local investors. The coefficient of GameOtherExtFE is statistically insignificant in all columns.

D. Is There a General Distraction Effect Associated with Sports Events? Timing of Announcement, Strength of Exposure to Sports News, and Stock Response

Having established the existence of a conflicting-mood distraction effect, we now address the possibility that such an effect could be part of a general distraction effect caused by sports events which exist, even without considering mood content. In particular, we examine whether the market gets distracted by earnings announcements around the time of big sports events by estimating the following models:

$$\text{CAR}=\beta_0+\beta_1\text{GameTime}+\beta2\text{GameTime*FE5}+\beta_3\text{GameTime*FE1}+B_4\text{*FE5} +B_5\text{*FE1}+\text{Controls} \quad (7)$$

$$\text{CAR}=\beta_0+\beta_1\text{Game200mi}+\beta2\text{Game200mi*FE5}+\beta_3\text{Game200mi*FE1}+ B_4\text{*FE5} +B_5\text{*FE1} +\text{Controls} \quad (8)$$

In model (7) above, GameTime is a dummy variable that takes the value of 1 if a firm's earnings announcement occurs around the time of big sports events and the value of 0 otherwise. Model (8) is similar to model (7). However, instead of simply accounting for the timing of the announcement, we also measure the proximity to the source of the unrelated news (i.e., the sports news) by replacing GameTime with Game200mi, which is a dummy variable that takes the value of 1 if a firm is located within 200 miles of a city with a team competing in a big sports event and the value of 0 otherwise. This variable, Game200mi, allows us to consider cases of greater exposure to sports news.

Panel A of Table 6 contains the results for the model (7) depicted in odd-numbered columns and those for the model (8) in even-numbered columns. The estimation includes all earnings announcements observations with firm location and other firm information issued during our sample period. There is no statistically significant difference in delayed response between announcements issued around big sports games and all other announcements. However, there is some difference in immediate reaction between announcements issued around big sports games and other announcements. This pattern is different for announcements of firms located close to participating teams' cities than for other firms making announcements around game time. All announcements with good earnings news issued around game days show some attenuated immediate reaction by 0.7%, whereas the announcements, especially good earnings news, of the firms located near teams' cities display a somewhat boosted immediate reaction. The results of these tests show that without accounting for mood content, PEAD is not significantly affected by sports events, and thus reveal that there is no general sports event distraction effect. The results also highlight the importance of proximity to the source of the sports mood.

We also examine delayed response ratios for GameTime and Game200mi. As we did before and based on DellaVigna and Pollet (2009), we estimate regression models by focusing only on extreme earnings-news quintiles. Delayed response ratio computation includes the following models:

$$CAR=\beta_0+\beta_1 GameTime+\beta_2 GameTime*Top+\beta_3 Top+Controls \quad (9)$$
$$CAR=\beta_0+\beta_1 Game200mi+\beta_2 Game200mi*Top+\beta_3 Top+Controls \quad (10)$$

The above models are estimated by using the same control variables used in the Panel A regression and include only extreme earnings surprise (FE5 and FE1) announcements. Top is also defined as in the previous delayed response ratio tests.). Panel B of Table 6 shows that the delayed responses of announcements issued around game times are not statistically significantly different and are even smaller than those of announcements from other times. This result is in line with the evidence in Panel A and the view that there is no general distraction effect associated simply with the timing of big sports events. Comparison of delayed responses for Game200mi and Other also shows an insignificant difference. The lower half of Panel B indicates that up to 54% of stock response takes place with a delay for earnings news announced around the time of big sports events with the issuing firms' locations near only accounts for only up to 37% of the long-term response. Even though this is a sizeable difference, it is not significant in statistical terms. However, this result denotes the importance of proximity to the source of unrelated news, in that it strengthens the delayed response to the firm news.

