Market Movements and Investors' Reaction to Earnings News

by

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Abstract

The literature suggests that investors' reaction to news is sensitive to the market's condition. We investigate whether investors react differently to the same earnings news when the market continues in the same state versus when it transitions to a different state. The results show that investors react less aggressively to positive earnings news when the market continues advancing (declining) than when it transitions to a declining (advancing) state. Concerning negative news, investors' reactions are the same (stronger) when the market continues advancing (declining) compared to when it transitions to a declining (advancing) state. These results suggest that the string of news is important in determining investors' reaction to earnings news when the market continues in the same state, while the effect of market transitions on investor overconfidence drives reactions during market transitions.

EFM Classification: 180, 320
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1.0 Introduction

Prior theory and evidence suggest that investors' reaction to news is dependent on the direction of the market's movement.[1] In Veronesi's (1999) rational expectations model, investors' reaction to news depends on their inferred state of the market which is driven by the past market movement. The behavioral model of Daniel, Hirshleifer, and Subrahmanyam (1998) suggests that recent market movements drive investor overconfidence, and result in overreaction to confirming news and underreaction to contradictory news. Barberis, Shleifer, and Vishny (1998) suggest that investors underreact to a piece of news but overreact to a string of similar news and, therefore, undereact to news that contradicts past market movement and overreact to news that confirms past market movement.

Despite the theories that the market reaction to news is dependent on the market's state, empirical work on investors' reaction to earnings news in different market states is limited. The Conrad et al. (2002) study is the only one, to our knowledge, that examines investors' reaction to earnings news conditional on advancing versus declining markets. Defining the market's movement by its price/earnings ratio, they find that investors react more adversely to bad news when the market advances than when it declines.[2] However, they do not find that investors react differently to good earnings news when the market advances versus when it declines. In contrast to Conrad et al. (2002), we study investors' reaction to the same earnings news (positive or negative news) when the market continues in the same state (advancing or declining) versus when it transitions to a different state. Our results show that investors generally react differently to the

[1] For instance, Daniels et al. (1998), Barberis et al. (1998), and Veronesi (1991) develop models that link investor reaction to news to the market's dynamics. An example of studies that provide evidence that investors' reaction to news is sensitive to the market's state include: Conrad et al. (2002), Boyd et al. (2005), and Docking and Koch (2005).

[2] In particular, they define the market's movement as the difference between the market price/earnings (P/E) ratio during the announcement month and the average P/E ratio during the preceding 12 months, where earnings is measured by next year's forecast earnings.

same earnings news when the market continues in the same state versus when it transitions to a different state.

Our study is motivated by both theory and evidence. The models that suggest that the market's response to the same earnings news is dependent on the market's state and make predictions about the investors' response to the same news when the market continues in the same state versus when it transitions to a different state. In Veronesi's (1999) model, the investors' reaction to news is dependent on their inferred state of the market and their discount rate. Both of these factors are influenced by the market's movement. Following an advancing market, the investor in this model believes that the market is in a good state and, hence, a transition to a bad state tempers his belief that the market is in a good state and the resulting uncertainty increases his discount rate. The former effect increases the surprise in good earnings news (increases the market's reaction), while the latter effect dampens the price increase (reduces the market's reaction). Concerning negative earnings news, the former effect decreases the surprise in negative earnings news (mitigate the price decline), while the latter effect exacerbates the price decline. Thus, the news effect and the discount rate effect are offsetting and, hence, the model offers no clear prediction on the difference in reactions to the same news when the market continues to advance versus when it transitions to a declining state. Vuolteenaho (2002) reports that the news effect dominates that discount rate effect, suggesting that a transition to a bad state should result in larger price increase when the news is positive and to a muted price decline when the news is negative than a continuation in a good state.[3]

Following a declining market, investors in the Veronesi's (1999) model believe the market is in a bad state and, hence, continuation in the bad state should have little impact on his belief or

[3] In particular, using a vector autoregressive model, he finds that price movements associated with the news effect is more than twice those associated with the discount rate effect for a typical stock.

discount rate. In contrast, if the market transitions to a good state, this will mitigate the belief that the market is in a bad state and increase the discount rate. The former effect reduces the surprise in positive earnings news (reducing the price increase) and the latter effect also mitigates the price increase. Turning to the arrival of negative earnings surprise, the former effect will increase the surprise in the news (larger price decline) and the latter effect also has a negative impact on the price. Thus, the model predicts that investors will react more (less) aggressively to positive (negative) earnings surprise when the market continues declining than when it transitions to an advancing state.

Behavioral finance researchers and psychologists argue that frame dependence results in investors interpreting information within the context of recent experiences.[4] In Daniel, Hirshleifer, and Subrahmanyam's (1998) model, confirming price appreciations in UP markets result in investor overconfidence following these markets, resulting in overreaction to good news and underreaction to bad news. Thus, investor overconfidence should strengthen when the market continues advancing while an inception of a declining state tempers overconfidence. This suggests a stronger (weaker) investor reaction to good (bad) earnings news when the market continues advancing than when it transitions to a declining state. Similarly, price declines in declining markets underpin investors' overconfidence in these markets, resulting in overreaction to bad news and underreaction to good news. As a result, market continuation in a declining state increases overconfidence while an inception of an advancing market mitigates overconfidence. This indicates that investors should react more (less) aggressively to bad (good) earnings news when the market continues declining than when it transitions to an advancing state.

[4] Kahneman and Tversky (1979) provide evidence to support frame dependence by examining loss aversion. Docking and Koch (2005) examine investors' sensitivity to dividend change announcements and find that investor reaction is stronger when the new information goes against the recent market direction. Cooper et al. (2004) and Asem and Tian (2010) report that autocorrelation in stock returns depends on investors' past experience with the market.

In the Barberis et al. (1998) model, investors expect positive shocks following a string of positive earnings news (advancing market). Thus, when the market continues advancing, investors' expectation of positive shocks is reinforced while an inception of a declining state interrupts the string of good news and dampens the expectation. Thus, the model suggests that investors should react less positively (more adversely) to good (bad) news when the market continues in advancing state than when it transitions to a declining state. Following a string of negative shocks, investors in the Barberis et al. (1998) model expect more bad news and, hence, when the market continues in the same state the expectation is reinforced while an inception of an advancing state mitigates the expectation of bad news. Consequently, the model predicts that investors should react less adversely (more positively) to bad (good) news when the market continues declining than when it transitions to an advancing state. We summarize the expected reactions to good and bad earnings news under the different market conditions for each model in Table 1.

