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"Monthly Employee Reports and the Pricing of Firm-level Earnings News"

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Monthly employment reports and the pricing of firm-level earnings news

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Abstract: In this study I use the monthly release of the Employment Situation (ES) by the Bureau of Labor Statistics to examine the impact of macroeconomic uncertainty on the pricing of firm-level earnings news. I use this setting because uncertainty about employment conditions is high the day before the employment report and the resolved the day of the report. I find a muted initial response to earnings announcements disclosed the day before the employment report and show this effect exists only when ex-ante uncertainty about the contents of the employment report is high. The muted initial response is accompanied by abnormal post-earnings-announcement-drift (PEAD) and the abnormal drift becomes significant shortly after the release of the employment report when the macroeconomic uncertainty has been resolved. I also consider the market response to earnings announcements the day of the ES. Though macroeconomic uncertainty has been resolved prior to market trading for these announcements, the ES is released on Friday and prior research (see DellaVigna and Pollet (2009)) finds an initial muted response to earnings announced on Fridays. I show that for the sample and research design used in this study, a muted initial response to earnings news from Friday earnings announcements exists only for Fridays coinciding with the release of an employment report. I also find greater PEAD associated with earnings announcements the day of the ES. In contrast to the abnormal PEAD associated with earnings announcements the day before the ES, the abnormal drift does not become significant until 30 days after the earnings announcement. Finally, I show that the proportion of negative earnings announcements on Fridays is higher for Fridays of employment reports and find evidence consistent with managers strategically timing the disclosure of bad news to coincide with the release of ex-ante meaningful employment reports.

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> "It has been said that economists never agree on anything. But there may be one exception – the value of the monthly employment report."
>
> - Carnes and Slifer (1991)

1. Introduction

In this study I consider the effects of macroeconomic uncertainty on the pricing of earnings news. To do this, I examine how the scheduled monthly release of the Employment Situation (ES)[1] by the Bureau of Labor Statistics influences the stock market response to quarterly earnings announcements (EAs). I consider the effect of the ES[2] on the pricing of earnings news because the timing of the report is predetermined, the report is highly anticipated by market participants, studies have shown that the report systematically resolves macroeconomic uncertainty, and the resolution of uncertainty is greater than that associated with other scheduled macroeconomic announcements (Ederington and Lee (1996) and Graham et al. (2003)). These characteristics make the employment report a unique and powerful information event which can be used to examine the effects of macroeconomic uncertainty on the pricing of earnings news.

While several studies provide cross-sectional evidence that the market pricing of firm-level news is a function of uncertainty about the price implications of the news (Zhang (2006) and Francis et al. (2007)), I consider the effects of time-varying macroeconomic uncertainty on the pricing of earnings news. Macroeconomic uncertainty can affect the pricing of earnings news because evidence suggests the price implications of earnings news are a function of the macroeconomic environment. Investment textbooks, when discussing fundamental analysis

[1] I use the terms Employment Situation, employment report and employment release interchangeably.

[2] The data in the Employment Situation comes from monthly surveys distributed to households and businesses. The household survey generates the unemployment rate and employment statistics and the business survey generates payroll data such as total non-farm payrolls, average weekly hours worked, overtime and hourly earnings. Dates of the releases of the Employment Situation are from the Bureau of Labor Statistics website.

emphasize consideration of the broad economic environment when analyzing a firm's prospects (e.g., Bodie et al. (2005)). In addition, Johnson (1999) finds evidence that earnings persistence as well as the relation between abnormal returns and unexpected earnings are functions of the business cycle. If the persistence of earnings news depends on the state of the economy, the price implications of earnings news will also be a function of the state of the economy, and uncertainty about the state of the economy will cause uncertainty about the price implications of earnings news.

To investigate the impact of macroeconomic uncertainty on the pricing of earnings news, I consider EAs occurring the day before the employment report[3]. Prior studies indicate that uncertainty about employment conditions is highest the day before the ES (Graham et al. (2003) and Beber and Brandt (2009)) and anecdotal evidence from the financial press suggests that investors are particularly cautious on this day.[4] Because investors face high uncertainty the day before the employment report and macroeconomic conditions affect the valuation implications of earnings news, I predict that for EAs on this day, macroeconomic uncertainty lowers the weight investors place on the earnings (or investment) signal resulting in an initially muted investor response to earnings news (muted as compared to the initial market response to EAs on all other days).