Table 6

Delayed response and immediate reaction to all earnings announcements during sample years

The first (last) four columns show delayed response (immediate reaction) regressions in Panel A. The dependent variable is delayed response ratio in Panel B, which is the ratio of the delayed stock response to the long-term stock response. GameTime is a dummy variable that takes the value of 1 if a firm's earnings announcement happens around the time of big sports events and the value of 0 otherwise. Game200mi is a dummy variable that takes the value of 1 if a firm is located within 200 miles of a city with a team competing in a big sports event and the value of 0 otherwise. Control variable definitions are provided earlier in the paper and they are not shown for brevity. Standard errors are adjusted for heteroskedasticity, clustered by the day of the announcement. Robust p-values are in parentheses (* significant at 10%; ** significant at 5%; *** significant at 1%).

Panel A: Delayed Response (PEAD) and Immediate Reaction Regressions

	Delayed Response				Immediate Reaction			
Dependent Variable	CAR (Et,Et+1)		CAR (2,75)		CAR (-1,1)		CAR (0,1)	
GameTime	0.0023		0.0015		-0.0001		0.0010	
	(0.571)		(0.687)		(0.958)		(0.461)	
GameTime*FE5	-0.0032		0.0008		-0.0077		-0.0071	
	(0.487)		(0.837)		(0.074)*		(0.025)**	
GameTime*FE1	0.0126		0.0177		-0.0014		-0.0010	
	(0.201)		(0.120)		(0.548)		(0.483)	
Game200mi		0.0099		0.0089		0.0006		0.0021
		(0.377)		(0.334)		(0.773)		(0.067)*
Game200mi*FE5		0.0055		0.0108		0.0042		0.0002
		(0.443)		(0.328)		(0.099)*		(0.966)
Game200mi*FE1		-0.0085		-0.0148		0.0034		0.0031
		(0.344)		(0.108)		(0.665)		(0.563)
FE5	0.0325	0.0323	0.0320	0.0319	0.0293	0.0288	0.0252	0.0248
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
FE1	-0.0018	-0.0010	-0.0020	-0.0009	-0.0310	-0.0311	-0.0277	-0.0278
	(0.463)	(0.654)	(0.406)	(0.656)	(0.000)***	(0.000)***	(0.000)***	(0.000)***
Constant	-0.0158	-0.0155	-0.0063	-0.0059	-0.0043	-0.0042	-0.0029	-0.0028
	(0.496)	(0.503)	(0.789)	(0.801)	(0.583)	(0.595)	(0.671)	(0.682)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	96885	96885	96885	96885	96880	96880	96880	96880
R-squared	0.011	0.011	0.011	0.011	0.053	0.053	0.047	0.047

Table 6 (continued)

Panel B: Ratio of the Delayed Stock Response to the Long-Term Stock Response		
Response Ratio representation	[CAR (Et,Et+1) / CAR (-1,Et+1)]	[CAR (2,75) / CAR (0,75)]
Response Ratio for GameTime	0.2472 (0.033)**	0.2688 (0.043)**
Response Ratio for Other times	0.3465 (0.000)***	0.3845 (0.000)***
Difference between the response ratio for GameTime and other times	-0.09923 (0.398)	-0.11567 (0.389)
Response Ratio for Game200mi	0.4291 (0.003)***	0.5425 (0.043)**
Response Ratio for Other	0.3413 (0.000)***	0.3777 (0.000)***
Difference between the response ratio for Game200mi and other announcements	0.0878 (0.541)	0.1647 (0.184)