Empirically, Asem and Tian (2010) show that momentum profit exits when the market continues advancing but not when it transitions to a declining state. In addition, momentum profit exists when the market continues declining while transitions to an advancing state generate momentum losses. The findings suggest that investors' responses to winner and loser stocks depend on whether the market continues in the same state versus when it transitions to a different state. In this study, we investigate whether investors respond differently to the same earnings surprise when the market continues in the same state versus when it transitions to a different state.

We proceed by studying the market's response to the same earnings news following an advancing market versus following a declining market (defined by the market performance in the previous four quarters). Consistent with Conrad et al. (2002), the results show that investors react more adversely to bad news when the past market advances than when it declines. In contrast to their results, we also find that investors' react more positively to good news when the past market declines than when it advances. Next, we examine investors' reaction to earnings surprises when the market advances or when it declines in the current quarter. The results are directly opposite to the past market's results. That is, investors react more positively to good news when the current market advances than when it declines, and more adversely to bad news when the current market declines than when it advances. This suggests that investors are likely to respond differently to the same earnings news when the market continues in the same state versus when it transitions to a different state.

To study this, we partition the market into market continuations in the same state (past and the contemporaneous markets are in the same direction) and market transitions to a different state (past and the contemporaneous markets are in different directions). Our results show that, following an advancing market, investors react more aggressively to positive earnings surprise when the market transitions to a declining state than when it continues advancing. Following declining markets, investors react more aggressively to positive earnings surprise when the market transitions to an advancing state than when it continues declining. Turning to negative earnings news, we find that investors react more aggressively to this news when the market continues declining than when it transitions to an advancing state. However, following advancing markets, we find no difference in the investors' reactions to negative earnings surprise when the market continues advancing (UP) versus when it transitions to a declining (DOWN) state.

Overall, our evidence from the market's reaction to the same earnings news during different market dynamics does not support a particular model. Investors' reaction to earnings news when the market continues declining or transitions to an advancing state is more consistent with the

Daniel's et al. (1998) model. This suggests that the effect of continuations in a declining market versus transitions to an advancing state on overconfidence is an important driver of investors' reactions in these markets. The reaction to good news when the market continues advancing versus when it transitions to a declining state is consistent with the Barberis et al. (1998) model, while the reaction to bad news is more consistent with Veronesi's model. The former results suggest that the string of news is important in reactions to good news while the discount rate is important in reactions to bad news.

The remainder of the paper is organized as follows. Section 2 provides a description of data and methodology used, while Section 3 presents the results on investors' reaction to earnings news under the different market conditions and the robustness check. Section 4 contains a discussion of the results and Section 5 concludes the paper.

3.0 Data and Methodology

We extract data for firms that have quarterly earnings, earnings announcement dates and analyst consensus and median earnings forecasts from Institutional Brokers Estimates System (IBES) database from January 1982 through December 2010. Over the sample period, there are 174,304 earnings announcements reported in IBES. Following Cheng and Warfield (2005), we estimate earnings surprise for firm i in quarter t as:

$$NEWS_{i,t} = \text{(Actual quarterly earnings – the median analyst forecast earnings)/Price(-10)}, \qquad (1)$$

where Price(-10) is the stock price ten days before the earnings announcement.

Return data around earnings announcements, along with stock prices for the remaining firms are obtained from Center for Research in Security Prices (CRSP) database. We require that firms have at least 250 trading daily returns data prior to the earnings announcement date and that firms' share price is greater than \$1 in order to eliminate the effects of penny stock. The CRSP data requirement further reduces our sample of earnings announcements to 163,203. Following Brown and Warner (1985) and Corrado and Zivney (1992), we estimate the market model for expected returns (Equation 2) for our sample firms using daily returns from day -250 through -20 (where day 0 is the earnings announcement date). We then use the parameter estimates from the market model, individual stock and market returns to estimate the abnormal returns (Equation 3) over the event window (controlling for beta).

$$R_{i,t} = \alpha_i + \beta_i R_{m,t} + \varepsilon_{i,t} \tag{2}$$

$$AR_{i,t} = R_{i,t} - \hat{\alpha}_i - \hat{\beta}_i R_{m,t} \tag{3}$$

We also used the Fama-French (1993) and Carhart (1997) four factor model (Equation 4) to estimate abnormal returns over the event window. We control for beta, size (SMB), growth (HML) and momentum (MUM) effects. Using the estimated parameters for beta, size, growth and momentum, we augment equation (2) to estimate the abnormal returns around earnings announcements using the four factor model.

$$R_{i,t} = \alpha_i + \beta_i R_{m,t} + \gamma_i SMB_t + \delta_i HML_t + \theta_i MUM_t + \varepsilon_{i,t} \tag{4}$$

Turning our attention to market movements, we classify the market as an UP (DOWN) market if the average change of quarterly return of the CRSP value-weighted index in excess of the three-month Treasury bill rate is positive (negative) over the past four quarters (e.g., Cooperet al., 2004). This results in 83 UP and 33 DOWN markets over our sample period. Furthermore, we classify market condition based only on the contemporaneous quarter return and classify the market as UP (DOWN) if the excess CRSP value-weighted return in the current quarter is positive (negative). This results in 74 UP (U) markets and 42 DOWN (D) markets. Finally, we partition the market dynamics into market continuation in the same state versus transition to a different state using the past four quarter market returns along with the contemporaneous quarter market return. Thus, we denote continuation in an UP state by (UU) if the average change in CRSP value-weighted index return in excess of the three-month Treasury bill is non-negative in the past four quarters and non-negative in the current quarter. Similarly, continuations in DOWN states are denoted by (DD), transitions to UP states by (DU), and transitions to DOWN states by (UD). This results in 56 UU markets, 15 DD, 27 DU and 18 UD markets.

3. Results

3.1 Descriptive Statistics

Panel A of Table 2 reports the average dollar earnings surprises partitioned by negative and positive earnings news. The mean (median) negative earnings surprise is -\$0.15 (-\$0.07) whereas firms that beat analyst expectations do so with a mean (median) of \$0.09 (\$0.04) and the difference in these average dollar surprises is statistically significant (p-values are less than 0.00). In Panel B of the table, we present the raw stock returns on the earnings announcement day by negative and positive earnings news. Negative surprises result in a mean (median) announcement-day return of -0.42% (-0.09%), while positive surprises lead to a mean (median) return of 0.96% (0.47%), and the difference in the market's reactions is statistically significant with p-values less than 0.00.