The resolution of uncertainty at the release of the ES allows a clear prediction about post-earnings-announcement returns for EAs occurring the day before the ES. If uncertainty about the state of the economy causes investors to place less weight on news in these EAs, then once

[3] In section 3.2 I describe the process I follow to identify earnings announcements occurring the day before the employment report.

[4] For example, a recent headline from CNN Money read "Stocks quiet before Friday's jobs report" and the first line of the article noted how investors remained "in a holding pattern ahead of… [the] report." Article by Ken Sweet, contributing writer, on Thursday, March 31, 2011. See article at: http://money.cnn.com/2011/03/31/markets/markets_newyork/index.htm.

the employment report is released and the macroeconomic uncertainty is resolved, I predict investors will increase the weight applied to earnings signals and prices will drift in the direction of the earnings news.

To test whether uncertainty about the state of the economy affects the market response to EAs the day before the employment report, I first investigate the relation between three-day abnormal returns centered on the day of the EA and unexpected earnings, i.e. the earnings response coefficient (ERC). Using a sample of quarterly EAs from September 1998 to December 2009, I find the initial response to EAs the day before an employment report is significantly lower than the response to EAs released on other days. If the lower response is due to macroeconomic uncertainty, then the muted response should be more pronounced when ex-ante uncertainty about the employment report is high. To test this, I use the dispersion of economists' forecasts of the unemployment rate as a proxy for ex-ante uncertainty about the employment news and find that the muted reaction exists only when uncertainty about the contents of the employment report is high (above the median level of dispersion).

If macroeconomic uncertainty causes the low initial reaction to earnings news, then once the employment report is released and the uncertainty is resolved, prices should move in the direction of the earnings news. I first examine post-earnings-announcement drift (PEAD) for EAs issued the day before the employment report and find greater PEAD for these announcements than for EAs issued on other days. By greater (or abnormal) PEAD I mean drift in excess of that associated with EAs on all other days. In addition, I find the abnormal PEAD becomes significant the day after the release of the employment report, consistent with uncertainty about employment conditions affecting the market response to earnings news. To summarize, I document an initial muted response to EAs reported the day before the employment

report and find that the muted response exists only around employment reports characterized by high ex-ante uncertainty. I also show that shortly after the release of the employment report (or resolution of macroeconomic uncertainty), prices drift in the direction of the earnings news. These results suggest that uncertainty about the state of the economy affects the pricing of earnings news.

As part of my investigation of the effects of macroeconomic uncertainty on the pricing of earnings news I also consider EAs issued the day of the employment report[5]. Since the ES is released Friday morning before the market opens, the pricing of EAs issued the day of the employment report should not be affected by ex-ante uncertainty about the ES. However, DellaVigna and Pollet (2009) show the initial market response to Friday EAs is muted and followed by price drift in the direction of the news. They label these results the "Friday effect" and suggest the results are attributable to inattentive investors who are distracted by the weekend. Due to the findings in DellaVigna and Pollet (2009), and because employment reports are released on Fridays, I predict that the initial market response to EAs the day of the ES will be of equal or greater magnitude than the initial response to EAs on all non-employment-report Fridays.

To investigate the market response for EAs the day of the ES, I use the same methodology used to examine the response to EAs the day before the ES. I first show that using my sample and research design there is a low initial market reaction for Friday EAs. However, once I separate Fridays of employment reports from all other Fridays, interestingly, and in contrast to my prediction, I find investors' initial response to EAs on Fridays of employment reports is lower than the initial response to EAs on non-employment-report Fridays. I also find

[5] In section 3.2 I describe the process I follow to identify earnings announcements occurring the day of the employment report.

the market response to EAs on non-employment-report Fridays is not reliably different from the response to earnings news disclosed on other days. These results are consistent with the Friday effect being driven by the employment report. To distinguish the muted response for EAs the *day of* the ES from the muted reaction for EAs the *day before* the ES, I show that the muted reaction to EAs the *day of* the employment report does not differ across the high and low ex-ante uncertainty subsamples discussed above. This is consistent with a construct other than macroeconomic uncertainty generating the results for EAs issued the day of the ES.