E. Conflicting-Mood Distraction and Local Stock Ownership

So far, we have shown that a conflicting-mood distraction is stronger among firms located closer to the source of mood-inducing unrelated news. This pattern is consistent with the existence of a sizeable local component in the pricing of stocks and highlights the potential role of local investors in the conflicting-mood distraction effect. To further examine and verify the importance of local investors, we run two additional tests. First, following prior studies that examined the importance of a local component of asset pricing (e.g., Pirinsky and Wang, 2006), we re-examine the distraction effect using the subsample of earnings announcements around big sports events excluding firms that are located in the New York area. Since New York is the heart of the U.S. financial markets and the home of numerous financial institutions, the locality of investors is expected to have a smaller role in any financial outcome compared to other places. Table 7 shows the results of tests for the subsample excluding New York firms. In Panel A, the pattern and magnitude of the Loss*FE5 and Win*FE1 coefficients are very similar to those displayed in Table 2 and in line with the strong conflicting-mood distraction effect that becomes gradually weaker with distance from the source of the mood-inducing sports news. Panel B reports results for the short-term price reaction tests. The findings are, once again, very similar to the short response results provided in Table 2. We conclude that our findings remain robust when we exclude from our investigation the areas that are expected to have a less pronounced impact on local investors.

Next, we examine the impact of the size of local retail investor ownership. We construct a local stock ownership index and use it to divide our sample into two subsamples, one with more local ownership and one with less local ownership. The local stock ownership index contains several factors that reflect the likelihood of stock ownership by local investors. For example, Coval and Moskowitz (1999) suggest that small firms have higher levels of local ownership and they also imply that individual investors are more likely to own local stocks compared to institutional investors. Therefore, we use firm size and institutional ownership in constructing the local ownership index. Also, other components of the local ownership index are investors' income, education, and age. In particular, we use the proportion of the population with a college degree in the county, the median household income of the county from 1990 and 2000 Censuses and the proportion of people who are 65 years old or older in a firm's headquarter county. We use interpolation to fill in the missing values for years between the US Censuses.

Table 7

Tests with a subsample that excludes New York area firms

The dependent variables in this table are CAR (Et, Et+1) and CAR (2,75) in Panel A and CAR (-1,1) and CAR (0,1) in Panel B. This table controls for Size, B/M ratio, Log (1+ #of analysts), Reporting Lag, Earnings Volatility, and Share Turnover. Variable definitions are provided in the paper as well as Table 1 and Table 2. This table also includes controls of two-digit SIC, the day of the week, month, and year indicator variables. Control variables are not shown for brevity. Standard errors are adjusted for heteroscedasticity, clustered by the day of the announcement. Robust p-values are in parentheses (* significant at 10%; ** significant at 5%; *** significant at 1%).

Panel A: Delayed Response (PEAD) Regressions

Dependent Variable	CAR (Et,Et+1)			CAR (2,75)		
Distance to Team City	100 miles	150 miles	200 miles	100 miles	150 miles	200 miles
Win	0.0230	0.0088	0.0086	0.0228	0.0106	0.0127
	(0.121)	(0.450)	(0.616)	(0.112)	(0.332)	(0.374)
Loss	0.0226	0.0209	0.0089	0.0216	0.0188	0.0077
	(0.044)**	(0.042)**	(0.401)	(0.183)	(0.147)	(0.393)
Win*FE5	-0.0387	-0.0366	-0.0245	-0.0229	-0.0265	-0.0266
	(0.211)	(0.137)	(0.461)	(0.415)	(0.274)	(0.464)
Loss*FE5	0.0898	0.0554	0.0438	0.1027	0.0662	0.0480
	(0.038)**	(0.109)	(0.118)	(0.027)**	(0.085)*	(0.062)*
Win*FE1	-0.0482	-0.0300	-0.0339	-0.0658	-0.0592	-0.0689
	(0.003)***	(0.085)*	(0.026)**	(0.005)***	(0.055)*	(0.028)**
Loss*FE1	-0.0046	0.0042	-0.0014	-0.0022	0.0069	0.0006
	(0.887)	(0.861)	(0.961)	(0.955)	(0.827)	(0.984)
FE5	0.0345	0.0352	0.0349	0.0364	0.0372	0.0381
	(0.010)***	(0.006)***	(0.012)**	(0.010)***	(0.009)***	(0.006)***
FE1	0.0173	0.0163	0.0178	0.0232	0.0231	0.0253
	(0.211)	(0.269)	(0.255)	(0.118)	(0.147)	(0.126)
Constant	0.0482	0.0521	0.0518	0.0491	0.0538	0.0546
	(0.063)*	(0.052)*	(0.057)*	(0.094)*	(0.062)*	(0.058)*
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4943	4943	4943	4943	4943	4943
R-squared	0.035	0.035	0.033	0.038	0.038	0.037

