Does Macro-news Help to Interpret Micro-news? Evidence from Post-Earnings-Announcement Drift

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Abstract

With limited information processing ability, investors pay more attention to the overall market on days with important macroeconomic news announcement and allocate relatively less attention to firm-level news on those days. In turn, the information in macroeconomic news helps investors to interpret firm-level news. We provide evidence supporting the above argument by showing that investor underreaction to earnings announcements with concurrent important macroeconomic news announcement is significantly weaker than otherwise. The post-earnings-announcement drift is reduced by about 20% over short horizon due to the effect of macroeconomic news announcement. Under market conditions with less uncertainty, macroeconomic news has an immediate and more pronounced effect on investor reaction to earnings surprises.

Key words: Post-earnings-announcement drift; Macroeconomic news announcements; Limited investor attention; Category learning behavior; Investor underreaction

JEL Classification: G12, G14

I. Introduction

Existing literature documents strong evidence of investor underreaction to corporate events. The most well-known phenomenon is the so-called post-earnings-announcement drift (PEAD) in stock returns, as documented in Ball and Brown (1968), Foster, Olsen, and Shevlin (1984), and Bernard and Thomas (1989, 1990), among others. That is, firms reporting positive (negative) unexpected earnings on average experience positive (negative) abnormal returns up to three quarters after earnings announcement.[1] The literature has proposed a number of potential explanations, from both rational and behavioral perspectives, of investor underreaction in general and PEAD in particular. Several recent studies attribute PEAD to limited investor attention and other forms of investor cognitive constraints (e.g., Hirshleifer and Teoh, 2003, 2005; DellaVigna and Pollet, 2009; Hirshleifer, Lim and Teoh, 2009, 2011). For example, Hirshleifer, Lim and Teoh (2009) find that the immediate investor reaction to a firm's earnings surprise is much weaker and drift to earnings surprises is much stronger when a larger number of related companies also announce earnings on the same day. This is because investors have limited power to process large amounts of information at the same time.

In this paper, we argue that all news does not receive equal attention from investors. In particular, macroeconomic news may receive more attention from investors than firm-level news as a result of limited investor attention. Our hypothesis is motivated by the following arguments. First of all, motivated by psychological evidence that attention is a limited cognitive resource, Peng (2005) and Peng and Xiong (2006) show that investors have to be conscious in allocating their limited attention capacity given the vast amount of information available in the market place. More specifically, Peng and Xiong (2006) show that limited investor attention leads to

[1] Several studies also document investor underreaction to other corporate events, such as share repurchase announcements (Ikenberry, Lakonishok, and Vermaelen, 1995), dividend initiations and omissions (Michaely, Thaler, and Womack, 1995), and stock split announcements (Ikenberry and Ramnath, 2002).

category-learning behavior, i.e., investors tend to process information about macroeconomic fundamentals before processing firm-specific information.[2] As a result, macroeconomic news receives more attention from investors than firm-level news. Second, it is known that many sophisticated investors, such as institutional investors, employ a "top-down" approach in their portfolio management.[3] A top-down investor first makes decisions on asset allocations with the desired risk-return trade-off. Such decisions on asset allocation are typically made based on overall economic outlook, macroeconomic fundamentals, and sometimes market technical indicators. Thus, it is natural for investors, particularly institutional investors, to pay more attention to macroeconomic news.

With investors paying more attention to macroeconomic news, the distraction could potentially aggravate investor misreaction to firm-level news due to limited information processing ability. Nevertheless, macroeconomic news itself contains important information about the state of economy and has a significant effect on stock returns. Existing studies document evidence that macroeconomic news announcement leads to more rational pricing of individual stocks (Gerlach, 2007; and Savor and Wilson, 2014). For instance, Savor and Wilson (2014) show that stock return patterns are much easier to reconcile with standard asset pricing theories, both at cross-section and over time, on macroeconomic news announcement days. As a result, we further hypothesize that with investors paying more attention to macroeconomic news,

[2] Attention is a constraint not only for unsophisticated individual investors but also for professional investors. For example, Sims (2003) studies the implications of information-processing constraint in a general dynamic control problem. Kacperczyk, Nieuwerburgh, and Veldkamp (2009) examine how mutual fund managers allocate their limited attention between aggregate market-level information and firm-specific information during different phases of business cycle. Given the fact that many specialists handle multiple securities on the NYSE, Corwin and Coughenour (2008) and Chakrabarty and Moulton (2009) document the effect of limited attention of specialists on market making.

[3] As described in Bodie, Kane, and Marcus (Essentials of Investments, 9th edition, 2013, McGraw-Hill/Irwin), a top-down active investment strategy involves three main steps: asset allocation, security selection, and implementation.

the complementary information in macroeconomic news helps investors to interpret firm-level news, leading to more efficient stock valuation and weaker investor misreaction. Our argument is probably best presented under the model of Vuolteenaho (2002) who decomposes individual stock returns into a cash-flow component and an expected-return component, namely

$$r_t - E_{t-1}[r_t] = N_{cf,t} - N_{r,t}, \quad (1)$$

where N_{cf} denotes cash-flow news and N_r denotes expected-return news.[4] He shows that cash-flow news is largely firm specific and expected-return news is predominantly driven by systematic macroeconomic component. Moreover, under the above model framework, stock returns are not only driven by respective shocks to expected cash flows and discount rates, but also by the interaction of these two components. For example, as shown in Li, Richardson, and Tuna (2014), information in macroeconomic news is relevant in assessing future corporate earnings. Chordia and Shivakumar (2005) and Basu, Markov and Shivakumar (2010) provide direct evidence that PEAD is related to investor underestimation of the impact of expected inflation on future earnings change. Thus, the updated information in macroeconomic news about expected discount rates and updated information in earnings announcement about firm

[4] Under the framework of Campbell and Shiller (1988) and Campbell (1991) for aggregate stock returns, Vuolteenaho (2000) derives an earnings-based model and decomposes the log book-to-market ratio (θ) as:

$$\theta_{t-1} = \kappa_{t-1} + \sum_{j=0}^{\infty} \rho^j r_{t+j} - \sum_{j=0}^{\infty} \rho^j \left(e_{t+j} - f_{t+j}\right),$$

where r_t denotes the excess log stock return, e_t denotes *ROE* which is defined as log one plus earnings (X_t) and book equity (B_{t-1}) ratio, f_t denotes log one plus the interest rate, ρ (<1) is the discount coefficient, and κ_t is a constant plus the approximation error. Taking changes in expectations from *t-1* to *t* (ΔE_t), the stock return can be decomposed into a cash-flow component and an expected-return component:

$$r_t - E_{t-1}[r_t] = \Delta E_t\left[\sum_{j=0}^{\infty} \rho^j \left(e_{t+j} - f_{t+j}\right)\right] + \kappa_t - \Delta E_t\left[\sum_{j=0}^{\infty} \rho^j r_{t+j}\right],$$

where $\kappa_t = \Delta E_t[\kappa_{t-1}]$. The first two terms capture the effect of cash-flow news ($N_{cf,t}$) and the last term captures the effect of expected-return news ($N_{r,t}$).

cash flows as well as their interaction may help investors to value stocks more efficiently and reduce misreaction to earnings surprises.

In this paper, we directly test the above hypotheses based on investor reactions to earnings announcements. Specifically, we compare market reactions to earnings announcements with concurrent important macroeconomic news announcement with market reactions to those without. The data used in our study includes the CRSP database for stock returns and Compustat for earnings announcement and other firm characteristics. The information on pre-scheduled macroeconomic news announcements is obtained from Bloomberg. The stock sample in our empirical analysis includes all common stocks traded on NYSE, AMEX and NASDAQ. Our sample period is from January 2001 to December 2013.

The main results of our study show that drift following earnings announcement with concurrent important macroeconomic news announcements is significantly weaker than drift following other earnings announcements. For instance, for earnings announcements with no concurrent macro news announcements, average return differentials between top and bottom SUE (standardized unexpected earnings) deciles are 3.39%, 5.21% and 6.91% over 1-week, 1-month and 1-quarter horizons following earnings announcement, respectively. For earnings announcements with concurrent macro news announcements, these corresponding numbers are significantly lower at 2.65%, 3.78% and 4.83%. That is, macroeconomic news helps to reduce investor underreaction to earnings surprises by about 20% over short horizons.

We confirm that the results are robust to a number of variations in our empirical analysis. First, DellaVigna and Pollet (2009) compare responses to earnings announcements on Friday, when investor inattention is more likely, to responses on other weekdays and find less immediate response and more drift for Friday announcements. We exclude Fridays in our analysis and

confirm that our results are not driven by Friday announcements. Second, while most macroeconomic news announcements occur monthly or quarterly, the Initial Jobless Claims are announced weekly with the highest frequency of occurrence. We confirm that the results hold even if we exclude the announcements of Initial Jobless Claims. Third, we also control for other firm characteristics, such as size, boot-to-market ratio, past stock returns, liquidity, and idiosyncratic volatility, and further confirm the effect of macroeconomic news on investor reaction to firm-level news. Fourth, we divide macroeconomic news into different categories and show that the effect on investor reaction is pervasive among different types of news.

To understand exactly what drives the effect of macroeconomic news announcement on investor reaction to firm-level news, we perform additional analyses. The main implication of category-learning behavior is that limited attention capacity leads investors to pay more attention to macro news and allocate relatively less attention to firm-level news. In turn, the information content in macroeconomic news helps investors to interpret firm-level news and reduce misreaction to earnings surprises. Nevertheless, it is also possible that as macroeconomic news announcement draws investor attention to the overall market, investors may also pay more attention to firm-level news as well. As such, it could be increased investor attention to earnings announcement that attributes to weaker market underreaction. First, we show that trading volume and price variation, proxies of investor attention, are higher on days with macroeconomic news announcements than on other days. In particular, the significantly higher trading volume on days with macroeconomic news announcement suggests that investors update their valuation of stocks and adjust their portfolio following the arrival of macroeconomic news. Second, we compare investor attention to earnings announcements on days with important macroeconomic news announcements versus other days. Our results show that investors pay relatively less attention to

earnings announcements on days with macro news announcement. These findings suggest that it is more likely the information content of macroeconomic news rather than increased investor attention that attributes to significantly weaker investor undereaction to earnings surprises on days with macroeconomic news announcement.