In Panel C, Table 2, we present the cumulative daily returns for the -3 to +3 window. The results are similar to the announcement day returns but with larger impact. Panel D (E) of Table 2 present the cumulative abnormal returns (CAR) using the market (four-factor) model by positive and negative earnings news. From both panels, we see that investors react adversely to earnings that are below analysts' expectations and positively to earnings that beat analysts' expectations. For instance, from Panel E, the mean (median) return for negative earnings surprises is -1.14% (-0.80%) while that for positive surprises is 1.59% (1.26%). The differences in market reaction to positive and negative earnings news are statistically significant at the 1% level of test. Our results are consistent with the findings of prior studies (e.g., Conrad et al. (2002)).[5]

3.2.0 Investors' Reaction to Earnings News and Market Movement

In this section, we study investors' reactions to earnings news under different market conditions. In particular, we analyze investors' reaction to the same earnings news conditional on the past market movement, the contemporaneous market movement, and the market dynamics (market continuations versus transitions).

3.2.1 Reaction to Earnings News and Past Market Performance

Using equation 5, we test whether investors react differently to the same news when the past market advances versus when the past market declines. We define the past market performance by the CRSP value-weighted index excess return in the prior four quarters and examine the return to the same earnings news when the excess return is positive versus when it is negative. In particular, we estimate the following regression model;

$$\begin{aligned} CAR_{i,t} &= \alpha_0 + \alpha_1 D + \delta_0 (NEWS_{i,t} * POS) + \delta_1 (NEWS_{i,t} * POS * D) \\ &\quad + \mu_0 (NEWS_{i,t} * NEG) + \mu_1 (NEWS_{i,t} * NEG * D) + \beta_1 SIZE_{i,t} + \varepsilon_{i,t}, \end{aligned} \tag{5}$$

[5] Adjusting their returns by the CRSP value-weighted return, Conrad et al. (2002) report mean excess cumulative returns of -0.60% and 1.54% for negative and positive earnings surprises, respectively.

where $CAR_{i,t}$ is the abnormal returns (residual from the Fama-French-Carhart four-factor model, equation (4) or the market model, equation (2)) for firm i in quarter t; D is a dummy variable set to 1 if the past market performance (DOWN market) is negative and to zero otherwise; *NEWS* is earnings news as defined by Equation (1); *POS* is a dummy variable set to 1 if *NEWS* is positive and to zero otherwise; *NEG* is a dummy variable set to 1 if *NEWS* is negative and to zero otherwise; and *SIZE* is the natural logarithm of the market capitalization of the firm (using stock prices 10 days prior to the announcements). Thus, δ_0 measures the sensitivity of investors' reaction to increments in positive earnings surprise following advancing markets and δ_1 captures the difference in response to positive news following declining markets. Similarly, μ_0 captures the sensitivity of investors' reaction to negative news following advancing markets and μ_1 captures the incremental sensitivity to the negative news following declining markets.

Table 3 presents the estimates of Equation (5). Column I (II) [III] reports the results when the raw (market model) [four-factor model] cumulative daily return over the -3 to +3 window is used as the dependent variable. As expected, the results show that investors react more positively to good earnings news the stronger the positive surprise. In particular, the estimate of δ_0 is positive and significant (for instance, the estimate from the four-factor model is 0.323 with t-value of 12.21). This suggests that a one standard deviation increase in positive earnings surprise increases earnings announcement returns by 7.11% (0.323*.22) when the past market is up. Also, estimate of δ_1 is positive (0.108) and statistically significant (t-value = 2.89), suggesting that investors react more aggressively to incremental positive earnings surprise following DOWN market than following an UP market. Specifically, a one standard deviation increase in positive earnings surprise increases earnings announcement return by 2.38% (0.108 x 0.22) more following a DOWN market than following an UP market. This suggests that investors react differently to positive news following an UP versus a DOWN market.

Turning to negative earnings news, the results show that investors react more adversely to bad earnings news, the more the negative surprise. That is, the estimate of μ_0 is positive (0.096) and statistically significant (t-value = 16.89). Using the estimated coefficient from Column III, a one standard deviation increase in negative earnings surprise reduces the announcement return by 2.21% (0.096*0.23) following an UP market. The reaction following a DOWN market is less aggressive since the estimate of μ_1 is negative (-0.046) and significant (t-value = -5.99). In particular, a one standard deviation increase in negative earnings surprise reduces earnings announcement return by 1.06% (0.046*0.23) more following a DOWN market than following an UP market. This suggests that investors react more adversely to bad earnings news following UP markets than following DOWN markets.[6]

3.2.2 Reaction to Earnings News and the Contemporaneous Market Performance

This section investigates whether investors' reaction to earnings news is sensitive to the contemporaneous market movement. Accordingly, we re-estimate Equation (5), replacing past market performance by the contemporaneous market performance (where the contemporaneous market is UP (DOWN) if the excess return on CRSP value-weighed return in the current quarter is positive (negative)). The dependent variable in Column I of Table 4 is the raw cumulative daily returns over the -3 to +3 window and in Column II (III) it is the cumulative returns from the market (four-factor) model. The results, reported in Table 4, Column III, show that the estimate of

[6] Our results from negative earnings surprises are consistent with Conrad et al.'s (2002) results that investors react more aggressively to bad earnings news when price/earnings (P/E) increase than when they decline. However, contrary to our results, Conrad et al. (2002) do not find a difference in investors' reaction to positive news when the price/earnings ratio increases versus when it decreases.

δ_0 is again positive (0.410) and statistically significant (t-value = 17.03), suggesting investors react more aggressively to positive earnings surprise the larger the surprise. However, in stark contrast to the past market results, the estimate of δ_1 is negative (-0.077) and statistically significant (t-value = -2.01). This indicates that investors react more aggressively to positive earnings news when the current market increases than when the current market declines. In particular, a one standard deviation increase in positive earnings news increases earnings announcement return by 1.69%(0.077*0.22) more when the current market advances than when it declines.

Again, like the past market results, we find investors react more adversely to negative news, the larger the negative surprise (i.e., the estimate of μ_0 is positive (0.061) and statistically significant (t-value = 11.15)). However, the estimate of μ_1 is positive (0.016) and statistically significant (t-value = 2.11). This suggests that investors react more adversely to negative news when the current market declines than when the current market advances. Thus, again, we find that investors react differently to the same earnings news when the current market advances versus when it declines.

The results from conditioning on the contemporaneous market performance, however, are completely the reverse of the results from conditioning on the prior market performance. Whereas investors react more aggressively to positive earnings news following declining markets than following advancing markets, they react less aggressively to the same news when the contemporaneous market declines than when it increases. Likewise, the reaction to negative earnings surprise is more aggressive following an advancing market than following a declining market but it is less aggressive when the contemporaneous market advances than when it declines.

The reversal in results is suggestive that investors react differently to the same earnings news in market continuations versus market transitions and we explore this in the next section.