Table 7 (continued)

Panel B: Immediate Reaction Regressions						
Dependent Variable	CAR (-1,1)			CAR (0,1)		
Distance to Team City	100 miles	150 miles	200 miles	100 miles	150 miles	200 miles
Win	0.0072	0.0056	0.0040	0.0052	0.0037	0.0035
	(0.018)**	(0.225)	(0.115)	(0.156)	(0.438)	(0.206)
Loss	-0.0027	0.0006	-0.0019	0.0002	0.0022	0.0009
	(0.371)	(0.741)	(0.478)	(0.926)	(0.135)	(0.599)
Win*FE5	0.0069	0.0137	0.0116	0.0047	0.0078	0.0057
	(0.240)	(0.125)	(0.114)	(0.619)	(0.215)	(0.496)
Loss*FE5	0.0225	0.0151	0.0154	0.0130	0.0099	0.0091
	(0.328)	(0.328)	(0.257)	(0.527)	(0.418)	(0.449)
Win*FE1	0.0142	0.0077	0.0071	0.0107	0.0065	0.0044
	(0.222)	(0.322)	(0.401)	(0.522)	(0.619)	(0.762)
Loss*FE1	0.0121	0.0111	0.0044	0.0124	0.0135	0.0062
	(0.293)	(0.280)	(0.619)	(0.138)	(0.012)**	(0.212)
FE5	0.0188	0.0182	0.0180	0.0159	0.0156	0.0156
	(0.006)***	(0.007)***	(0.007)***	(0.005)***	(0.006)***	(0.005)***
FE1	-0.0344	-0.0345	-0.0339	-0.0310	-0.0313	-0.0306
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
Constant	0.0715	0.0706	0.0712	0.0475	0.0473	0.0474
	(0.020)**	(0.019)**	(0.018)**	(0.029)**	(0.028)**	(0.024)**
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4943	4943	4943	4943	4943	4943
R-squared	0.070	0.070	0.070	0.065	0.065	0.065

We first rank firms into deciles after sorting for each of the five factors and then, for each firm observation, we compute the local ownership index by taking the average value of the ranks. Specifically, we divide our sample into ten firm-size groups based on the corresponding NYSE equity deciles and assign corresponding index values as follows: Firms that are in the smallest (biggest) firm size group takes the value of 10 (1). Similarly, we divide the sample into ten institutional ownership groups and assign corresponding index values as follows: Firms that are in the smallest (biggest) institutional ownership group take the value of 10 (1). We use a similar procedure for our county-level variables: education, income, and age. Firms that are located in a county which is in the biggest (smallest) county-level variable takes the value of 10 (1). The local ownership index is the average of the five rankings and can take values between 1 and 10, with higher index values representing the greater likelihood of larger local ownership.

To examine the impact of local ownership on our findings, we divide into two the sample of firms that announce earnings around big sports events as follows: Firms that have local index values higher (lower) than the median value of the local ownership index form the more (less) local ownership subsample. We repeat our tests for these two subsamples and present the results in Table 8. Consistent with the notion that local retail investors are the drivers of the conflicting-mood distraction effect, the results are stronger, especially for Loss*FE5, for firms with more local ownership. Panel A shows that the magnitude of the Loss*FE5 coefficient, especially for the firms that are located shorter distances from cities with sports teams, is about 20%-30% higher than that of the corresponding coefficients from the tests based on the full sample shown in Table 2. The effect becomes weaker as the distance to the cities with sports teams becomes bigger. The conflicting-mood distraction effect of good sports news occurs concurrently with the bad firm news—Win*FE1—does not appear to be different between the subsamples of firms with more and less local ownership. This result is somewhat expected considering its smaller magnitude compared to the distraction effect emanating from bad sports news concurrently occurring with good earnings news—Loss*FE5— shown in our earlier results.