As we pointed out earlier, sophisticated investors generally pay more attention to macro news. It is also safe to assume that sophisticated investors have better understanding about discounting future cash flows in stock valuation. Thus, we conjecture that the effect of macroeconomic news announcements on PEAD is stronger for firms with more sophisticated investor base. We use institutional ownership as a direct proxy for investor sophistication. Our results confirm that the effect of macroeconomic news on investor reaction is indeed stronger for firms with higher institutional ownership.

Finally, existing literature documents that as investors misreact to news, information uncertainty may further aggravate such misreaction. In particular, investor underreaction is stronger when there is greater information uncertainty (Jiang, Lee, and Zhang, 2005; Zhang 2006; and Francis, Lafond, Olsson, and Schipper, 2007). In this study, we examine the effect of macroeconomic news on investor reaction to earnings announcements under different market conditions. Using VIX as a measure of market uncertainty, we find that during high VIX quarters or market conditions with more uncertainty, macroeconomic news has an insignificant effect on PEAD over short horizons. On the other hand, during low VIX quarters or market conditions with less uncertainty, macroeconomic news has an immediate and more pronounced effect on investor reaction to earnings surprises.

Our study contributes to the literature in the following dimensions. First, our study contributes to the literature on investor learning behavior. We provide empirical evidence

supporting the predictions of Peng and Xiong (2006) on the category-learning behavior for investors with limited information processing power. Second, our study contributes to the literature on the effect of macroeconomic news on stock valuation. Savor and Wilson (2014) show that stock prices behave more rationally on days with important macroeconomic news announcements. Our study provides one concrete setting illustrating exactly how macroeconomic news may affect investors' interpretation of firm-level news and lead to more efficient stock valuation. Third, our study contributes to an extensive literature by shedding new light on what drives investor underreaction. Existing literature provides evidence that limited investor attention contributes to investor underreaction. In particular, more information of the same type distracts investor attention and aggravates misreaction to corporate news. We show that when investors allocate more attention to macroeconomic news, the complementary information in macroeconomic news helps investors to interpret firm-level news and actually reduce misreaction. Finally, our study offers further evidence on the effect of information uncertainty on investor reaction to news. We show that the information content in macroeconomic news is incorporated into asset prices more quickly under market conditions with less uncertainty.

The rest of the paper is structured as follows. Section II describes the data and methodology in our analysis. Section III presents main empirical results with various robustness checks. Section IV performs further analysis, and Section V concludes.

II. Data

The main data used in our empirical analysis includes the CRSP database for stock returns, Compustat for earnings announcements and information on other firm characteristics, Thomson-Reuters 13F Database for institutional holdings, and Bloomberg for macroeconomic

news announcements. CRSP stock returns are adjusted for delistings to avoid survivorship bias, following Shumway (1997). The stock sample includes common stocks in the CRSP database (SHRCD of 10 or 11) traded in NYSE, AMEX or NASDAQ (EXCHCD of 1, 2 or 3). Bloomberg provides date and time for almost all pre-scheduled macroeconomic news announcements. Due to data availability on macroeconomic news announcements, our sample covers the period from January 2001 to December 2013.

A. Unexpected Earnings and Firm Characteristics

We follow existing literature (Foster, 1977; and Foster, Olsen, and Shevlin, 1984) and construct the measure of standardized unexpected earnings (SUE) as:

$$E(Q_{i,t}) = Q_{i,t-4} + \phi_i (Q_{i,t-1} - Q_{i,t-5}) + \delta_i \tag{2}$$

$$SUE_i = \frac{Q_{i,t} - E(Q_{i,t})}{\sigma[Q_{i,t} - E(Q_{i,t})]} \tag{3}$$

where $Q_{i,t}$ denotes quarterly earnings of firm *i* in quarter *t*. The parameters ϕ_i and δ_i are estimated using the most recent 20 quarters of data. Firm characteristics in the empirical analysis include size (SIZE), book-to-market ratio (BM), momentum (MOM), the Amihud illiquid measure (ILLIQ) (Amihud, 2002), and idiosyncratic volatility (IVOL). All variables are constructed following literature convention (e.g., Fama and French, 2008) as described below.

- SIZE: the natural log of market capitalization at the end of June of a year.
- BM: the natural log of the book-to-market ratio. Book value of equity is stockholders' equity plus balance-sheet deferred taxes and investment tax credit (TXDITC, from Compustat), if available, minus preferred stock liquidating value (PSTKL), if available, or redemption value (PSTKRV), if available, or carrying value (PSTK). Depending on

availability, stockholders' equity is Compustat variable SEQ, or CEQ+PSTK, or AT-LT, in that order. All Compustat items are measured for the fiscal year ending in calendar year t-1. Market value of equity is stock price times shares outstanding at the end of December of year t-1, from CRSP. We exclude firms with negative book value of equity.

- MOM: 11-month buy-and-hold return from July of year t-1 to May of year t.
- ILLIQ: the Amihud (2002) illiquidity measure is calculated as the ratio of absolute daily stock return divided by daily dollar trading volume and averaged over a given period. Since trading volume is defined differently for NASDAQ stocks and NYSE-AMEX stocks, trading volumes of NASDAQ stocks are adjusted by a factor of 0.7 (Boehmer, 2005).
- IVOL: the standard deviation of the residuals in the Fama-French (1993) 3-factor model estimated from daily returns over a given period.

Table I reports the cross-sectional statistics of SUE and firm characteristics for selected years in our sample period. During our sample period, the US stock market experienced the collapse of internet bubble, its recovery, the financial crisis, and the post-crisis period. The statistics in the table clearly reflect the effect of these events. The average of earnings surprises (SUE) is lower in 2001 and 2009 than in 2005 and 2013, so is the average firm SIZE. The negative log BM ratio indicates that book value is on average below market value and the ratio on average is closer to one in 2001 and 2009 than in 2005 and 2013. The median MOM is negative in 2001 and 2009, but is positive in 2005 and 2013.The illiquidity (ILLIQ) peaks in 2009 during the financial crisis period, and remains high even afterwards in 2013. Furthermore, the average volatility (IVOL) is higher in 2001 and 2009 than in 2005 and 2013.

B. Macroeconomic News Announcements

The list of macroeconomic announcements used in our analysis includes: Initial Jobless Claims; Change in Nonfarm Payrolls; FOMC Rate Decision; GDP Growth (Annualized); Consumer Confidence Index; ISM Manufacturing Index; Consumer Price Index; U. of Michigan Consumer Sentiment Index; Durable Goods Orders; New Home Sales; Housing Starts; Unemployment Rate; and Retail Sales. These announcements are considered as important as they have significant impact on financial markets based on the average Bloomberg relevance index during our sample period and a number of existing studies (Flannery and Protopapadakis, 2002; Beber and Brandt, 2009; Lee, 2012; Brenner, Pasquariello, and Subrahmanyam, 2009; and Savor and Wilson, 2013, 2014).

Table II reports the list of macroeconomic news announcements. *N* denotes the total number of announcements during the period from January 2001 to December 2013. Day and time denote, respectively, the weekday or day of the month and time (ET) of announcement. Most announcements occur at either 8:30 a.m. or 10:00 a.m. except the FOMC Rate Decision at either 12:30 or 14:15 p.m. The table also reports the number of announcements with no surprises, i.e., the actual announcement is the same as market consensus. Other than FOMC rate decisions of which about 95 percent are consistent with market expectations, most news items have a significant portion of announcements with surprises.

III. Main Empirical Analysis

A. The Post-Earnings-Announcement Drift

Existing studies document that investors tend to underreact to earnings information (e.g., Ball and Brown, 1968; Foster, Olsen, and Shevlin, 1984; and Bernard and Thomas, 1989, 1990).

These studies show that firms reporting positive unexpected earnings on average outperform those reporting negative unexpected earnings up to three quarters after earnings announcement. In this section, we examine stock returns following earnings announcement in our sample period. Following existing literature, each quarter stocks are assigned to deciles based on the SUE breakpoints of the previous quarter. D1 includes firms with the lowest SUE rank and D10 includes firms with the highest SUE rank. The standardized unexpected earnings (SUE) are estimated following the procedure described in Section II.A.

Table III reports the average SUE, average cumulative abnormal returns (CARs) in percentage term for each decile portfolio as well as spreads between the top and bottom deciles (D10-D1) over the two-day announcement window (the day before and the day of earnings announcement) and over different horizons following earnings announcement. Abnormal daily stock return is calculated as the difference between daily stock return and the average daily return of the corresponding size decile portfolio formed at the beginning of each calendar year. The 1-, 5-, 10-, 21-, 42-, and 63-day horizons correspond to 1-day, 1-week, 2-week, 1-month, 2-month, and 1-quarter post-earnings-announcement periods. The table also reports *t*-statistics of the return spreads based on Newey-West (Newey and West, 1987) standard errors that are adjusted for both heteroskedasticity and serial correlation in returns.

The results in Table III show that there is significant market reaction to information content in earnings announcement. The abnormal returns of stocks in the top SUE decile (D10) are significantly higher than those in the bottom SUE decile (D1) during the two-day announcement window as well as the day following earnings announcement. More importantly, the return spreads between the top and bottom deciles are positive and highly significant over all horizons following earnings announcement. The spreads are 2.188%, 2.877%, 3.261%, 4.193%,

4.988%, and 5.453% over 1-, 5-, 10-, 21-, 42-, and 63-day horizons, respectively. The magnitudes of these spreads are comparable to those documented in the existing literature and provide clear evidence of PEAD or market underreaction to earnings surprises during our sample period from January 2001 to December 2013.