To further distinguish between the results for EAs the day before and the day of the ES, I examine PEAD for EAs the day of the ES. While abnormal drift for earnings announced the day before the ES becomes significant just after the release of the ES, abnormal PEAD for earnings announced the day of the ES becomes significant only after 30 trading days. This result is similar to findings from limited attention studies. DellaVigna and Pollet (2009) and Hirshleifer et al. (2009) find abnormal drift becomes significant 30 and 45 trading days after the earnings announcement, respectively. These studies suggest that investors who were distracted and did not process and price the earnings news at the time of the announcement, will over time, revisit their valuation models and prices will drift in the direction of the earnings news. One potential explanation for the muted initial response and subsequent drift for EAs the day of the ES is that a subset of investors is distracted by activities related to the release of the employment report: pricing employment news, rebalancing portfolios, and unwinding hedging and speculative positions entered into in advance of the report.

Although this study is primarily about the effects of macroeconomic uncertainty on the pricing of earnings news, given the finding of the muted initial response to EAs the day of the ES, I evaluate the effect of the ES on the proportion of bad news (negative unexpected earnings) EAs

issued the day of the ES. Prior studies such as Damodaran (1989) show the proportion of bad news EAs is higher on Fridays than other weekdays and suggest that managers may strategically time their bad news announcements to occur on Fridays due to (perceived) low levels of media and investor attention. However, in a recent study, Doyle and Magilke (2009) find no evidence that managers strategically time bad news EAs to occur on Fridays.

I consider the effects of the ES on the strategic timing of bad news EAs and first show that for my sample there is a significantly higher proportion of bad news EAs on Fridays than on other weekdays. I next document that the proportion of bad news announcements is higher on employment-report Fridays than non-employment-report Fridays. Finally, I find that the proportion of bad news announcements on employment-report Fridays is higher when ex-ante uncertainty about the employment report is high and it is more likely that the employment report will contain significant news. In contrast, the proportion of bad news announcements on non-employment-report Fridays (and other weekdays) is not affected by ex-ante uncertainty about the employment report. These results suggest that when ex-ante uncertainty about the employment report is high, some managers to attempt to "hide" bad earnings news on Fridays of employment reports, potentially due to the possible distraction of investors by employment-report-related activities.

This paper makes the following contributions. First, while Johnson (1999) shows that the state of the economy affects the pricing of earnings, I provide evidence that uncertainty about the state of the economy also affects the pricing of earnings. Also, while Zhang (2006) and Francis et al. (2007) use cross sectional measures to provide evidence that uncertainty about the pricing implications of firm-level news affects the pricing of the news, I present evidence of this relation using over-time changes in macroeconomic uncertainty.

The documented low initial response for EAs the day before the ES is also related to research in finance that considers the impact of the employment report on conditional return volatility. Motivated by claims from the financial media that investors are cautious and markets are particularly quiet the day before the release of the ES, several studies find abnormally low return volatility the day before the ES (see Jones et al. (1998) and Brenner et al. (2009)). Jones et al. (1998) label this effect the "calm before the storm" and call for further examination of the phenomenon. One explanation for this finding is that there may be fewer news events the day before the ES. While this is possible, my finding of the muted initial market response to EAs the day before the ES implies that, controlling for the amount of news, the market responds differently to news released the day before the ES.

This study also contributes to the limited attention literature. Prior studies have identified several settings in which investor distraction may affect the pricing of firm-level news (e.g., weekends (DellaVigna and Pollet (2009) and days with a high number of EAs (Hirshleifer et al. (2009)). The results in this paper suggest that an additional explanation for the Friday effect documented in DellaVigna and Pollet (2009) may be related to the issuance of the monthly employment report.

Finally, this study contributes to the broad information environment literature by investigating the interaction of two important information events, monthly employment reports and EAs. Beyer et al. (2010) call for research that provides evidence on the interdependencies among factors that shape firms' information environments. In this study I provide evidence that macroeconomic uncertainty affects the pricing of earnings and that the issuance of the monthly employment report affects both the pricing of earnings news as well as the timing of EAs.

The remainder of this paper is organized as follows. In the next section I outline my main hypotheses. In Section 3 I describe the empirical design and data used in my tests and provide some descriptive statistics. I present the main results in Section 4, and in Section 5 I offer concluding remarks.