Panel B presents immediate reaction results. The results for the subsample of firms with a higher fraction of local investors are consistent with the earlier tables. The coefficients for conflicting-mood distraction effects are not pronounced, as in our earlier findings. Loss has significant coefficient values that suggest a negative mood effect on all firms near cities with a losing team. Win*FE5 is statistically significant for some columns, indicating a mood-consistent return effect when firms are within longer distances of cities with a winning team. On the other hand, the immediate reaction results obtained using the subsample of firms with less local ownership are different and somewhat opposite. Overall, the results of Table 8 suggest that a conflicting-mood distraction is more pronounced among the firms with more local ownership; these results are consistent with the notion that mood effects enhance the importance of the local component of price formation.

Table 8

Subsample tests – local ownership subsample

In Panel A, CAR (Et, Et+1) is the dependent variable for columns 1-3 and columns 7-9 whereas CAR (2,75) is the dependent variable for columns 4-6 and columns 10-12.In Panel B, CAR (-1,1) is the dependent variable for columns 1-3 and columns 7-9 whereas CAR (0,1) is the dependent variable for columns 4-6 and columns 10-12. In both panels, columns 1-6 report the results for the more local ownership subsample whereas columns 7-12 report the results for the less local ownership subsample. We divide our sample into two based on the median value of our local ownership index. If an observation's local ownership index value is greater (lower) than the median value of the index, then it is included in the more (less) local ownership subsample. The local ownership index is constructed based on firm size, institutional ownership, local income, local education and local senior citizen proportion. More details about the index are provided in the paper. This table controls for Size, B/M ratio, Log (1+ #of analysts), Reporting Lag, Earnings Volatility, and Share Turnover. Variable definitions are provided in the paper as well as Table 1 and Table 2. This table also includes controls of two-digit SIC, the day of the week, month, and year indicator variables. The control variables are not shown for brevity. Standard errors are adjusted for heteroscedasticity, clustered by the day of the announcement. Robust p-values are in parentheses (* significant at 10%; ** significant at 5%; *** significant at 1%).