B. The Effect of Macroeconomic News Announcement

The main research question of our study is whether macro news helps investors to interpret firm-level news and therefore reduces PEAD. To address this question, each quarter we classify earnings announcements into two subsamples: those with concurrent macro news announcements and those without. An earnings announcement is classified as having concurrent macro news announcement if there is at least one important macro news announcement on the same day of or the day before the earnings announcement. The list of important macroeconomic news announcements can be found in Section II.B. During our sample period, roughly 40% of the days have macroeconomic news announcements, and about two-thirds of earnings announcements are classified as having concurrent macro news announcement. Based on the classification, stocks in each decile of Table III are then divided into two subsamples accordingly. Since the deciles are formed based on SUE breakpoints of the previous quarter, this is equivalent to forming SUE decile portfolios separately within each stock subsample. We are mainly interested in the differences in stock return drift between earnings announcements with concurrent macro news announcements and those without.

As motivated in the introduction, if macroeconomic news helps investors to interpret information content in earnings news, we should expect a weaker drift following earnings announcements with concurrent macro news announcements. This is because, as investors pay

more attention to macroeconomic news, the combination of information in macro news about expected discount rates and information in earnings surprises about cash flows leads to more efficient valuation of stocks. On the other hand, if the announcement of macroeconomic news distracts investor attention to earnings announcements due to limited attention, it may aggravate investor misreaction to earnings surprises. In this case, we may see a stronger drift following earnings announcements with concurrent macro news announcement.

Table IV reports the SUE and CARs (in percentage term) of the top and bottom SUE deciles and the return differentials between the top and bottom deciles as well as their *t*-statistics for earnings announcements with concurrent macro news announcement and those without. The *t*-statistics for the differences are based on the Newey-West standard errors. At the bottom of the table, we also report the differences in SUE spreads and PEAD between the two earnings announcement subsamples. The results show that differences in SUE spreads between these two earnings announcement subsamples are statistically insignificant, suggesting that any differences in subsequent stock return drift are likely due to other effects rather than earnings surprises. In addition, differences in return spreads during the two-day earnings announcement window are statistically insignificant, suggesting that any differences in subsequent stock return drift are likely due to the effect of macro news on investor reaction to earnings announcements rather than investor reaction to the macro news itself, such as higher market returns on macro news announcement days as documented in Savor and Wilson (2013).

Table IV shows that for both earnings announcement subsamples, the spreads (D10-D1) between the top and bottom deciles are positive and highly significant over all horizons. That is, there is a significant drift following earnings announcements regardless whether or not there are concurrent macro news announcements. However, the drift following earnings announcements

with concurrent macro news announcements is significantly weaker. The differences in drifts between two earnings announcement subsamples (*t*-statistic in absolute value) are -0.485% (2.39), -0.739% (3.48), -0.797% (3.16), -1.431% (4.24), -1.407% (4.04), and -2.028% (4.33) over 1-, 5-, 10-, 21-, 42-, and 63-day horizons, respectively. All these differences are highly significant. On average, macroeconomic news reduces the drift by about 20% over immediate short horizons. Furthermore, we note that the reduction of drift for earnings announcements with concurrent macro news is driven by both positive earnings surprises and negative earnings surprises. That is, the effect is not due to abnormal returns associated with macro news announcements but more rational investor reaction to earnings surprises. These results are consistent with the conjecture that macroeconomic news helps investors to interpret earnings news, leading to more efficient pricing of individual stocks.

C. Robustness Checks

In this section, we perform several robustness checks of our main empirical findings in the previous section.

A. Excluding Earnings Announcements on Fridays

By comparing investors' response to earnings announcements on Friday to response on other weekdays, DellaVigna and Pollet (2009) find that there is more drift for earnings announced on Friday. They argue that investors likely pay less attention to announcements on Friday than to announcements on other weekdays. In this section, we examine whether our findings in Table IV are robust to this Friday effect.

To address the issue, we replicate the analysis in Table IV after excluding earnings announced on Fridays. As a result, the sample size, i.e., the number of earnings announcements, is reduced. Since not all Initial Jobless Claims are announced on Thursday during our sample period (see the footnote of Table II), some earnings announcements on Friday are not classified as having concurrent macro news announcement. Thus, the total number of earnings announcements without macro news is also slightly reduced. The results in Table V show that differences between the drift following earnings announcements with macro news announcement and the drift following those without remain negative and statistically significant over all horizons**.** The results confirm that the empirical findings in Table IV are robust to the Friday effect as documented in DellaVigna and Pollet (2009).

B. Excluding Weekly Initial Jobless Claims

Different from other macro news announcements which are announced at either monthly or quarterly frequency, the Initial Jobless Claims are announced weekly on every Thursday at 8:30 am with only a few exceptions (see the footnote of Table II). As a result, earnings announcements on Thursday and Friday (two-fifth of weekdays) are classified as having concurrent macro news announcement. To ensure that our results are not driven by the announcement of this particular macroeconomic news, we replicate the analysis in Table IV by excluding earnings announcements associated with only the announcements of Initial Jobless Claims. As a result, the average number of earnings announcements with concurrent macro news announcement is smaller compared to that in Table IV. Nevertheless, the results in Table VI are very similar to those in Table IV and confirm that the empirical findings in Table IV are robust to excluding weekly announcements of Initial Jobless Claims.

C. Fama-MacBeth Regressions: Controlling for Other Firm Characteristics

In this section, we perform further robustness check of the empirical results documented in Table IV by controlling for the effect of other firm characteristics on stock returns. Specifically, we perform the following event-based Fama-MacBeth (1973) regressions of post-earnings-announcement holding period returns (HPRs) on standardized unexpected earnings (SUEs) and its interaction with a macro news announcement dummy as well as other control variables:

$$\begin{aligned} HPR_{i,[t+1,t+h]} = a + \beta_0 SUE_{i,t} + \beta_1 d^{MAC} SUE_{i,t} + \beta_2 d^{MAC} + \beta_3 \mathrm{LRET}_{[\text{t-1m,t}]} + \beta_4 \mathrm{LRET}_{[\text{t-5m,t-1m}]} \\ + \beta_5 \mathrm{LRET}_{[\text{t-11m,t-6m}]} + \beta_6 \mathrm{SIZE} + \beta_7 \mathrm{BM} + \beta_8 \mathrm{ILLIQ} + \beta_9 \mathrm{IVOL} + \varepsilon_{i,t} \end{aligned} \quad (4)$$

where $HPR_{i,[t+1,t+h]}$ denotes cumulative returns over horizon [t+1, t+h] following earnings announcement for firm i with earnings announcement on day t, and d^{MAC} is a dummy variable which is set to equal to 1 if the earnings announcement has concurrent macro news announcement and 0 otherwise. The main difference of event-based Fama-MacBeth regression with conventional Fama-MacBeth regression is that in this setting, stock returns and lagged variables are defined on event dates instead of calendar dates. Following existing literature, for example, Grinblatt and Moskowitz (2004), we include past returns over different horizons as control variables. *LRET* denotes lagged cumulative stock returns over various horizons. For example, $LRET_{[t-5m,t-1m]}$ is the lagged cumulative stock return over the past 5 months. It is important to control for lagged returns in our analysis as Aboody, Lehavy and Trueman (2010) show that stocks with the highest prior 12-month returns experience significantly negative market-adjusted returns immediately following earnings announcements. In addition to lagged returns, we include lagged SIZE, BM, ILLIQ, and IVOL as control variables. SIZE and BM are

updated annually each June, and ILLIQ and IVOL are updated quarterly. For details on the definitions of these variables, please refer to Section II.A.

Each quarter, we perform the cross-sectional regressions as specified in Eq. (4) over the sample period from January 2001 to December 2013. Since book-to-market ratio is included as a control variable in Eq. (4), we exclude financial firms in the regressions. Table VII reports the average coefficient estimates of the cross-sectional regressions with *t*-statistics based on Newey-West standard errors. The results show that consistent with Aboody, Lehavy and Trueman (2010), cumulative stock returns following earnings announcement generally have a negative relation with lagged returns. The SIZE coefficient is significantly positive over 1- and 5-day horizon, indicating a positive relation between size and post-earnings-announcement stock returns over very short horizons, and significantly negative over longer horizon at 1-month and 1-quarter horizons, which is consistent with findings in the existing literature. Also consistent with the existing literature, the coefficients of BM and ILLIQ are significantly positive over all horizons and the coefficients of IVOL are significantly negative over all horizons. More importantly, the results show that for stock returns over all horizons, the coefficient estimates of the macro news dummy are negative and highly significant. The results further confirm that the empirical findings in Table IV are robust to controlling for other firm characteristics.

D. The Effect of Different Types of News

Existing literature documents that macroeconomic news does not have the same effect on stock returns because the information content varies among different types of news. For instance, Flannery and Protopapadakis (2002) examine the effect of macroeconomic news on stock market returns and market return volatility. They find that six macroeconomic news announcements

(three nominal and three real) are pricing factors. Bernanke and Kuttner (2005) show that the effect of unanticipated monetary policy actions on stock prices is mainly driven by changes of expected excess returns. Boyd, Hu, and Jagannathan (2005) shows that unemployment news contains information on all three primitive pricing factors: the future interest rate, the expected rate of growth of corporate earnings and dividends, and the equity risk premium. They also document that the effect of the changes of unemployment rates on stock prices depends on the stage of the economy. In this section, we study the effect of different types of macroeconomic news on the post-earnings-announcement drift. We classify news in our list into three categories: (1) news related to interest rate expectation or expected discount rate, including FOMC Rate Decision, Consumer Price Index, Initial Jobless Claims, Change in Nonfarm Payrolls, and Unemployment Rate; (2) news related to real activities, including GDP Growth (Annualized), ISM Manufacturing Index, Durable Goods Orders, Consumer Confidence Index, U. of Michigan Consumer Sentiment Index, and Retail Sales; and (3) news related to housing market, including New Home Sales and Housing Starts. We include news on labor market conditions in the same category as FOMC Rate Decision because employment is one of the two main goals (the other is inflation) of the Fed monetary policy and contains information about the future interest rate (Boyd, Hu, and Jagannathan, 2005). Flannery and Protopapadakis (2002) classify housing market news as real economic activities in their analysis but notes that "the market particularly 'watches' the unemployment and housing reports". We place housing news in a separate category since housing market is one of the most observed news announcements during the financial crisis in our sample period.