2. Hypothesis development

Prior research provides evidence that uncertainty about the pricing implications of firm-level news affects the pricing of this news. Francis et al. (2007) use Dechow and Dichev's (2002) measure of accruals quality as a proxy for uncertainty about the degree to which earnings reveals information about cash flows and show that the initial market reaction to earnings signals characterized by low accruals quality is lower and followed by greater PEAD than for earnings signals characterized by high accruals quality. Francis et al.'s hypotheses are based on Bayesian decision theory which shows that rational investors place less weight on low-precision investment signals (see DeGroot (1970), 167).[6] Zhang (2006) finds evidence that the level of uncertainty about the price implications of analyst forecast revisions can explain variation in price drift following the forecast revisions. Zhang concludes that, "…the [initial] market reaction to new information is relatively complete for low-uncertainty stocks…" but for "…high uncertainty stocks…the market reaction is far from complete."

While the studies above use cross-sectional measures of uncertainty about the price implications of news, I consider the impact of macroeconomic (time-varying) uncertainty on the pricing of earnings news. Macroeconomic uncertainty can affect the pricing of earnings news if the pricing implications of earnings news are a function of the state of the economy. Investment

[6] Francis et al. (2007) also motivate their hypotheses using the structural uncertainty model from Brav and Heaton (2002). In this model, Bayesian investors are uncertain about the payoff structure of an investment and this uncertainty results in a rational underweighting of data used to estimate investment payoffs.

textbooks, when discussing security analysis, often emphasize the importance of considering the macro economy when analyzing a firm's prospects. Bodie, et al. (2005) state that "…in analyzing a firm's prospects it often makes sense to start with the broad economic environment, examining the state of the aggregate economy (pg. 571)." In addition, Johnson (1999) finds that earnings persistence and ERCs are functions of macroeconomic conditions. For example, Johnson finds that earnings persistence and earnings response coefficients are higher during economic expansions and during credit crunches than during recessions or reliquification periods. Given Johnson's findings that the persistence of earnings and the magnitude of ERCs depend on the state of the economy, uncertainty about the state of the economy should result in uncertainty about the valuation implications of earnings news.

Monthly employment reports provide a unique setting for studying the effects of macroeconomic uncertainty on the pricing of earnings news. The timing of the employment report is pre-determined and studies have shown the release of the report is associated with a significant and systematic decline in option implied volatilities[7] on the day of the employment report. For example, Graham et al. (2003) use the CBOE Market Volatility Index as a proxy for market uncertainty and show that of the 11 macroeconomic announcements they consider, employment reports account for the largest reduction in implied volatilities. They find that on average, implied volatilities fall by 5% the day of employment report (Federal Open Market Committee announcements are the second most informative announcements, resulting in a 3% reduction in implied volatilities). Beber and Brandt (2009) show that implied volatilities from

[7] Option implied volatilities are derived using option pricing models that model an option value as a function of the underlying security's price, time to expiration and exercise price of the option, the risk-free rate of interest, and the expected volatility of the security's price. In studies using implied volatilities, the first four factors are observed and are used to derive expected volatility, though the measure of volatility may reflect any model-omitted factors which might affect option prices (see Ederington and Lee (1996)).

options written on Treasury securities increase leading up to and peak the day before the ES, then drop substantially at the release of the report.

Anecdotal evidence from the financial press also suggests that market participants face uncertainty about the employment report the day before its release. Headlines such as "Investors Cautious Ahead of Key US Jobs Data"[8] and statements like "…participants in both the bond and stock markets were proceeding cautiously as they awaited Friday's report from the Labor Department on the employment situation…"[9] imply that some media members believe that uncertainty about the employment report affects how investors process information the day before the report. Based on this anecdotal evidence and research showing significant drops in implied volatilities the day of the employment report, I test whether uncertainty about the macro economy affects the pricing of news from EAs issued the day before the employment report. Because macroeconomic uncertainty (1) can cause uncertainty about the pricing implications of earnings news and (2) is high just before the release of the ES, my first hypothesis is that the immediate investor response to earnings news is lower for EAs the day before the issuance of the employment report than for EAs on other days.

If the market response to earnings news is muted due to uncertainty about the state of the economy, then after the release of the employment report when the uncertainty is resolved, prices should move in the direction of the earnings news. Thus, my second hypothesis is that PEAD associated with EAs of the day preceding the issuance of the employment report is greater than the PEAD associated with EAs of other days. This abnormal PEAD should also be manifest shortly after the resolution of uncertainty, or the release of the employment report.