3.2.3 Reaction to Earnings News and Market Continuations versus Transitions

To study investors' reaction earnings news when the market continues in the same state versus when it transitions to a different state, we classify the market into four categories based on past market performance and the contemporaneous performance. The market continues advancing if both the past and the contemporaneous market advances and it transitions to a declining state if the past market advances and the contemporaneous market declines. Continuations in a declining state and transitions to an advancing state are similarly defined. Accordingly, we estimate the following regression model:

$$
\begin{aligned}
CAR_{i,t} = {} & \alpha_0 + \alpha_1 (U,D) + \alpha_2 (D,D) + \alpha_3 (D,U) + \delta_0 (NEWS_{i,t} * POS) + \delta_1 (NEWS_{i,t} * POS * (U,D)) \\
& + \delta_2 (NEWS_{i,t} * POS * (D,D)) + \delta_3 (NEWS_{i,t} * POS * (D,U)) + \mu_0 (NEWS_{i,t} * NEG) \\
& + \mu_1 (NEWS_{i,t} * NEG * (U,D)) + \mu_2 (NEWS_{i,t} * NEG * (D,D)) \\
& + \mu_3 (NEWS_{i,t} * NEG * (D,U)) + \beta_1 SIZE_{i,t} + \varepsilon_t , \qquad (6)
\end{aligned}
$$

where (U,D) is a dummy variable that is equal to 1 when the past market is UP and the current market is DOWN; (D,D) is a dummy variable that is set to 1 when the past market is DOWN and the current market is also DOWN and to zero otherwise; (D,U) is a dummy variable that is set to 1 when the past market is DOWN and the current market is UP (D,U) and to zero otherwise; (U,U) and (U,D) are similarly defined, the remaining variables are as previously defined. Thus, δ_0 captures the sensitivity of investors' response to positive earnings news when the market continues in an UP state, δ_1 represents the incremental sensitivity when the market transitions to a DOWN state, and δ_2 (δ_3) captures the incremental sensitivity when the market continues in a

DOWN state (transitions to an UP state). Coefficient μ_i (i = 0,1,2,3) captures the corresponding values for negative earnings news.

The results for market transitions versus continuations are presented in Table 5. As before, Column I (II) [III] display the results when the dependent variable is the raw (market model) [four-factor model] cumulative daily return over the -3 to +3 window. From the results, presented in Table 5, the estimate of δ_0 is positive (0.27) and it is statistically significant (t-value = 8.74), suggesting that when investors react more aggressively to positive earnings news, the larger the positive surprise when the market continues in an UP state. The estimate of δ_1 is 0.199 (t-value = 3.33), suggesting investors' reaction to the same positive news is stronger when the market transitions to a declining state. That is, following an advancing market, investors react more aggressively to positive earnings news when the market transitions to a declining state than when it continues advancing. Also, the results show that δ_4 is greater than δ_3 (p-value of difference in coefficients is less than 0.00, Panel B, Table 5). This suggest that, following a declining market, investors react more aggressively to positive earnings surprise when the market transitions to an advancing state than when it continues declining. Thus, it appears that reactions to positive news are stronger when the market transitions to a different state than when it continues in the same state.

Turning our attention to negative news, we see that the estimate of μ_0 is 0.091 (t-value = 5.98), suggesting that investors react more adversely to negative earnings news, the larger the negative surprise when the market continues in an UP state. The estimate of μ_1 is 0.013 and is statistically not different from zero (t-value = 1.09). This indicates that, following an advancing market, investors react in a similar fashion to negative earnings news when the market continues advancing versus when it transitions to a declining state. In contrast, the estimate of μ_4 (-0.072) is lower than that of μ_3 (-0.026) with p-value for the test of the difference in coefficients is less than 0.00 (Panel B, Table 5). This suggest that, following declining markets, investors react more aggressively to negative earnings news when the market continues declining than when it transitions to an advancing state. Thus, while investors do not react differently to negative earnings news when the market continues advancing versus when it transitions to a declining state, they do react differently to the same news when the market continues declining compared to when it transitions to an advancing state.

3.2.2 *Mean Results*

In Table 6, market regime is determined using the past four quarters of market returns. We find that good news in DOWN markets elicits a stronger investor reaction compared to UP markets.[7] In Panel A, Table 6, we show that when the news goes against the direction of the market, it produces a stronger reaction. We find that bad news is viewed as worse news in an UP market (-1.27%) compared to bad news in DOWN markets (-0.51%).[8] The results are based on the four factor model for estimating the CAR are presented in Panel B, and they are similar to those based on the market model, reported in Panel A. In Table 6, Panel C, we define UP and DOWN markets using the lag 4 quarters and the current quarter in which the announcements occur. The results are similar to those presented in Panels A and B for the market model as well as the four-factor model. The results reported in Table 6 are similar to the regression results presented in Table 2.

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[7] Conrad et al., (2002) show that positive earnings surprise in a down market (DIFFPE = 1) is no different than in an UP market (DIFFPE =5).

[8] The results are consistent with those presented in Conrad et al. (2002). They show that investors react more strongly to bad news in an UP market relative to bad news in a DOWN market. They argue that the results are consistent with predictions of both the regime-shifting models and behavioral models. For negative news, the results are consistent with both Barberis et al. (1998) and Veronesi (1999) models. However, for good news, the results are consistent with the Barberis et al. (1998) model and not the Veronesi (1999) model.

In Table 7, Panel A, using the market model to estimate the CARs and contemporaneous quarter market returns to determine market regimes, we show that investors react adversely to negative earnings surprises more in DOWN markets (-1.71%) than UP markets (-0.65%). Similarly, positive surprises elicit a stronger positive reaction in UP markets (1.82%) than in DOWN markets (1.23%). The tests of difference in means and median are statistically significant at the 1% level. In Panel B, Table 7, CARs are calculated using the four-factor model and the results are similar to those in Panel A.

In Table 8, the CAR (-3 top +3) using the market model is presented in Panel A and the CAR using the four-factor model is reported in Panel B. Using the CAR from the four factor model, negative surprise results in a mean (median) CAR of -1.45% in the DOWN-DOWN market compared to -0.97% in the UP-UP market (Table 8, Panel B). Also, bad news elicits a stronger reaction when the market is in a DOWN state and continues in that state (D,D) relative to when it transitions into an UP state (D,U). The mean CAR in the DOWN-DOWN market is -1.45% compared to -0.38% in a DOWN-UP market (Panel B, Table 8). In contrast, investors' reaction to bad news is less adverse in an UP market which continues in an UP state (-0.97%) compared to when the market transitions into a DOWN market (-1.27%).