We perform the following event-based Fama-MacBeth regressions of post-earnings-announcement holding period returns (HPRs) on standardized unexpected earnings (SUEs) and

its interaction with dummies of three different types of macro news announcements as well as other control variables:

$$\begin{aligned} HPR_{i,[t+1,t+h]} = a &+ \beta_0 SUE_{i,t} + \beta_1 d^{DR} SUE_{i,t} + \beta_2 d^{RA} SUE_{i,t} + \beta_3 d^{HM} SUE_{i,t} + \beta_4 d^{MAC} \\ &+ \beta_5 \text{LRET}_{[t\text{-}1m,t]} + \beta_6 \text{LRET}_{[t\text{-}5m,t\text{-}1m]} + \beta_7 \text{LRET}_{[t\text{-}11m,t\text{-}6m]} + \beta_8 \text{SIZE} + \beta_9 \text{BM} \\ &+ \beta_{10} \text{ILLIQ} + \beta_{11} \text{IVOL} + \varepsilon_{i,t} \end{aligned} \quad (5)$$

where $d^{DR} = 1$, $d^{RA} = 1$, and $d^{HM} = 1$ if the earnings announcement has concurrent macro news announcement in the first, the second, or the third category, respectively. All other variables are the same as those in Eq. (4).

Each quarter, we perform the cross-sectional regressions as specified in Eq. (5) over the sample period from January 2001 to December 2013. Table VIII reports the average coefficient estimates of the cross-sectional regressions with *t*-statistics based on Newey-West standard errors. The coefficient estimates of the control variables and their statistical significance are similar to those in Table VII. The results in Table VIII show that over all horizons, the coefficient estimates of the dummy variables for different types of macro news are negative and highly significant. This is evidence that macroeconomic news in all categories has a significant effect on investor reaction to earnings surprises. Judging by the significance level, as measured by the *t*-statistics of the coefficient estimates, news related to discount rate has the strongest effect on investor reaction over very short horizons (from 1-day up to 1-month), followed by news related to real activities, which is further followed by news related to housing market. Nevertheless, the effect of housing market news becomes stronger over relatively longer horizons (from 2-month up to 1-quarter). It seems that while news related to housing market indeed contains important information and is watched by investors during our sample period, it takes a longer time to have an effect on investor reaction to earnings surprises. In comparison, news related to discount rate, such as interest rate expectation (FOMC Rate Decision) and

inflation expectation (Consumer Price Index), has a rather immediate effect on investor reaction to earnings surprises. This finding corroborates with those in Chordia and Shivakumar (2005) and Basu, Markov and Shivakumar (2010) that PEAD is related to investor underestimation of the impact of expected inflation on future earnings change. Yet, our results show that the macroeconomic news effect on PEAD is pervasive and goes beyond inflation related news.

IV. Further Analysis

Our empirical results suggest that the information content in macroeconomic news helps investors to interpret firm-level news and thus reduces misreaction to earnings surprises. In this section, we perform additional analyses to understand exactly what mechanism drives the effect of macroeconomic news announcements. First, we test the implications of category-learning behavior on the allocation of investor attention. Second, we examine whether sophisticated investors, as expected, play a more important role in incorporating the information content of macroeconomic news into asset prices. Finally, we investigate the effect of macroeconomic news on asset prices under market conditions with different levels of uncertainty.

A. Investor Attention to Macroeconomic News and Earnings Announcement

One implication of the category-learning behavior in Peng and Xiong (2006) is that investors generally pay more attention to macro news announcement. In addition, investors tend to allocate relatively less attention to firm-level news on days with macro news announcement than on days without macro news announcement. As such, the significantly weaker underreaction to earnings surprises on days with important macroeconomic news announcement, as documented in the previous section, is more likely due to the information content in

macroeconomic news rather than the increased investor attention to earnings announcement. In this section, we empirically test these implications.

To test the first implication, we examine whether investors in general pay more attention to the overall market on days with macro news announcement than on days with no macro news announcement. We use two variables to measure investor attention, namely excess market trading volume and absolute market returns. As pointed out in the survey by Bamber, Barron, and Stevens (2011), both trading volume and absolute price changes have been used in the literature to measure market responses to informational events. Following existing literature, we define excess trading volume for day *t* as $ETV_t = \ln(TV_t / ATV_{[t-21,t-3]})$ where TV_t is dollar trading volume on day *t* and $ATV_{[t-21,t-3]}$ denotes the average dollar trading volume over [*t-21, t-3*] or the past month. We calculate daily market trading volume as the total dollar volume of all CRSP common stocks. We calculate absolute market daily returns using the CRSP value-weighted and equal-weighted indexes. Tables IX reports the average daily market excess trading volume and average absolute daily market returns during macro news announcement days and no macro news announcement days. For macro news announcement days, the results for each news item are also reported. In addition, the table reports the differences in excess trading volume and absolute returns between macro news announcement days and no macro news announcement days as well as their *t*-statistics.

The results in Table IX show that the difference in excess market trading volume between macro news announcement days and no macro news announcement days is 0.049 and highly significant. For most individual news items, the average excess market daily trading volume on the announcement days is also significantly higher than no macro news announcement days. The only exceptions are Durable Goods Orders and New Home Sales but neither has significantly

lower trading volume than no macro news announcement days. The results in Table IX also show that average absolute daily returns for both CRSP value-weighted and equal-weighted indexes are higher on macro news announcement days than on no macro news announcement days, albeit the differences are statistically insignificant. These findings show that investors pay more attention to the overall market on macro news announcement days than on no macro news announcement days. In particular, the significantly higher trading volume on macro news announcement days is evidence that investors update their valuation of stocks and adjust their portfolio holdings in response to the arrival of macroeconomic news.

To test the second implication, we examine whether investors allocate relatively less attention to earnings announcements on days with macro news announcement than on days with no macro news announcements. Peng and Xiong (006) show that due to limited information processing power, investors have to make conscious decisions in allocating their attention and tend to devote more attention to macro news than firm-level news. In turn, the information content in macro news helps investors to interpret firm-level news and reduce misreaction to earnings surprises. The alternative argument is that as the announcement of macro news draws investor attention to the overall market, it is also possible that investors may pay more attention to earnings announcements on macro news announcement days as well. That is, it is not necessarily the information content of macroeconomic news but possibly the increased investor attention to earnings announcements on macro news announcement days that helps to reduce investor underreaction to earnings surprises.

Again, we use two variables to measure investor attention, namely excess trading volume and absolute stock returns. As we examine trading activities for individual stocks, we use turnover instead of dollar trading volume in our analysis (e.g., Landsman and Maydew, 2002).

Consistent with existing literature on the post-earnings-announcement drift, e.g., Bamber (1987), Ajinkya and Jain (1989), we compute average turnover over the 3-day announcement window [*t-1, t+1*]. Specifically, for a stock with earnings announcement on day *t*, we compute excess turnover as $ETO_t = \ln(TO_t / ATO_{[t-21,t-3]})$ where TO_t is the average daily turnover over the earnings announcement window [*t-1, t+1*] and $ATO_{[t-21,t-3]}$ denotes the average daily turnover over [*t-21, t-3*] or the past month. Note that as showed in Table IX, excess trading volume on days with macro news announcement is higher than on days with no macro news announcements. Since our focus is allocation of attention to firms with earnings announcements relative to other firms, we adjust the macro news announcement effect when comparing trading activities on macro news announcement days with those on no macro news announcement days. Specifically, we first calculate the average daily turnover of all stocks on macro news announcement days and no macro news announcement days, separately, during each quarter. We then use the ratio of these two averages as the adjustment factor for the effect of macro news announcement. As a second measure of investor attention, we calculate the absolute daily returns (|RET|) as the average over the earnings announcement window [*t-1, t+1*] for a stock with earnings announcement on day *t*.

Table X reports the average absolute SUE, average excess turnover, and average absolute daily returns of stocks in each SUE decile on macro news announcement days and no macro news announcement days. The table also reports the averages of these variables for all stocks. The differences in average excess turnover and absolute daily returns between macro news announcement days and no macro news announcement days are reported in the last column. The results show that the average absolute daily returns over the earnings announcement window are significantly lower on macro news announcement days than on no macro news announcement

days. The pattern holds consistently for all SUE deciles. The average excess turnover over the earnings announcement window is also lower on macro news announcement days than on no macro news announcement days, albeit the differences are statistically insignificant. The pattern is also observed for most SUE deciles except the lower SUE deciles (D1, D3 and D4) where the average excess turnover is higher on macro news announcement days than on no macro news announcement days. Nevertheless, none of the difference is statistically significant.

The findings in Tables IX and X support the argument that investors pay more attention to the overall market on macro news announcement days than on no macro news announcement days. In addition, due to limited attention and information processing ability, investors pay relatively less attention to firms with earnings announcements relative to other firms on macro news announcement days than on no macro news announcement days. These findings suggest that it is more likely the information content in macro news rather than the increased investor attention to earnings announcement on macro news announcement days that helps investors to interpret firm-level news and reduce misreaction to earnings surprises.