[8] Article by Jamie Chisholm, Global Markets Commentator, and Telis Demos, both of the Financial Times – March 4, 2010. See article at: http://www.ft.com/cms/s/0/38e21446-275a-11df-b0f1-00144feabdc0.html#axzz1BaorhMiX.
[9] Article from the Los Angeles Times on October 3, 1986. See article at: http://articles.latimes.com/1986-10-03/business/fi-4102_1_employment-report.

I also examine EAs issued the day of the employment report. Because the employment report is released before the market opens, uncertainty about the contents of the report is resolved before there is trading in response to earnings news for these EAs and the market response should not be affected by the ex-ante uncertainty related to the employment report. However, employment reports are released on Fridays and DellaVigna and Pollet (2009) find the market responds differently to Friday EAs. More specifically, they show that the initial market response to Friday EAs is muted, and they attribute the muted response to investor inattention – a subset of investors (who affect price) are distracted by the weekend. They also find that there is greater PEAD for Friday EAs and submit that over time, "… investors become aware of the information they neglected and trade accordingly (pg. 711)" causing prices to drift in the direction of the earnings news. The authors claim that due to weekend distractions, the initial market response to EAs the day of the employment report could be muted and followed by abnormal PEAD. Therefore, due to the resolution of uncertainty from the release of the ES and the findings in DellaVigna and Pollet (2009), I predict that the initial market response to EAs occurring on Fridays of employment reports will be greater than or equal to the response to EAs occurring on non-employment-report Fridays.

3. Empirical design, data, and descriptive statistics

3.1 Empirical design

Prior literature in accounting has identified variables that moderate the effect of earnings news on abnormal returns. For example, Freeman and Tse (1992) and Subramanyam and Wild (1996) find that the price response to earnings news is a function of the absolute magnitude of the news and the probability of firm termination, respectively. Studies such as these often

employ some version of the following regression:

$$CAR = \beta_0 + \beta_1 VOI + \beta_2 UE + \beta_3 UE * VOI + \varepsilon \quad (1)$$

where CAR is a measure of cumulative abnormal returns, VOI is the test variable, and UE is a measure of unexpected earnings. In these studies β_3 captures the moderating effect of the variable of interest on the relation between earnings and returns.

I test whether the timing of earnings announcements in relation to the employment report affects the relation between earnings news and abnormal returns, or ERC. I use the following as my primary empirical specification:

$$CAR[-1,1]_{iq} = \beta_0 + \beta_1 PRE1_{iq} + \beta_2 FRIDAY_{iq} + \beta_3 POST0_{iq} + \beta_4 UE_{iq} + \beta_5 UE_{iq} * PRE1_{iq} + \beta_6 UE_{iq} * FRIDAY_{iq} + \beta_7 UE_{iq} * FRIDAY_{iq} * POST0_{iq} + \varepsilon_{iq} \quad (2)$$

where observations are at the firm-quarter level. $CAR[-1,1]_{iq}$ is the cumulative abnormal return from the day before to the day after the quarter *q* earnings announcement for firm *i*[10], defined as

$$CAR[-1,1]_{iq} = \sum_{k=t-1}^{t+1} Ret_{ik} - \sum_{k=t-1}^{t+1} Ret_{pk}$$

where Ret_{ik} is the raw daily return for firm *i* on day *k*, Ret_{pk} is the return of a matched size/book-to-market portfolio on day *k*, and *t* is the day of the quarter *q* earnings announcement for firm *i*. As in Hirshleifer et al. (2009), firms are matched to 1 of 25 size/book-to-market portfolios at the end of June each year. The 25 portfolios are based on 5 size and 5 book-to-market splits and the portfolio returns and cutoff values are taken from Kenneth French's website[11]. A firm's match is determined by the firm's market value of equity at the end of June and its book-to-market ratio is

[10] The three-day window of CAR[-1,1] includes the day of the employment report. For earnings announcements the day before the employment report I avoid this potential problem by also using CAR[-1,0] as the dependent variable. The results using CAR[-1,0] are similar to those presented in the main tables.