Similarly, good news which goes against the direction of the market (DOWN market), elicits a strong reaction when the market continues in this state (D,D) relative to good news during good times (U,U market). For example, a positive surprise produces a 0.44% greater reaction in a DOWN-DOWN market compared to an UP-UP market using the four-factor model. The results are statistically and economically significant. Also, investors react more positively to good news when the market transitions from a DOWN market to an UP market (D,U) relative to when it continues in the DOWN state (D,D).

3.3.0 Robustness Check

3.3.1 Sample Selection Biases

We conduct several robustness checks to ensure that our results are not influenced by outliers and/or low-priced stocks. First, in order to eliminate the effects of outliers, we eliminate the top and bottom 0.5% of the CAR and re-run the analysis. The procedure resulted in 140,594 earnings announcements over the sample period. The results, which are not tabulated, are similar to those presented above. Second, we require firms to have a share price of $5 or greater (see Harris (1994) for a discussion on the effects of low-priced stocks). The results are similar to those presented above.

3.3.2 Market Movements

To further exclude the possibility that our results are driven by extreme UP or DOWN markets, we examine the top and bottom 25% of past 12-months market returns.[9] This screen resulted in 83,193 quarterly announcements over the sample period.[10] The results, which are not tabulated for brevity, are similar and slightly stronger than those for the full sample. For instance, using the four-factor market model, the coefficient for positive surprises in the DU market is 0.37 compared to 0.34 for the full sample (Table 5, Column III).[11]

3.3.3 Length of Market Definition

We analyze the robustness of our results due to the definition of past market performance. For instance, Cooper et al. (2004) in studying the behavioral models, suggest that longer windows for the past market performance is important. Accordingly, we re-define UP and DOWN markets

[9] We also examine the top and bottom 25% of the current quarter in which the announcement occurs and the results are similar to those presented in the paper.
[10] This is approximately half of the full sample.
[11] The mean results for this sub-sample are also similar to those presented in the paper.

using the past 8 quarters of market returns and re-run the analysis. The results are similar to those presented above.

3.3.4 Definition of Earnings Surprise

It is possible that our definition of earnings surprise may affect our results. Therefore, following Mendenhall (1991), Trueman et al. (2005) and Conrad et al., (2002), we define earnings surprise as the difference between the actual earnings minus expected median earnings scaled by price six (-6) days before the earnings announcement. The results are similar to those presented above. Also, we define earnings surprise as (actual earnings - mean/consensus analyst earnings forecast)/ stock price six (or ten) days before the announcement and the results, which are not tabulated for brevity, are similar to those presented in the paper. In addition, we define earnings surprise as (actual earnings - expected earnings)/actual earnings (Foster et al., 1984) and re-run the analysis. The results are qualitatively the same as those presented above.

3.3.5 Definition of Event Window

It is possible that there are information leakages several days prior to the earnings announcements. Also, it is possible that investors take several days to fully incorporate the news into their expectations. Therefore, we examine a shorter (3 days) and a longer (11 days) event window surrounding earnings announcements. The results for the longer window (-5, +5), not tabulated for brevity, are similar to those presented based on a 7 day window (CAR -3 to +3). However, using the shorter window (-1, +1), the results are slightly stronger than the 7 day window. For example, the coefficient estimate for positive news in U,U market is 0.32 (not tabulated) for the CAR (-1, +1) whereas it is 0.27 for the CAR (-3, + 3) in Table 5, Column III. In addition, positive news in the D,D market and negative news in U,D market are significant at the 5% level whereas they are not significant over the -3 to +3 window.

3.3.6 *Simultaneous Dividend and Earnings Announcements*

Prior research suggests that simultaneous dividend and earnings announcements have interactive effects on the market's reaction to earnings announcements (e.g., Kane et al., (1984) and Lonie, et al., (1996)). To ensure that our results are not contaminated by simultaneous dividend announcements, we eliminate earnings announcement events when dividends are declared within -3 and +3 days around the earnings announcements.[12] This screening procedure resulted in a final sample of 142,015 earnings announcements that is, approximately 13% of the earnings announcement in our sample occurs simultaneously with dividend announcement around a 5 day window. The results from this subsample, which are not tabulated for brevity, are similar to those presented above.

4.0 Result Discussions

Our results show that investors react more favorably to positive earnings surprises following declining markets than following advancing markets. Likewise, they react more adversely to negative earnings news following advancing markets than following declining markets. These results are consistent with the predictions of the Barberis et al. (1998) model, suggesting that the string of positive (negative) news that drives advancing (declining) markets makes investors expect the same news. Accordingly, they react more aggressively to news that contradicts their expectation than news that corroborates it. Overall, the results from conditioning on prior market performance alone are more consistent with the Barberis et al. (1998) model than the competing models of Veronesi (1999) and Daniels et al. (1999).

[12] Lonie et al. (1996) examine simultaneous dividend and corporate earnings announcements where dividends are increased and earnings decrease or vice versa. They find that the influence of combinations of dividend and earnings news is found to be important in explaining the share price reaction on the announcement day.

Turning to the market dynamics, we find asymmetry in investors' responses to the same news (positive or negative) when the market continues in the same state versus when it transitions to a different state. In particular, our results show that the market reacts less favorably to positive earnings surprise when the market continues advancing or declining than when it transitions to a different state. In contrast, the market reacts more adversely to negative earnings news when the market continues declining than when it transitions to an advancing state, while there is no difference in reaction when the market continues advancing compared to when it transitions to a declining state (The last row of Table 1 summarizes these results).

From the table, we see that the results from declining or transitions to an advancing market are more consistent with the Daniel et al. (1998) model but not the other models. This suggests that overconfidence about price declines drives investors' response to earnings surprises when the market continues declining versus when it transitions to an advancing state. That is, price declines that confirms the overconfidence and, therefore, investors overreact to negative earnings news and underreact to positive earnings news. An inception of an advancing market tempers this overconfidence, mitigating the overreaction to negative news and the underreaction to the positive news, exactly as the evidence indicates.

The evidence from continuations in advancing markets and transitions to declining markets does not support a particular model. The reaction to positive earnings news in these market situations is consistent with the Barberis et al. (1998) model whereas the reaction to negative earnings news is consistent with the Veronesi's (1990) model. This suggests that the string of good news in advancing markets leads investors to expect more good news and this underpins investors' response to good news when the market continues advancing versus when it transitions to a declining state.

Overall, our results suggest that investors behave differently in advancing versus declining markets. When the market is declining, investor overconfidence about price declines appears to be the main driver of the market's reaction to earnings surprises. When the market is advancing, the string of positive news that makes investors expect more positive news appears to drive investors' reaction to positive earnings news. However, when negative news arrives, it seems that the discount rate effect is sufficiently strong to offset the news effect.