B. Investor Sophistication and the Effect of Macroeconomic News

The evidence in the previous section indicates that the effect of macro news announcement on investor reaction to earnings news is likely due to the information content in macro news. In this section we further examine whether the effect is stronger for firms with more sophisticated investor base. If macro news helps to interpret firm-level news, it is reasonable to assume that this effect is stronger for firms with more sophisticated investor base. This is because sophisticated investors, such as institutional investors, have more resources to allocate attention to macro news announcement. It is also safe to assume that sophisticated investors have

better understanding about discounting future cash flows when evaluating stocks. As such, we expect the effect of macro news announcement on investor reaction to be stronger for firms with more sophisticated investor base.

To test the hypothesis, we use institutional ownership (IO) as a direct proxy for the level of sophistication of a firm's shareholders. Each quarter, we divide stocks into three subsamples based on institutional ownership. We focus on the subsample of stocks above the 60th percentile (top 40%) and the one below the 40th percentile (bottom 40%) of institutional ownership. The first subsample is considered as have a more sophisticated investor base than the second subsample. For both stock subsamples, we replicate the analysis in Table IV.

Table XI reports the results for the top 40% IO firms (Panel A) and the bottom 40% IO firms (Panel B). Both panels report the differences in the drift following earnings announcements with concurrent macro news and the drift following those without. Since the post-earnings-announcement drift is stronger with higher magnitude for the subsample of stocks with low institutional ownership than for the subsample of stocks with high institutional ownership, for comparison purpose we also report relative reductions in the drift due to the effect of macro news. The results in Table XI show that while there is a reduction in PEAD due to macro news effect for both the top 40% and bottom 40% IO firms, the effect is more pronounced for the top 40% IO firms based on the relative reduction and statistical significance. The results in Panel A show that for the top 40% IO firms, the differences in drift between earnings announcements with concurrent macro news announcements and those without are significantly negative over all horizons. The relative reduction in the drift due to the effect of macro news is about 24% over short horizons. In comparison, the results in Panel B show that for the bottom 40% IO firms, while the differences in drift between earnings announcements with concurrent macro news

announcements and those without are negative over all horizons, they are mostly insignificant. Compared to the sample of top 40% IO firms, the relative reductions in the drift due to the effect of macro news are also much lower at about 16% over short horizons. This is evidence that the effect of macro news on PEAD is stronger for firms with higher institutional ownership.

The evidence in Table XI supports our conjecture that the effect of macro news on PEAD is stronger for firms with more sophisticated investor base. Although both sophisticated and inexperienced investors may exhibit category-learning behavior due to attention constraint and, as such, pay more attention to macro news announcement, it is likely that sophisticated investors have a better understanding of the information content conveyed in macro news when evaluating stocks. This further supports the conjecture that the weaker post-earnings-announcement drift on macro news announcement days is likely due to the information content in macro news.

C. Information Uncertainty and the Effect of Macroeconomic News

Existing literature documents that investors exhibit stronger behavioral biases when they make decisions under high information uncertainty environment, see, e.g., Hirshleifer (2001) and Daniel, Hirshleifer, and Subrahmanyam (1998, 2001). Using several different proxies for information uncertainty, Jiang, Lee, and Zhang (2005) show that earnings momentum effects are much stronger among firms with high information uncertainty. Zhang (2006) tests the impact of information uncertainty on investor underreaction to news and finds that underreaction is stronger for firms with greater information uncertainty. Similarly, Francis, Lafond, Olsson, and Schipper (2007) find evidence that investors have more muted initial reactions to unexpected earnings signals of greater information uncertainty. Kumar (2009) provides further evidence that individual investors make larger investment mistakes and exhibit stronger behavioral biases

when stocks are more difficult to value, and such effect is amplified if the market-level uncertainty is higher. The direct implication of these arguments on our study is that under market condition with high information uncertainty, we should expect macro news to have a weaker effect on investor reaction to firm-level news. The information content in macro news may take longer time to be incorporated into stock prices. On the other hand, under market condition with low information uncertainty, we should expect macro news to have an immediate and more pronounced effect on investor reaction to firm-level news. In this section, we examine the effect of macroeconomic news announcements on investor reaction to earnings surprises under different market conditions.

We follow Ang, Hodrick, Xing and Zhang (2006) and Kumar (2009) and use VIX (the Chicago Board Options Exchange volatility index) as a measure of market-level uncertainty. We separate our sample period into two subperiods: high VIX period and low VIX period. High VIX period includes quarters with average daily VIX in the top 40 percentile of all quarters in our sample period and low VIX period includes quarters with average daily VIX in the bottom 40 percentile. We replicate the analysis in Table IV for each subperiod. The results are reported in Table XII. The results in Panel A show that during low VIX quarters, differences in the drift between earnings announcements with concurrent macro news announcements and those without are significantly negative over all horizons. In particular, the differences (absolute value of *t*-statistics) are -0.786% (2.96), -0.1.098% (2.63), -0.1.346 % (3.32), -1.884% (4.36), -1.785% (5.97), and -2.21% (4.37) over 1-, 5-, 10-, 21-, 42-, and 63-day horizons, respectively. The relative reduction in the drift due to the effect of macro news is about 30% over short horizons. In contrast, results in Panel B show that during high VIX quarters, while differences in the drift between earnings announcements with concurrent macro news announcements and those without

are significant over longer horizons of 21-, 42-, and 63-day following earnings announcement, they are insignificant over short horizons of 1-, 5-, and 10-day following earnings announcement. The differences (absolute value of *t*-statistics) over those longer horizons are, respectively, -1.322% (2.59), -1.538% (2.29), and -2.314% (2.50). Compared to low VIX quarters, the relative reductions in the drift due to the effect of macro news are much lower at about 16% over short horizons.

The contrast between Panel A and Panel B shows that information in macro news has an immediate and more pronounced effect on investor reaction to earnings surprises during low VIX quarters, whereas information in macro news takes longer time to have a significant effect on investor reaction to earnings surprises during high VIX quarters. That is, under market condition with low information uncertainty, investors are able to quickly digest the information content of macroeconomic news and as such there is an immediate and pronounced effect on market reaction to earnings surprises. On the other hand, under market conditions with high information uncertainty, the information content in macro news takes longer time to be impounded into asset prices.

V. Conclusion

In this paper, we examine the allocation of investors' attention, a limited cognitive resource, to macro news versus firm-level news and the effect of macro news on investor reaction to firm-level news, i.e., earnings announcement. We show that investors generally pay more attention to the overall market on days with important macroeconomic news announcements but, due to limited attention capacity and information processing power, allocate relatively less attention to earnings announcements on those days. The evidence is consistent

with predictions of category-learning behavior in Peng and Xiong (2006). In turn, the information content in macroeconomic news helps investors to interpret firm-level news and thus reduce underreaction to earnings surprises. Our results show that the drift following earnings announcements with concurrent important macroeconomic news announcements is significantly weaker than the drift following earnings announcements with no concurrent important macroeconomic news announcements. In addition, we show that the effect of macroeconomic news announcement is stronger for firms with more sophisticated investor base. That is, sophisticated investors have better understanding of the information content in macroeconomic news and the implications on stock valuation. Finally, our results show that under market conditions with less uncertainty, macroeconomic news has an immediate and more pronounced effect on investor reactions to earnings surprises.

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Table I: Summary Statistics of SUE and Firm Characteristics

This table reports cross-sectional summary statistics of the standardized earnings surprise (SUE) and firm characteristics for selected years in our sample period. Firm characteristics include: the natural log of market capitalization (SIZE), the natural log of book-to-market ratio (BM), momentum (MOM), the Amihud (2002) illiquidity ratio, pre-multiplied by 1,000,000, (ILLIQ), and idiosyncratic volatility (IVOL). The summary statistics are reported in the end of June for selected years in our sample period from January 2001 to December 2013.

Year	Variable	5%	25%	Mean	Median	75%	95%	StDev
2001.6	SUE	-2.13	-0.61	-0.18	-0.08	0.31	1.44	1.04
	SIZE	8.68	10.38	12.01	11.92	13.51	15.77	2.18
	BM	-2.45	-1.18	-0.47	-0.44	0.28	1.39	1.16
	MOM	-0.83	-0.42	0.01	-0.03	0.30	0.97	0.65
	ILLIQ	0.00	0.01	5.48	0.12	1.42	24.79	28.37
	IVOL	1.19	2.23	4.67	3.72	6.03	11.40	3.60
2005.6	SUE	-1.47	-0.38	-0.04	-0.01	0.33	1.34	0.87
	SIZE	9.68	11.39	12.79	12.73	14.08	16.25	1.97
	BM	-2.32	-1.38	-0.94	-0.87	-0.42	0.22	0.84
	MOM	-0.57	-0.21	0.04	0.01	0.21	0.72	0.44
	ILLIQ	0.00	0.00	1.54	0.02	0.23	4.90	11.04
	IVOL	0.83	1.42	2.62	2.10	3.16	6.00	2.10
2009.6	SUE	-2.30	-0.65	-0.17	-0.04	0.41	1.49	1.12
	SIZE	9.24	11.01	12.54	12.52	13.96	16.15	2.09
	BM	-1.81	-0.78	-0.16	-0.16	0.43	1.52	1.04
	MOM	-0.83	-0.60	-0.38	-0.40	-0.20	0.12	0.32
	ILLIQ	0.00	0.00	18.87	0.04	0.71	55.80	183.31
	IVOL	1.49	2.48	4.86	3.69	5.86	11.75	4.20
2013.6	SUE	-1.49	-0.35	-0.03	-0.01	0.32	1.29	0.83
	SIZE	9.80	11.89	13.32	13.36	14.75	16.78	2.10
	BM	-2.28	-1.17	-0.65	-0.58	-0.06	0.77	0.96
	MOM	-0.40	0.00	0.26	0.21	0.42	1.05	0.63
	ILLIQ	0.00	0.00	7.40	0.01	0.09	11.38	102.76
	IVOL	0.59	1.01	2.17	1.57	2.56	5.55	2.20

Table II: The List of Macroeconomic News Announcements

This table reports the list of macroeconomic news announcements included in our analysis. *N* denotes the total number of announcements during the period from January 2001 to December 2013. Day denotes the day of week or month and Time denotes the time of the pre-scheduled announcements. $N_{SUR=0}$ denotes the number of announcements with no announcement surprise.