Panel A: Delayed Response (PEAD) Regressions												
	More Local Ownership						Less Local Ownership					
Dependent Variable	CAR (Et, Et+1)			CAR (2,75)			CAR (Et,Et+1)			CAR (2,75)		
Distance to Team City	100 mi	150 mi	200 mi	100 mi	150 mi	200 mi	100 mi	150 mi	200 mi	100 mi	150 mi	200 mi
Win	0.0208	0.0188	0.0082	0.0122	0.0082	0.0049	0.0119	-0.0069	0.0024	0.0229	0.0073	0.0154
	(0.238)	(0.256)	(0.760)	(0.581)	(0.682)	(0.842)	(0.455)	(0.710)	(0.885)	(0.092)*	(0.559)	(0.300)
Loss	0.0243	0.0287	0.0048	0.0239	0.0249	0.0051	0.0236	0.0175	0.0179	0.0253	0.0201	0.0189
	(0.203)	(0.149)	(0.758)	(0.277)	(0.265)	(0.755)	(0.041)**	(0.074)*	(0.009)***	(0.093)*	(0.140)	(0.081)*
Win*FE5	-0.0593	-0.0591	-0.0456	-0.0273	-0.0267	-0.0364	0.0444	0.0194	0.0414	0.0323	0.0023	0.0207
	(0.265)	(0.140)	(0.400)	(0.606)	(0.530)	(0.524)	(0.129)	(0.327)	(0.039)**	(0.268)	(0.897)	(0.424)
Loss*FE5	0.1247	0.0787	0.0776	0.1352	0.0926	0.0823	-0.0159	-0.0032	-0.0314	0.0112	0.0102	-0.0274
	(0.036)**	(0.064)*	(0.024)**	(0.029)**	(0.069)*	(0.018)**	(0.629)	(0.910)	(0.201)	(0.721)	(0.714)	(0.214)
Win*FE1	-0.0616	-0.0553	-0.0559	-0.0607	-0.0687	-0.0871	-0.0049	0.0192	-0.0047	-0.0544	-0.0249	-0.0475
	(0.068)*	(0.165)	(0.251)	(0.058)*	(0.137)	(0.156)	(0.921)	(0.776)	(0.927)	(0.024)**	(0.509)	(0.089)*
Loss*FE1	-0.0384	-0.0208	-0.0094	-0.0439	-0.0254	-0.0199	0.0458	0.0256	0.0046	0.0594	0.0431	0.0256
	(0.416)	(0.638)	(0.836)	(0.420)	(0.637)	(0.673)	(0.166)	(0.279)	(0.857)	(0.188)	(0.202)	(0.440)
FE5	0.0446	0.0462	0.0442	0.0500	0.0505	0.0510	0.0233	0.0236	0.0239	0.0240	0.0249	0.0263
	(0.005)***	(0.004)***	(0.021)**	(0.001)***	(0.001)***	(0.003)***	(0.050)*	(0.058)*	(0.045)**	(0.026)**	(0.033)**	(0.021)**
FE1	0.0233	0.0231	0.0230	0.0331	0.0339	0.0362	0.0138	0.0134	0.0164	0.0155	0.0148	0.0180
	(0.096)*	(0.088)*	(0.074)*	(0.081)*	(0.074)*	(0.043)***	(0.411)	(0.453)	(0.364)	(0.317)	(0.364)	(0.265)
Constant	0.0577	0.0601	0.0625	0.0905	0.0921	0.0933	-0.1989	-0.1914	-0.2004	-0.2123	-0.2048	-0.2141
	(0.468)	(0.469)	(0.447)	(0.272)	(0.285)	(0.277)	(0.002)***	(0.002)***	(0.001)***	(0.007)***	(0.007)***	(0.006)***
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2482	2482	2482	2482	2482	2482	2606	2606	2606	2606	2606	2606
R-squared	0.058	0.057	0.056	0.067	0.065	0.065	0.069	0.067	0.068	0.069	0.068	0.068