5.0 Summary and Conclusion

Both theory and evidence suggest that investors' reaction to earnings news is sensitive to the market's movement. We investigate whether investors react to the same earnings news differently when the market continues in the same state versus when it transitions to a different state by classifying the market by its past and current performance. The market continues in the same state if the past and the current market directions are the same and it transitions if they are different. Conditioning on past market performance alone, we find that investors respond more positively to good earnings surprise following declining markets than following advancing markets, and they respond more adversely to bad earnings surprise following advancing markets than following declining markets.

When we consider both past and current market performance, we find that investors generally react different to the same earnings news when the market continues in the same state versus when it transitions to a different state. In particular, following advancing markets, investors react more aggressively to positive earnings news when the market transitions to a declining state than when it continues advancing. However, the reaction to negative earnings surprises is not dependent on whether the market transitions to a declining state or continues advancing. Following declining markets, investors respond more aggressively to positive earnings surprise when the market transitions to an advancing state than when it continues declining. In contrast, investors respond more adversely to negative earnings news when the market continues declining than when it transitions to an advancing state.

Investors' reaction to earnings news when the market continues declining or transitions to an advancing state is consistent with Daniel's et al. (1998) model but not the computing models of Barberis et al. (1998) and Veronesi (1999). This suggests the overconfidence resulting from price declines that confirm sale positions drive investors' response to earnings news. In contrast, investors' reaction to positive earnings news when the market continues advancing or transitions to a declining state is consistent with the Barberis et al. (1998) model. This indicates that the string of positive news makes investors' expect more positive news and this underpins their reaction to positive earnings news. The market reaction to negative earnings news when the market continues advancing versus when it transitions to a declining state supports the Veronesi's (1999) model. This suggests that the arrival of negative earnings news when the market has been advancing has a large impact on the discount rate. Overall, these results support the notion that investors behave differently towards the same news in different market conditions.

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Table 1: Market Dynamics and the Predictions of the Various Models

The table summarizes the predictions of the three models of investors' reactions to earnings news conditional on past and current market performance. The past market is UP (DOWN) if the return on CRSP value-weighted index minus the U.S. Treasury bill rate in the past four quarters is positive (negative). The current market is UP (DOWN) when the same return is positive (negative) in the contemporaneous quarter. (U,U) represents an UP past and current market and (U,D) represents an up past market and a down current market. The remaining market dynamics are similarly defined. The notations (+) and (+,+) denote positive and strong positive market reactions to good earnings news, and (–) and (–,–) denote negative and strong negative reaction to bad earnings news, respectively. N/A is when the prediction is ambiguous.

Panel A: Past Market Movements

	Good Earnings News		Bad Earnings News	
	UP Market	DOWN Market	UP Market	DOWN Market
Veronesi's Model	(+)	N/A	(–,–)	(–)
Barberis's et al. Model	(+)	(+,+)	(–,–)	(–)
Daniel's et al. Model	(+,+)	(+)	(–)	(–,–)
Results	(+)	(+,+)	(–,–)	(–)

Panel B: Market Continuations versus Transitions

	U,U	U,D	D,D	D,U	U,U	U,D	D,D	D,U
Veronesi's Model	N/A	N/A	(+,+)	(+)	N/A	N/A	(–)	(–,–)
Barberis's et al. Model	(+)	(+,+)	(+,+)	(+)	(–,–)	(–)	(–)	(–,–)
Daniel's et al. Model	(+,+)	(+)	(+)	(+,+)	(–)	(–,–)	(–,–)	(–)
Results	(+)	(+,+)	(+)	(+,+)	(–)	(–)	(–,–)	(–)

Table 2: Descriptive Statistics

Earnings surprise is computed as the difference between the actual quarterly earnings and the median expected quarterly earnings. Cumulative abnormal returns are estimated using the market model and Fama-French-Carhart four-factor model. The test of difference in mean is the t-test and the test for difference in median is the Wilcoxon rank-sum test. ***, **, * denotes statistical significance at the1%, 5% and 10% levels, respectively.

Panel A: Earnings Surprise

	Mean ($)	Median($)	Sta. Dev.	Obs.
Overall Surprises	-0.04	-0.01	0.25	163,203
Negative Surprises	-0.15	-0.07	0.23	87,346
Positive Surprises	0.09	0.04	0.22	75,857
Test for difference (Negative - Positive=0)	-220.6***	-359.3***		

Panel B: Announcement Day Returns

	Mean (%)	Median (%)	Sta. Dev.	Obs.
Overall Surprises	0.22	0.00	5.93	163,203
Negative Surprises	-0.42	-0.09	6.17	87,346
Positive Surprises	0.96	0.47	5.56	75,857
Test for difference (Negative - Positive=0)	-47.91***	-52.98***		

Panel C: Cumulative Daily Returns (-3 to + 3)

	Mean (%)	Median (%)	Sta. Dev.	Obs.
Overall Surprises	0.74	0.58	11.70	163,203
Negative Surprises	-0.84	-0.54	12.09	87,346
Positive Surprises	2.57	1.96	10.87	75,857
Test for difference (Negative - Positive=0)	-59.55***	-57.75***		

Panel D: Cumulative Abnormal Returns (CAR, -3 to +3) using market model

	Mean (%)	Median (%)	Sta. Dev.	Obs.
Overall Surprises	0.19	0.08	11.2	163,203
Negative Surprises	-1.05	-0.87	11.6	87,346
Positive Surprises	1.61	1.16	10.5	75,857
Test for difference (Negative - Positive=0)	-47.9***	-56.1***		

Panel E: Cumulative Abnormal Returns (CAR, -3 to +3) using Fama-French-Carhart four factor model

	Mean (%)	Median (%)	Sta. Dev.	Obs.
Overall Surprises	0.21	0.13	12.3	163,203
Negative Surprises	-1.14	-0.80	10.8	87,346
Positive Surprises	1.59	1.26	9.8	75,857
Test for difference (Negative - Positive=0)	-52.9***	-57.7***		

Table 3: Regression for abnormal earnings announcement returns for different market dynamics using lagged 12-month market returns to define UP and DOWN markets

$$CAR_{i,t} = \alpha_0 + \alpha_1 DOWN + \delta_0 (NEWS_{i,t} * POS) + \delta_1 (NEWS_{i,t} * POS * DOWN)$$
$$+ \mu_0 (NEWS_{i,t} * NEG) + \mu_1 (NEWS_{i,t} * NEG * DOWN) + \beta_1 SIZE_{i,t} + \varepsilon_{i,t},$$

The dependent variable is abnormal returns around earnings announcements (CAR -3 to 3) using the cumulative daily returns (column I), market model (column II) and Fama-French-Carhart Model (column III). If the market return less the U.S T-bill rate is negative over the past four quarters then it is a DOWN market. If it is positive over the past four quarters then it is an UP market. News is defined as (actual earnings – analyst median expected earnings)/price(-10), Pos is an indicator variable for positive news, Neg is an indicator variable for negative news, DOWN is an indicator variable equal to 1 if the market is a DOWN market, and size is the natural log of equity market value. The test statistics are reported below the estimated coefficient. *** and ** indicate 1% and 5% significant levels.