News Type/News Event	N	Day	Time	$N_{SUR=0}$
Initial Jobless Claims	678	Thursday*	8:30	13
Change in Nonfarm Payrolls	156	1st Friday of the month	8:30	0
FOMC Rate Decision	104	6-8 scheduled regularmeetings per year	12:30/14:15	99
GDP Growth (Annualized)	156	Around 27th of the Jan, April, July, Oct for GDP Advance**	8:30	24
Consumer Confidence Index	154	Around 25th of the month	10:00	0
ISM Manufacturing Index	155	1st business day of the month	10:00	4
Consumer Price Index	156	Around 16th of the month	8:30	48
U. of Michigan Consumer Sentiment Index	312	2nd and 4th Friday (revised) of the month	10:00	2
Durable Goods Orders	156	Around 26th of the month	8:30	4
New Home Sales	156	17th workday of the month (around 25th/26th)	10:00	3
Housing Starts	156	2 or 3 weeks after the reporting month	8:30	2
Unemployment Rate	156	1st Friday of the month	8:30	43
Retail Sales	156	Around 12th of the month	8:30	16

*During our sample period, out of 678 Initial Jobless Claims were announcements, 22 occurred on Wednesday and 1 on Friday.

**The dates are around 28th of March, June, Sep, Dec for GDP Final and around 29th of Feb, May, Aug, Nov for GDP Preliminary.

Table III: Post-Earnings-Announcement Abnormal Stock Returns

This table reports average post-earnings-announcement abnormal stock returns (in percentage term) of all SUE decile portfolios over different horizons. Each quarter, stocks are assigned to deciles using the SUE breakpoints of the previous quarter. D1 includes firms with the lowest SUE rank and D10 includes firms with the highest SUE rank. The average return differentials between the top and bottom deciles, as well as their *t*-statistics, are also reported. *N* is the average number of stocks in each decile. All common stocks (SHRCD=10 or 11) that have earnings announcements in Compustat database are included and the sample period is from January 2001 to December 2013.

SUE Decile	Horizons								
	N	SUE	[-1,0]	[1, 1]	[1, 5]	[1, 10]	[1, 21]	[1, 42]	[1, 63]
D1	443	-2.026	-0.905	-1.265	-1.672	-1.781	-2.335	-2.925	-3.410
D2	428	-0.893	-0.607	-0.940	-1.213	-1.346	-1.655	-2.007	-2.561
D3	435	-0.488	-0.437	-0.776	-1.114	-1.212	-1.203	-1.568	-2.221
D4	431	-0.252	-0.210	-0.496	-0.712	-0.740	-0.877	-1.173	-1.598
D5	436	-0.086	0.050	-0.327	-0.519	-0.519	-0.447	-0.562	-0.850
D6	431	0.053	0.414	0.058	-0.039	-0.016	0.063	-0.016	-0.206
D7	429	0.214	0.715	0.294	0.339	0.442	0.631	0.680	0.507
D8	432	0.445	0.923	0.514	0.621	0.765	0.926	0.904	0.901
D9	430	0.837	1.151	0.708	0.890	0.995	1.114	1.066	0.835
D10	441	1.869	1.473	0.923	1.205	1.480	1.858	2.062	2.043
D10 –D1		3.895	2.378	2.188	2.877	3.261	4.193	4.988	5.453
t-Stat		[27.9]	[15.57]	[10.51]	[10.09]	[9.69]	[11.67]	[13.73]	[16.03]

Table IV: The Effect of Macroeconomic News Announcement

Each quarter, we classify earnings announcements into two subsamples: those with concurrent macro news announcements and those without. Earnings announcements are classified as having concurrent macro news announcements if there is at least one important macro news announcement on the same day of or the day before earnings announcement. Stocks in each decile of Table III are then divided into two subsamples accordingly. This table reports average returns (in percentage term) of the top and bottom deciles and average return differentials between the top and bottom deciles as well as their *t*-statistics for earnings announcements with macro news and those without. The differences in decile 1 (D1), decile 10 (D10), and return differential (D10-D1) between two subsamples are also reported. *N* is the average number of stocks in each decile. The sample period is from January 2001 to December 2013.

SUE Decile	Holding Period Return								
	N	SUE	[-1,0]	[1, 1]	[1, 5]	[1, 10]	[1, 21]	[1, 42]	[1, 63]
Earnings Announcements with No Macro News									
D1	133	-2.026	-0.851	-1.529	-1.931	-2.095	-2.751	-3.229	-3.941
D10	131	1.867	1.530	0.985	1.455	1.717	2.456	2.722	2.968
D10 –D1		3.892	2.381	2.515	3.387	3.812	5.206	5.951	6.909
t -Stat		[28.7]	[10.69]	[15.36]	[13.55]	[11.27]	[16.86]	[18.57]	[19.18]
Earnings Announcements with Macro News									
D1	310	-2.025	-0.942	-1.140	-1.551	-1.654	-2.191	-2.781	-3.180
D10	310	1.870	1.437	0.890	1.097	1.361	1.585	1.763	1.648
D10 –D1		3.896	2.379	2.030	2.647	3.015	3.776	4.545	4.828
t -Stat		[27.51]	[16.67]	[8.32]	[8.38]	[8.13]	[9.24]	[10.95]	[12.07]
Macro News - No Macro News									
Δ(D10–D1)		0.003	-0.002	-0.485	-0.739	-0.797	-1.431	-1.407	-2.082
t -Stat		[0.23]	[0.02]	[2.39]	[3.48]	[3.16]	[4.24]	[4.04]	[4.33]
Relative Reduction				-19.28%	-21.83%	-20.92%	-27.48%	-23.64%	-30.13%
ΔD1		0.000	-0.090	0.389	0.381	0.441	0.559	0.448	0.761
t -Stat		[0.01]	[1.27]	[5.94]	[3.87]	[3.55]	[3.06]	[2.74]	[4.34]
ΔD10		0.003	-0.092	-0.096	-0.359	-0.356	-0.871	-0.959	-1.320
t -Stat		[0.37]	[0.76]	[0.58]	[2.11]	[2.16]	[3.37]	[2.81]	[2.94]

Table V: Robustness Check: Excluding Fridays.

We replicate the analysis in Table IV by excluding earnings announcements on Fridays. This table reports average returns (in percentage term) of the top and bottom deciles and average return differentials between the top and bottom deciles as well as their *t*-statistics for earnings announcements with macro news and those without. The differences in average return differentials between two subsamples are also reported. *N* is the average number of stocks in each decile. The sample period is from January 2001 to December 2013.

SUE Decile	Horizons								
	N	SUE	[-1,0]	[1, 1]	[1, 5]	[1, 10]	[1, 21]	[1, 42]	[1, 63]
Earnings Announcements with No Macro News									
D1	133	-2.025	-0.847	-1.530	-1.931	-2.092	-2.749	-3.228	-3.949
D10	131	1.867	1.525	0.982	1.458	1.715	2.454	2.716	2.956
D10 –D1		3.893	2.372	2.512	3.389	3.807	5.202	5.944	6.905
t -Stat		[28.69]	[10.59]	[15.27]	[13.44]	[11.34]	[16.92]	[18.42]	[19.1]
Earnings Announcements with Macro News									
D1	264	-2.017	-0.826	-1.197	-1.620	-1.656	-2.077	-2.519	-2.953
D10	269	1.867	1.404	0.969	1.239	1.561	1.810	2.047	1.939
D10 –D1		3.884	2.230	2.165	2.858	3.216	3.887	4.566	4.891
t -Stat		[27.75]	[15.99]	[7.68]	[8.27]	[8.35]	[9.44]	[11.32]	[12.58]
Macro News - No Macro News									
Δ(D10-D1)		-0.009	-0.142	-0.347	-0.531	-0.591	-1.315	-1.378	-2.014
t -Stat		[0.72]	[1.20]	[1.93]	[2.49]	[2.33]	[3.84]	[3.94]	[4.16]

Table VI: Robustness Check: Excluding Weekly Announcements of Initial Jobless Claims

We replicate the analysis in Table IV by excluding earnings announcements only associated with the weekly announcements of Initial Jobless Claims. This table reports average returns (in percentage term) of the top and bottom deciles and average return differentials between the top and bottom deciles as well as their *t*-statistics for earnings announcements with macro news and those without. The differences in average return differentials between two subsamples are also reported. *N* is the average number of stocks in each decile. The sample period is from January 2001 to December 2013.

SUE Decile	Horizons								
	N	SUE	[-1,0]	[1, 1]	[1, 5]	[1, 10]	[1, 21]	[1, 42]	[1, 63]
Earnings Announcements with No Macro News									
D1	133	-2.026	-0.851	-1.529	-1.931	-2.095	-2.751	-3.229	-3.941
D10	131	1.867	1.530	0.985	1.455	1.717	2.456	2.722	2.968
D10 –D1		3.892	2.381	2.515	3.387	3.812	5.206	5.951	6.909
t -Stat		[28.70]	[10.69]	[15.36]	[13.55]	[11.27]	[16.86]	[18.57]	[19.18]
Earnings Announcements with Macro News									
D1	254	-2.027	-0.980	-1.150	-1.605	-1.695	-2.287	-2.916	-3.382
D10	252	1.873	1.508	0.828	1.028	1.295	1.482	1.599	1.550
D10 –D1		3.900	2.489	1.978	2.633	2.990	3.769	4.515	4.932
t -Stat		[27.24]	[16.70]	[9.28]	[9.50]	[9.35]	[10.00]	[10.17]	[11.52]
Macro News - No Macro News									
Δ(D10-D1)		0.007	0.108	-0.537	-0.754	-0.822	-1.438	-1.436	-1.977
t -Stat		[0.52]	[0.80]	[2.90]	[3.70]	[4.15]	[4.16]	[4.13]	[4.47]

Table VII: Fama-MacBech Regressions

Each quarter, we perform cross-sectional regressions of post-earnings-announcement holding period returns (HPRs) on standardized unexpected earnings (SUEs) and its interaction with a macro news dummy as well as various control variables. The dummy variable is defined as $d^{MAC} = 1$ if the earnings announcement has concurrent macro news and 0 otherwise. Control variables include lagged returns (LRET), the natural log of market capitalization (SIZE), the natural log of book-to-market ratio (BM), the Amihud (2002) illiquidity ratio, pre-multiplied by 1,000,000, (ILLIQ), and idiosyncratic volatility (IVOL). All firm characteristics are lagged by at least one quarter. Financial firms are excluded in the regressions. This table reports the average of the coefficient estimates of quarterly regressions as well as the absolute values of their Newey-West *t*-statistics. The sample period is from January 2001 to December 2013.