Panel B: Immediate Reaction Regressions

	More Local Ownership						Less Local Ownership					
Dependent Variable	CAR (-1,1)			CAR (0,1)			CAR (-1,1)			CAR (0,1)		
Distance to Team City	100 mi	150 mi	200 mi	100 mi	150 mi	200 mi	100 mi	150 mi	200 mi	100 mi	150 mi	200 mi
Win	0.0015	-0.0012	0.0016	-0.0009	-0.0028	0.0018	0.0093	0.0104	0.0051	0.0055	0.0073	0.0042
	(0.625)	(0.870)	(0.750)	(0.898)	(0.773)	(0.834)	(0.035)**	(0.090)*	(0.313)	(0.263)	(0.208)	(0.356)
Loss	-0.0130	-0.0084	-0.0086	-0.0106	-0.0071	-0.0064	0.0097	0.0111	0.0044	0.0124	0.0132	0.0071
	(0.047)**	(0.012)**	(0.025)**	(0.034)**	(0.062)*	(0.121)	(0.021)**	(0.045)**	(0.158)	(0.001)***	(0.002)***	(0.040)**
Win*FE5	0.0143	0.0248	0.0212	0.0110	0.0190	0.0111	0.0107	0.0082	0.0080	0.0183	0.0067	0.0087
	(0.160)	(0.105)	(0.072)*	(0.475)	(0.081)*	(0.327)	(0.081)*	(0.103)	(0.522)	(0.032)**	(0.374)	(0.544)
Loss*FE5	0.0342	0.0270	0.0227	0.0232	0.0193	0.0167	0.0016	-0.0048	0.0021	-0.0009	-0.0036	-0.0020
	(0.345)	(0.302)	(0.313)	(0.478)	(0.381)	(0.405)	(0.933)	(0.785)	(0.835)	(0.938)	(0.752)	(0.823)
Win*FE1	0.0103	0.0036	0.0036	0.0130	0.0076	0.0037	0.0270	0.0264	0.0167	0.0090	0.0100	0.0035
	(0.410)	(0.793)	(0.796)	(0.297)	(0.660)	(0.836)	(0.096)*	(0.163)	(0.226)	(0.723)	(0.661)	(0.875)
Loss*FE1	0.0194	0.0177	0.0156	0.0211	0.0153	0.0128	0.0064	0.0041	-0.0116	-0.0004	0.0138	-0.0024
	(0.439)	(0.420)	(0.282)	(0.224)	(0.317)	(0.222)	(0.853)	(0.894)	(0.397)	(0.991)	(0.430)	(0.765)
FE5	0.0151	0.0140	0.0138	0.0121	0.0112	0.0115	0.0219	0.0220	0.0216	0.0193	0.0196	0.0195
	(0.021)**	(0.036)**	(0.034)**	(0.023)**	(0.037)**	(0.037)**	(0.003)***	(0.003)***	(0.005)***	(0.002)***	(0.002)***	(0.003)***
FE1	-0.0345	-0.0344	-0.0346	-0.0297	-0.0294	-0.0291	-0.0339	-0.0342	-0.0325	-0.0312	-0.0325	-0.0308
	(0.002)***	(0.003)***	(0.002 ***	(0.001)***	(0.002)***	(0.001)***	(0.002)***	(0.002)***	(0.001)***	(0.004)***	(0.003)***	(0.003)***
Constant	0.0521	0.0534	0.0546	0.0342	0.0353	0.0358	0.0453	0.0454	0.0461	0.0247	0.0269	0.0258
	(0.151)	(0.118)	(0.113)	(0.061)*	(0.048)**	(0.050)*	(0.010)***	(0.006)***	(0.003)***	(0.005)***	(0.000)***	(0.000)***
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2482	2482	2482	2482	2482	2482	2606	2606	2606	2606	2606	2606
R-squared	0.081	0.081	0.081	0.080	0.080	0.080	0.091	0.092	0.090	0.082	0.084	0.081

V. CONCLUSION

Technological advances provide investors with fast access to a vast number of information resources that facilitate the availability of large amounts of all types of information. Given investors' limited cognitive capacity (Kahneman, 1973), overexposure to information may come with a cost in the form of distraction and limited attention to relevant information. In this paper, we extend the literature on *PEAD* and investor inattention, which, until this study, primarily was limited to how calendar and time effects and attention-grabbing events interfere with investors' information processing capacity and cause underreactions to the firms' news.

We analyze investors' abilities to process fundamentals-related (firms') information when it is inconsistent with the mood state they are experiencing. In support of the conflicting-mood distraction hypothesis, we show that the combination of earnings-surprise content and the corresponding type of mood associated with a major sports event is important in determining investor distraction. Consistent with our conflicting-mood investor distraction hypothesis, we find stronger post-earnings announcement drift and delayed response ratio and weaker immediate volume reaction when the earnings news content is inconsistent with the local sports mood. Moreover, our findings suggest that investor distraction evolves primarily through the local investor base channel, which has not