	I	**II**	**III**
	Estimates	**Estimates**	**Estimates**
	t-stat	**t-stat**	**t-stat**
Intercept	0.029	0.026	0.012
	12.56***	11.71***	5.81***
DOWN Dummy	-0.014	-0.007	-0.000
	-21.07***	-10.96***	-0.57
News*Pos	0.452	0.372	0.323
	15.38***	13.13***	12.21***
News*Pos *DOWN	0.088	0.178	0.108
	2.13**	4.45***	2.89***
News*Neg	0.125	0.092	0.096
	19.91***	15.15***	16.89***
News*Neg *DOWN	-0.065	-0.064	-0.046
	-7.75***	-10.96****	-5.99***
Size	-0.001	-0.001	-0.001
	-5.16***	-9.03***	-5.25***
Adjusted R^2	1.02	0.67	0.52
Obs.	163,203	163,203	163,203

Table 4: Regression for abnormal earnings announcement returns for different market dynamics using current quarter returns to define UP and DOWN markets

$$CAR_{i,t} = \alpha_0 + \alpha_1 \, DOWN + \delta_0 \, (NEWS_{i,t} * POS) + \delta_1 \, (NEWS_{i,t} * POS * DOWN)$$
$$+ \mu_0 \, (NEWS_{i,t} * NEG) + \mu_1 \, (NEWS_{i,t} * NEG * DOWN) + \beta_1 \, SIZE_{i,t} + \varepsilon_{i,t},$$

The dependent variable is abnormal returns around earnings announcements (CAR -3 to 3) using the cumulative daily returns (column I), market model (column II) and Fama-French-Carhart Model (column III). If the market return less the U.S T-bill rate is positive for the current quarter then it is defined as an UP market. If it is negative then it is a DOWN market. NEWS is defined as (actual earnings – analyst median expected earnings)/price(-10), POS is an indicator variable for positive news, NEG is an indicator variable for negative news, DOWN is an indicator variable equal to 1 if the market is a DOWN market, and size is the natural log of equity market value. The test statistics are reported below the estimated coefficient. *** and ** indicate 1% and 5% significant levels.

	I	**II**	**III**
	Estimates	**Estimates**	**Estimates**
	t-stat	**t-stat**	**t-stat**
Intercept	0.005	0.014	0.009
	2.22**	6.66***	4.29***
DOWN Dummy	0.020	0.008	0.003
	32.95***	14.21***	6.00***
News*Pos	0.589	0.487	0.410
	22.08***	18.91***	17.03***
News*Pos *DOWN	-0.177	-0.035	-0.077
	-4.18***	-0.86	-2.01**
News*Neg	0.064	0.045	0.061
	10.49***	7.69***	11.15***
News*Neg *DOWN	0.028	0.012	0.016
	3.36***	1.49	2.11**
Size	-0.001	-0.001	-0.001
	-4.95***	-8.79***	-4.75***
Adjusted R^2	1.42	0.65	0.52
Obs.	163,203	163,203	163,203

Table 5: Regression for abnormal earnings announcements returns for market continuation versus market transition

$$
\begin{aligned}
CAR_{i,t} &= \alpha_0 + \alpha_1 (D,D) + \alpha_2 (U,D) + \alpha_3 (D,U) + \delta_0 (NEWS_{i,t} * POS) + \delta_1 (NEWS_{i,t} * POS * (D,D)) \\
&+ \delta_2 (NEWS_{i,t} * POS * (U,D)) + \delta_3 (NEWS_{i,t} * POS * (D,U)) + \mu_0 (NEWS_{i,t} * NEG) \\
&+ \mu_1 (NEWS_{i,t} * NEG * (D,D)) + \mu_2 (NEWS_{i,t} * NEG * (U,D)) \\
&+ \mu_3 (NEWS_{i,t} * NEG * (D,U)) + \beta_1 SIZE_{i,t} + \varepsilon_t
\end{aligned}
$$

The dependent variable is abnormal returns around earnings announcements (CAR -3 to 3) using the cumulative daily returns (column I), market model (column II) and Fama-French-Carhart Model (column III). Market continuation is defined as follows: if the market return is positive over the past four quarters and the current quarter then it is defined as an UP-UP (U,U) market. If the market return is negative over the past four quarters and the current quarter then it is defined as a DOWN-DOWN (D,D) market. Market transition is defined as follows: if the market return is positive over the past four quarters and the current quarter returns is negative then it is defined as an UP-DOWN (U,D) market. If the market return is negative over the past four quarters and the current quarter returns is positive then it is defined as a DOWN-UP (D,U) market. NEWS is defined as (actual earnings – analyst median expected earnings)/price(-10), POS is an indicator variable for positive news, NEG is an indicator variable for negative news, and size is the natural log of equity market value. *** and * indicate 1% and 10% significant levels.

Panel A: Regression Results

	I		II		III	
	Est.	**t-stat**	**Est.**	**t-stat**	**Est.**	**t-stat**
Intercept	0.017	7.63***	0.019	9.00***	0.012	5.78***
D,D Dummy	-0.113	-9.15***	-0.004	-4.49***	-0.003	-4.31***
U,D Dummy	-0.016	-21.53***	-0.007	-9.76***	-0.003	-3.96***
D,U Dummy	0.030	32.99***	0.017	15.56***	0.002	2.97***
News*Pos	0.388	11.39***	0.275	8.34***	0.270	8.74***
News*Pos*D,D	-0.092	-1.75*	0.076	1.48	-0.005	-0.11
News*Pos*U,D	0.419	7.74***	0.494	9.39***	0.199	3.33***
News*Pos*D,U	0.233	3.55***	0.361	5.66***	0.344	6.99***
News*Neg	0.119	15.40***	0.092	12.22***	0.091	5.98***
News*Neg*D,D	-0.042	-4.04***	-0.047	-4.67***	-0.026	-2.75***
News*Neg*U,D	0.012	0.92	-0.002	-0.14	0.013	1.09
News*Neg*D,U	-0.113	-9.15***	-0.104	-8.75***	-0.072	-6.48***
Size	-0.001	-4.07***	-0.001	-8.44***	-0.001	-4.95***
Adjusted R^2	2.37		1.00		0.61	
Obs.	163,203		163,203		163,203	

Panel B: F-test using coefficient (column III) from the Fama-French-Carhart Model

	F-test	p-value
News*Pos*D,D = News*Pos*D,U ($\delta_1 = \delta_3$)	43.27***	<0.0001
News*Neg*D,D = News*Neg*D,U ($\mu_1 = \mu_3$)	18.63***	<0.0001

Table 6: Cumulative abnormal returns when market regimes are determined using four-quarter lags

If the market return minus U.S. T-bill rate is positive over the past four quarters then it is defined as an UP market. If it is negative over the past four quarters then it is a DOWN market. The test of difference in mean is the t-test and the test for difference in median is the Wilcoxon rank-sum test. ***, **, * denote statistical significance at the1%, 5% and 10% level, respectively.