	Horizons					
	[1, 1]	[1, 5]	[1, 10]	[1, 21]	[1, 42]	[1, 63]
SUE	0.850	1.110	1.288	1.721	1.927	2.199
	[16.99]	[15.21]	[15.31]	[15.79]	[16.29]	[16.58]
d^{MAC} *SUE	-0.135	-0.160	-0.253	-0.439	-0.412	-0.600
	[2.66]	[2.93]	[3.09]	[3.69]	[3.26]	[3.46]
d^{MAC}	0.288	0.332	0.366	0.276	0.105	0.154
	[2.68]	[1.47]	[2.08]	[1.23]	[0.46]	[1.04]
$LRET_{[t-1m,t]}$	-0.458	-1.755	-2.777	-4.758	-5.797	-5.785
	[1.95]	[3.56]	[4.15]	[4.80]	[6.50]	[5.49]
$LRET_{[t-5m,t-1m]}$	0.122	-0.365	-0.847	-1.359	-1.417	-1.551
	[1.18]	[1.78]	[2.42]	[1.67]	[2.57]	[1.52]
$LRET_{[t-11m,t-6m]}$	-0.101	-0.300	-0.577	-0.937	-1.183	-1.626
	[1.41]	[2.20]	[2.32]	[2.06]	[2.61]	[2.90]
SIZE	0.041	0.079	0.026	-0.042	-0.297	-0.362
	[2.44]	[2.15]	[0.45]	[0.59]	[2.20]	[1.89]
BM	0.069	0.182	0.193	0.348	0.421	0.675
	[2.27]	[2.83]	[2.01]	[2.30]	[2.06]	[2.86]
ILLIQ	0.015	0.025	0.025	0.021	0.021	0.059
	[3.73]	[2.46]	[2.69]	[2.40]	[2.35]	[2.43]
IVOL	-0.164	-0.252	-0.266	-0.160	-0.244	-0.349
	[7.83]	[5.92]	[4.11]	[1.98]	[2.92]	[3.75]
Intercept	-0.347	-0.579	0.184	1.468	6.335	8.047
	[1.40]	[0.99]	[0.20]	[1.20]	[2.86]	[2.69]
Adj-R^2	1.95%	2.60%	2.86%	3.59%	4.15%	4.01%

Table VIII: The Effect of Different Types of News

Each quarter, we perform cross-sectional regressions of post-earnings-announcement holding period returns (HPRs) on standardized unexpected earnings (SUEs) and its interaction with three macro news dummies as well as other control variables. The control variables are the same as those in Table VII All firm characteristics are lagged by at least one quarter. Dummy variables are defined as $d^{DR}=1$ ($d^{RA}=1$ or $d^{HM}=1$) if the earnings announcement has concurrent macro news type related to "discount rate" ("real activities" or "housing market") and 0 otherwise. This table reports the average of the coefficient estimates of quarterly regressions as well as the absolute values of their Newey-West *t*-statistics. The sample period is from January 2001 to December 2013.

	Horizons					
	[1, 1]	[1, 5]	[1, 10]	[1, 21]	[1, 42]	[1, 63]
SUE	0.848	1.110	1.290	1.717	1.920	2.193
	[17.33]	[15.41]	[15.62]	[16.13]	[16.22]	[16.57]
d^{DR} *SUE	-0.166	-0.247	-0.363	-0.513	-0.461	-0.593
	[3.20]	[4.20]	[4.34]	[5.18]	[3.96]	[4.06]
d^{RA} *SUE	-0.165	-0.153	-0.238	-0.435	-0.451	-0.602
	[3.22]	[2.37]	[2.43]	[4.10]	[3.07]	[3.83]
d^{HM} *SUE	-0.182	-0.239	-0.398	-0.680	-0.672	-0.915
	[2.73]	[2.40]	[2.83]	[5.01]	[4.26]	[8.32]
d^{MAC}	0.306	0.379	0.423	0.255	0.052	0.113
	[2.70]	[1.65]	[2.29]	[1.13]	[0.22]	[0.81]
$LRET_{[t-1m,t]}$	-0.390	-1.708	-2.658	-4.581	-5.504	-5.498
	[1.55]	[3.50]	[3.91]	[3.30]	[4.81]	[5.90]
$LRET_{[t-5m,t-1m]}$	0.151	-0.401	-0.912	-1.283	-1.318	-1.395
	[1.38]	[1.83]	[2.66]	[1.64]	[2.63]	[1.57]
$LRET_{[t-11m,t-6m]}$	-0.117	-0.368	-0.691	-1.063	-1.246	-1.649
	[1.79]	[2.33]	[2.43]	[1.88]	[2.93]	[3.31]
SIZE	0.032	0.064	0.013	-0.046	-0.323	-0.365
	[1.76]	[1.65]	[0.23]	[0.52]	[2.50]	[2.23]
BM	0.035	0.160	0.156	0.287	0.334	0.544
	[2.11]	[2.36]	[2.15]	[2.17]	[2.16]	[2.46]
ILLIQ	0.015	0.025	0.025	0.024	0.020	0.059
	[3.54]	[2.36]	[2.62]	[2.66]	[2.57]	[2.75]
IVOL	-0.160	-0.246	-0.249	-0.151	-0.257	-0.373
	[6.60]	[5.34]	[3.66]	[2.13]	[2.90]	[3.78]
Intercept	-0.277	-0.450	0.236	1.418	6.633	8.045
	[1.06]	[0.76]	[0.26]	[1.20]	[3.13]	[2.75]
Adj-R^2	1.98%	2.67%	2.93%	3.69%	4.29%	4.12%

Table IX: Investor Attention to the Overall Market: Macro Days vs. No Macro Days

This table reports average excess daily market trading volume (ETV) based on the CRSP stock sample and absolute daily returns (|RET|) of CRSP VW and EW indexes on macro news announcement days and no macro news announcement days. For macro news announcement days, we also report the results for each news item. Excess trading volume for day *t* is defined as $ETV_t = \ln(TV_t / ATV_{[t-21,t-3]})$ where TV_t is dollar trading volume on day *t* and $ATV_{[t-21,t-3]}$ denotes the average dollar trading volume over [t-21, t-3] or the past month. The table also reports the differences (Diff) in excess trading volume and absolute returns between macro news announcement days and no macro news announcement days as well as their *t*-statistics. The sample period is from January 2001 to December 2013.

Sample Days/News Item	CRSP Trading Volume		CRSP VW Index		CRSP EW Index	
	ETV	Diff [*t*-Stat]	|RET|	Diff [*t*-Stat]	|RET|	Diff [*t*-Stat]
Macro News Announcement Days	0.011	0.049 [8.53]	0.882	0.022 [0.84]	0.790	0.011 [0.49]
Initial Jobless Claims	0.023	0.061 [11.25]	0.893	0.032 [0.88]	0.810	0.031 [1.01]
Change in Nonfarm Payrolls	0.006	0.045 [3.28]	0.933	0.073 [0.98]	0.802	0.023 [0.36]
FOMC Rate Decision	0.100	0.139 [8.68]	1.000	0.139 [1.74]	0.878	0.100 [1.39]
GDP Growth (Annualized)	0.020	0.058 [4.25]	0.812	-0.048 [0.80]	0.762	-0.017 [0.31]
Consumer Confidence Index	-0.024	0.015 [1.18]	0.867	0.006 [0.11]	0.717	-0.062 [1.39]
ISM Manufacturing Index	0.025	0.064 [3.81]	1.096	0.236 [3.75]	0.974	0.195 [3.34]
Consumer Price Index	0.059	0.097 [7.38]	0.875	0.015 [0.22]	0.792	0.013 [0.24]
U. of Michigan Consumer Sentiment Index	-0.019	0.019 [2.08]	0.761	-0.100 [1.98]	0.702	-0.077 [1.83]
Durable Goods Orders	-0.049	-0.011 [0.50]	0.816	-0.044 [0.77]	0.728	-0.051 [1.12]
New Home Sales	-0.055	-0.016 [1.09]	0.766	-0.094 [1.88]	0.691	-0.088 [1.98]
Housing Starts	0.055	0.093 [5.77]	0.973	0.112 [1.91]	0.871	0.092 [1.94]
Unemployment Rate	0.006	0.045 [3.28]	0.933	0.073 [0.98]	0.802	0.023 [0.36]
Retail Sales	-0.010	0.028 [2.44]	0.840	-0.020 [0.29]	0.772	-0.007 [0.11]
No Macro News Announcement Days	-0.038		0.861		0.779	

Table X: Allocation of Investor Attention to Earnings Announcement: Macro News vs. No Macro News

The table reports average absolute SUE, excess daily turnover, and absolute daily returns for stocks in each SUE decile. The results are reported separately for earnings announcements with macro news and those without. Excess daily turnover for earnings announcement on day *t* is defined as $ETO_t = \ln(TO_t / ATO_{[t-21,t-3]})$ where TO_t is the average daily turnover of the stock over the earnings announcement window [-1, 1] and $ATO_{[t-21,t-3]}$ denotes the average daily turnover of the stock over [t-21, t-3] or the past month. Excess turnover on macro news announcement days are adjusted for the effect of macro news announcement. Absolute return (|RET|) for earnings announcement on day *t* is calculated as the average of absolute returns over the earnings announcement window [-1, 1]. The table also reports the differences in ETO and |RET| between earnings announcements with macro news and those without for the whole stock sample and each SUE decile as well as their Newey-West *t*-statistics. The sample period is from January 2001 to December 2013.