ENDNOTES

1. Limited investor attention is one of the explanations put forth by the literature for underreaction-related anomalies (e.g., Francis et al. (1992), Bagnoli et al. (2005), DellaVigna and Pollet (2009), and Hou et al. (2009).) Hirshleifer et al. (2009) provide an example of how investors struggle to process multiple stimuli and perform multiple tasks at the same time. Investor attention also helps to explain other financial outcomes such as initial valuation of IPOs (Colaco et al., 2017).
2. The psychology literature suggests this asymmetric reaction to bad news and good news is rooted in the fact that negative information induces a greater influence on people's impressions than positive information does (e.g., Ronis and Lipinski, 1985; Singh and Teoh, 2000; Van der Pligt and Eiser, 1980).
3. See Schwarz et al. (1987), Arkes, et al. (1988), and Hirt et al. (1992) among others. Edmans et al. (2007) also use the aforementioned psychological evidence of a link between sports and mood to motivate and examine whether stock prices indices reflect investor sentiment related to soccer games' results.
4. See Edmans et al. (2007), Ashton et al. (2003), and Berument and Yucel (2005) among others.
5. http://news.gallup.com/poll/183689/industry-grows-percentage-sports-fans-steady.aspx, http://news.gallup.com/poll/4735/sports.aspx.
6. http://news.gallup.com/poll/183689/industry-grows-percentage-sports-fans-steady.aspx
7. http://tvbythenumbers.zap2it.com/more-tv-news/the-100-most-watched-tv-programs-of-2017-super-bowl-li-laps-the-field/
8. https://deadspin.com/which-teams-have-the-best-local-fan-bases-1521626155, http://www.nielsen.com/us/en/insights/reports/2014/year-in-the-sports-media-report-20

13.html?afflt=ntrt15340001&afflt_uid=UN9ekCv9Go8.ffB0pDfRgaexo8EsW4-raA.&afflt_uid_2=AFFLT_ID_2

9. Francis et al. (1992), and Bagnoli et al. (2005) show limited attention associated with event occurrence during non-trading hours, whereas others show that this is the case on Fridays (DellaVigna and Pollet (2009)), down market periods (Hou, Peng, and Xiong, 2009), and low trading volume (Hou, Peng, and Xiong, 2009). Hirshleifer et al. (2009) suggest that a high number of earnings announcements in a given day limits the immediate reaction to a firm's earnings surprise in that day and strengthens the post-announcement drift of the firm.
10. Those websites are: http://www.nfl.com/superbowl/history, http://www.basketball-reference.com/playoffs/, http://www.sports-reference.com/cbb/postseason/, http://www.pro-football-reference.com/super-bowl/, http://www.baseball-reference.com/postseason/, http://www.cbssports.com/collegebasketball/ncaa-tournament/history/yearbyyear.
11. http://www.nflfootballstadiums.com/NFL-Football-Stadium-Reviews.htm, http://www.baseball-statistics.com/Ballparks/, http://basketball.ballparks.com/, http://www.sportmapworld.com/ (accessed in April 2011).
12. We have also experimented with other deflators without obtaining materially different results.
13. Following DellaVigna and Pollet (2009) we also use CAR (2, 75) as an alternative measure of PEAD. Note that the CAR (2, 75) trading day windows will not always accurately capture PEAD because a firm can announce its next earnings earlier (later) than the end of a fiscal quarter.
14. See the discussions in Beevers and Carver (2003) and Cavanagh et al. (2011) related to attentional shifts and biases. Also see Ronis and Lipinski (1985), Singh and Teoh (2000), Van der Pligt and Eiser (1980)) that suggest a greater impact of negative information signals on impressions.
15. Investors' income and education are important in determining (especially individual) investors' stock market participation and thus local stock ownership (e.g., Hong et al., 2008; Brown et al., 2008). Previous studies of stock market participation also control for investor age (e.g., Hong et al., 2006; Brown et al., 2008). Moreover, older local investors are influential and can affect corporate policies (Becker et al., 2011).
16. If some factors have missing values for a given firm's observations, then we use the remaining factors to compute the local ownership index value.

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