Panel A: Cumulative abnormal returns are estimated using a market model

	CAR Window		UP Market %	DOWN Market %	Test for difference Mean and Median
Negative Surprises	-3 to 3	Mean	-1.27	-0.51	-8.77***
		Median	-0.95	-0.60	-8.07***
		Obs.	61,552	25,794	
Positive Surprises	-3 to 3	Mean	1.28	2.59	-14.94***
		Median	1.02	1.73	-11.87***
		Obs.	56,621	19,236	

Panel B: Cumulative abnormal returns are estimated using Fama-French-Carhart four factor model

	CAR Window		UP Market %	DOWN Market %	Test for difference Mean and Median
Negative Surprises	-3 to 3	Mean	-1.13	-1.16	0.29
		Median	-0.80	-0.79	-0.34
		Obs.	61,552	25,794	
Positive Surprises	-3 to 3	Mean	1.44	2.06	-7.39***
		Median	1.18	1.51	-5.68***
		Obs.	56,621	19,236	

Panel C: Cumulative abnormal returns when market regimes are determined using four-quarter lags and current quarter returns

Market Model	CAR Window		UP Market %	DOWN Market %	Test for difference Mean and Median
Negative Surprises	-3 to 3	Mean	-1.10	-0.92	-2.16**
		Median	-0.90	-0.77	-3.58***
		Obs.	61,602	25,744	
Positive Surprises	-3 to 3	Mean	1.32	2.41	-12.57***
		Median	1.03	1.65	-10.34***
		Obs.	55,901	19,956	

Four Factor Model	CAR Window		UP Market %	DOWN Market %	Test for difference Mean and Median
Negative Surprises	-3 to 3	Mean	-0.97	-1.14	1.92*
		Median	-0.77	-0.88	1.55
		Obs.	61,602	25,744	
Positive Surprises	-3 to 3	Mean	1.50	2.24	-8.66***
		Median	1.18	1.51	-6.12***
		Obs.	55,901	19,956	

Table 7: Cumulative abnormal returns when market regimes are determined using contemporaneous market returns (current quarter returns)

If the market return less U.S. T-bill rate is positive for the current quarter then it is defined as an UP market. If it is negative then it is a DOWN market. The test of difference in mean is the t-test and the test for difference in median is the Wilcoxon rank-sum test. ***, **, * denote statistical significance at the1%, 5% and 10% level, respectively.

Panel A: Cumulative abnormal returns are estimated using a market model

	CAR Window		UP Market %	DOWN Market %	Test for difference Mean and Median
Negative Surprises	-3 to 3	Mean	-0.65	-1.71	13.00***
		Median	-0.74	-1.11	9.19***
		Obs.	54,881	32,465	
Positives Surprises	-3 to 3	Mean	1.82	1.23	7.31***
		Median	1.20	1.07	4.73***
		Obs.	48,983	26,874	

Panel B: Cumulative abnormal returns are estimated using Fama-French-Carhart four factor model

	CAR Window		UP Market %	DOWN Market %	Test for difference Mean and Median
Negative Surprises	-3 to 3	Mean	-0.93	-1.49	7.36***
		Median	-0.79	-0.82	2.39***
		Obs.	54,881	32,465	
Positive Surprises	-3 to 3	Mean	1.63	1.53	1.13
		Median	1.22	1.32	-0.85
		Obs.	48,393	26,874	

Table 8: Market reaction to earnings surprises in market continuations versus transitions

Market continuation is defined as follows: if the market return less U.S. T-bill rate is positive over the past four quarters and the current quarter then it is defined as an UP-UP (U,U) market. If it is negative over the past four quarters and the current quarter then it is defined as a DOWN-DOWN (D,D) market. Market transition is defined as follows: if the market return is positive over the past four quarters and the current quarter returns is negative then it is defined as an UP-DOWN (U,D) market. If the market return is negative over the past four quarters and the current quarter returns is positive then it is defined as a DOWN-UP (D,U)market.

Panel A: Cumulative abnormal returns are estimated using a market model

			CONTINUATION		TRANSITION					
	CAR Window		D,D (A)	U,U (B)	D,U (C)	U,D (D)	Test that (A) – (B) = 0	Test that (C) – (D) = 0	Test that (A) – (C) = 0	Test that (B) – (D) = 0
Negative Surprises	-3 to 3	Mean	-1.62	-1.04	0.68	-1.78	-5.18***	17.26***	-13.14***	8.09***
		Median	-1.14	-0.89	-0.07	-1.11	-2.67***	14.36***	-11.09***	5.29***
		Obs.	13,381	42,468	12,413	19,084				
Positive Surprises	-3 to 3	Mean	1.79	1.43	3.39	0.92	3.15***	16.85***	-9.02***	5.69***
		Median	1.49	1.06	1.96	0.90	3.74***	13.25***	-6.07***	4.40***
		Obs.	9,620	39,365	9,616	17,256				

Panel B: Cumulative abnormal returns are estimated using Fama-French-Carhart four factor model

	CAR Window		D,D (A)	U,U (B)	D,U (C)	U,D (D)	Test that (A) – (B) = 0	Test that (C) – (D) = 0	Test that (A) – (C) = 0	Test that (B) – (D) = 0
Negative Surprises	-3 to 3	Mean	-1.45	-0.97	-0.38	-1.27	-4.45***	6.35***	-6.27***	3.36***
		Median	-0.96	-0.82	-0.68	-0.75	-2.16**	2.59***	-3.63***	-0.43
			13,381	42,468	12,413	19,084				
Positive Surprises	-3 to 3	Mean	1.97	1.53	2.54	1.45	3.98***	7.61***	-3.23***	0.87
		Median	1.64	1.18	1.40	1.18	4.54***	3.64***	0.36	0.62
		Obs.	9,620	39,365	9,616	17,256				