SUE Decile	Macro News			No Macro News			Macro - No Macro	
	|SUE|	ETO	|RET|	|SUE|	ETO	|RET|	ΔETO [*t*-Stat]	Δ|RET| [*t*-Stat]
D1	2.019	0.380	3.435	2.021	0.362	3.546	0.019 [1.20]	-0.111 [1.61]
D2	0.891	0.361	3.240	0.890	0.371	3.277	-0.010 [1.11]	-0.037 [0.85]
D3	0.488	0.368	3.335	0.487	0.357	3.337	0.011 [1.25]	-0.002 [0.03]
D4	0.252	0.350	3.289	0.253	0.349	3.395	0.002 [0.16]	-0.107 [2.20]
D5	0.105	0.361	3.302	0.105	0.370	3.433	-0.008 [0.92]	-0.131 [2.28]
D6	0.086	0.368	3.251	0.087	0.389	3.396	-0.022 [1.61]	-0.145 [2.91]
D7	0.217	0.385	3.361	0.216	0.399	3.414	-0.015 [1.09]	-0.053 [0.74]
D8	0.446	0.398	3.327	0.448	0.400	3.389	-0.002 [0.18]	-0.062 [1.30]
D9	0.838	0.408	3.380	0.838	0.441	3.461	-0.033 [2.85]	-0.081 [1.48]
D10	1.869	0.448	3.639	1.867	0.484	3.740	-0.035 [2.64]	-0.101 [1.51]
Average	0.721	0.383	3.356	0.722	0.392	3.439	-0.009 [1.69]	-0.083 [2.56]

Table XI: The Effect of Investor Sophistication: Evidence Based on Institutional Ownership

Each quarter, stocks are first sorted into three subsamples based on their institutional ownership (IO) in the previous quarter: one subsample containing stocks above the 60th IO percentile (top 40%), one subsample containing stocks below the 40th IO percentile (bottom 40%), and a third subsample containing other stocks. We replicate the analysis in Table IV for stocks in the top 40% IO subsample (Panel A) and those in the bottom 40% IO subsample (Panel B). Each panel reports average returns (in percentage term) of the top and bottom deciles and average return differentials between the top and bottom deciles as well as their Newey-West *t*-statistics for earnings announcements with macro news and those without. The differences in average return differentials between the two earnings announcement subsamples and the relative reduction of the drift due to the effect of macroeconomic news are also reported. *N* is the average number of stocks in each decile. The sample period is from January 2001 to December 2013.

Panel A: Institutional Ownership - Top 40%

SUE Decile	Horizons								
	N	SUE	[-1,0]	[1, 1]	[1, 5]	[1, 10]	[1, 21]	[1, 42]	[1, 63]
Earnings Announcements with No Macro News									
D1	47	-2.051	-0.516	-1.387	-1.561	-1.509	-1.551	-1.904	-1.993
D10	44	1.873	1.090	0.931	1.362	1.686	2.084	1.980	2.092
D10 –D1		3.924	1.606	2.319	2.923	3.195	3.635	3.884	4.085
t -Stat		[31.56]	[15.11]	[8.03]	[7.08]	[4.52]	[5.24]	[7.19]	[6.59]
Earnings Announcements with Macro News									
D1	115	-2.031	-0.829	-0.868	-1.111	-1.002	-1.163	-1.056	-1.177
D10	111	1.866	0.951	0.805	1.187	1.494	1.642	1.780	1.638
D10 –D1		3.897	1.780	1.673	2.298	2.496	2.805	2.837	2.815
t -Stat		[29.46]	[12.10]	[6.84]	[6.94]	[7.60]	[7.62]	[5.15]	[5.12]
Macro News - No Macro News									
Difference		-0.027	0.174	-0.646	-0.624	-0.699	-0.830	-1.047	-1.270
t -Stat		[1.36]	[1.09]	[2.25]	[3.49]	[2.00]	[2.60]	[3.49]	[3.31]
Relative Reduction				-27.84%	-21.36%	-21.88%	-22.83%	-26.97%	-31.08%

Panel B: Institutional Ownership - Bottom 40%

SUE Decile			Horizons						
	N	SUE	[-1,0]	[1, 1]	[1, 5]	[1, 10]	[1, 21]	[1, 42]	[1, 63]
Earnings Announcements with No Macro News									
D1	41	-2.025	-1.449	-1.908	-2.539	-2.966	-4.417	-5.469	-7.454
D10	42	1.860	2.298	1.292	1.924	2.385	3.167	3.990	4.058
D10 –D1		3.884	3.747	3.200	4.463	5.351	7.583	9.459	11.512
t -Stat		[26.3]	[6.97]	[12.40]	[10.39]	[8.60]	[12.84]	[11.24]	[10.82]
Earnings Announcements with Macro News									
D1	90	-2.029	-1.142	-1.723	-2.561	-3.004	-4.449	-5.994	-7.236
D10	93	1.872	2.090	1.028	1.172	1.441	1.641	1.676	1.537
D10 –D1		3.901	3.233	2.751	3.733	4.445	6.091	7.669	8.773
t -Stat		[24.57]	[10.35]	[11.64]	[10.75]	[11.40]	[11.94]	[7.61]	[8.31]
Macro News - No Macro News									
Δ(D10-D1)		0.016	-0.515	-0.449	-0.730	-0.906	-1.493	-1.790	-2.739
t -Stat		[0.70]	[1.38]	[1.06]	[1.08]	[1.09]	[2.05]	[1.59]	[1.85]
Relative Reduction				-14.02%	-16.35%	-16.93%	-19.69%	-18.92%	-23.80%

Table XII: Information Uncertainty and the Effect of Macroeconomic News Announcements

We divide our sample period into two subsample periods: quarters with low average VIX (below the 40th percentile) and quarters with high average VIX (above the 60th percentile). We replicate the analysis in Table IV for the low VIX quarters (Panel A) and high VIX quarters (Panel B). Each panel reports average returns (in percentage term) of the top and bottom deciles and the average return differentials between top and bottom deciles as well as their Newey-West *t*-statistics for earnings announcements with macro news and those without. The differences in average return differentials between the two earnings announcement subsamples are also reported. *N* is the average number of stocks in each decile. The sample period is from January 2001 to December 2013.

Panel A: Low VIX Quarters

SUE Decile	Horizons								
	N	SUE	[-1,0]	[1, 1]	[1, 5]	[1, 10]	[1, 21]	[1, 42]	[1, 63]
Earnings Announcements with No Macro News									
D1	132	-1.829	-0.760	-1.459	-1.883	-2.043	-2.208	-2.674	-2.970
D10	128	1.770	1.628	1.173	1.754	2.267	3.149	3.498	3.761
D10 –D1		3.599	2.388	2.632	3.637	4.311	5.357	6.173	6.731
t-Stat		[71.81]	[7.18]	[15.56]	[11.6]	[13.53]	[13.56]	[20.95]	[15.44]
Earnings Announcements with Macro News									
D1	318	-1.801	-0.811	-0.988	-1.430	-1.475	-1.596	-2.139	-2.258
D10	302	1.767	1.330	0.858	1.110	1.489	1.877	2.249	2.263
D10 –D1		3.568	2.142	1.846	2.540	2.964	3.473	4.388	4.521
t-Stat		[67.98]	[14.49]	[12.94]	[18.75]	[19.08]	[18.72]	[13.34]	[11.22]
Macro News - No Macro News									
Δ(D10-D1)		-0.031	-0.246	-0.786	-1.098	-1.346	-1.884	-1.785	-2.210
t -Stat		[1.29]	[0.73]	[2.96]	[2.63]	[3.32]	[4.36]	[5.97]	[4.37]
Relative Reduction				-29.88%	-30.18%	-31.24%	-35.17%	-28.92%	-32.83%

Panel B: High VIX Quarters

SUE Decile			Horizons						
	N	SUE	[-1,0]	[1, 1]	[1, 5]	[1, 10]	[1, 21]	[1, 42]	[1, 63]
Earnings Announcements with No Macro News									
D1	146	-2.238	-0.956	-1.776	-2.083	-2.305	-3.233	-3.746	-4.798
D10	135	1.903	1.544	0.955	1.314	1.399	2.063	1.931	2.082
D10 –D1		4.141	2.500	2.731	3.397	3.703	5.296	5.677	6.880
t-Stat		[36.59]	[8.52]	[8.38]	[7.16]	[5.40]	[7.56]	[9.85]	[9.25]
Earnings Announcements with Macro News									
D1	329	-2.256	-1.095	-1.239	-1.574	-1.749	-2.630	-3.148	-3.704
D10	309	1.923	1.447	0.891	1.181	1.344	1.343	0.990	0.861
D10 –D1		4.179	2.542	2.130	2.755	3.093	3.973	4.139	4.565
t-Stat		[37.78]	[11.91]	[11.15]	[10.33]	[6.62]	[6.02]	[5.61]	[6.16]
Macro News - No Macro News									
Δ(D10-D1)		0.038	0.042	-0.601	-0.642	-0.610	-1.322	-1.538	-2.314
t -Stat		[1.95]	[0.13]	[1.86]	[1.63]	[1.22]	[2.59]	[2.29]	[2.50]
Relative Reduction				-21.99%	-18.90%	-16.48%	-24.97%	-27.10%	-33.64%