[11] http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html

calculated as the book value of equity at the fiscal year end of the previous calendar year divided by the market value of equity at the end of the previous calendar year.[12]

UE_{iq} is a measure of unexpected earnings for firm *i* in quarter *q* calculated as actual earnings minus forecasted earnings for firm *i*, scaled by the stock price of firm *i*,

$$UE_{iq} = \frac{ACT_{iq} - AF_{iq}}{P_{iq}}$$

where ACT_{iq} is actual earnings per share (EPS) for firm *i* in quarter *q*, AF_{iq} is the median of analysts' forecasts of EPS for firm *i* issued within the 30 calendar days preceding the quarter *q* earnings announcement date (I include only the most recent forecast for each analyst), and P_{iq} is the stock price for firm *i* 21 trading days before the earnings announcement.[13][14]

$PRE1_{iq}$ is an indicator variable which equals 1 if the quarter *q* earnings announcement for firm *i* occurs the day before the issuance of the employment report. $FRIDAY_{iq}$ is an indicator variable equal to 1 if the quarter *q* earnings announcement for firm *i* occurs on a Friday, and $POST0_{iq}$ is an indicator variable equal to 1 if the quarter *q* earnings announcement for firm *i* occurs on the day of the employment report.[15]

The primary coefficients of interest from equation (2) are β_4, β_5, β_6, and β_7. B_4 is the ERC for all non-Friday EAs that do not occur the day before or the day of the release of an employment report (on average there are 22 trading days between employment reports). $\beta_4 + \beta_5$ is the ERC for EAs disclosed the day before an employment report, $\beta_4 + \beta_6$ is the ERC for EAs disclosed on Fridays without an employment report, and $\beta_4 + \beta_6 + \beta_7$ is the ERC for earnings announcements disclosed on Fridays of employment reports. For my first hypothesis I test whether β_5 is negative indicating lower-than-normal responses to earnings news announced the

[12] Firm returns are obtained from CRSP and book and market equity values are from COMPUSTAT.
[13] Actual and forecasted EPS values are from the IBES unadjusted file and are split-adjusted.
[14] In section 4.7 I discuss findings using alternative measures of abnormal returns and unexpected earnings.
[15] Appendix A provides all variable definitions.

day before the ES. I also test whether β_6 is negative, suggesting that a Friday effect exists using my sample and research design, and whether β_7 is greater than or equal to zero, indicating that the initial market response to EAs issued the day of the ES is greater than or equal to the response to EAs on other Fridays.

To test whether there is abnormal PEAD for EAs with PRE1 = 1, I change the dependent variable in equation (2) from $CAR[-1,1]_{iq}$ to $CAR[2,X]_{iq}$, where X takes values from 2 to 71. In these analyses it is important to note that the coefficient for UE captures the average amount of PEAD for EAs on all days except the primary days of interest. Abnormal PEAD is captured by the coefficient on the interactions term of UE and PRE1, i.e., the coefficient for UE*PRE1 represents abnormal PEAD for EAs the day before the employment report. My prediction suggests that due to the resolution of uncertainty there will be abnormal PEAD for EAs issued the day before employment report and it will become significant shortly after the release of the ES.

3.2 Data

In selecting the sample, I begin with all quarterly EAs in the I/B/E/S database for which there is at least one analyst forecast. Because my hypotheses require precise identification of EA dates, I follow DellaVigna and Pollet (2009) and eliminate all EAs prior to 1995. DellaVigna and Pollet (2009) use Lexis-Nexis to find EA press release newswires and discover that EA dates from I/B/E/S and Compustat prior to 1995 are frequently different from the newswire dates. Following DellaVigna and Pollet (2009), I obtain EA dates from both I/B/E/S and COMPUSTAT for each firm-quarter and use the earlier of the two dates (when they differ). DellaVigna and Pollet (2009) find that in the post-1995 period, following this rule provides a set

of EAs with highly accurate announcement dates (greater than 95% accuracy using newswire announcement dates as the benchmark).

I also adjust EA dates depending on the time of day of the announcement. Berkman and Truong (2009) find that from 2000 to 2004 over 40% of EAs by Russell 3000 firms occurred after market hours. Price changes due to earnings news for these after-market-hours announcements will occur the trading day following the announcement day. Berkman and Truong (2009) show that failure to adjust the event date can result in biased earnings response coefficients and estimates of PEAD. Accordingly, I use the time of day of the earnings report provided by I/B/E/S to adjust announcement dates so that the announcement date for after-market-hours announcements is the trading day following the earlier of the I/B/E/S and Compustat announcement dates[16]. I/B/E/S announcement times are available from September 1998 forward so I exclude EAs before this date. In my final sample 42% of EAs occurred after market hours.[17]

I eliminate EAs occurring on Saturdays or Sundays and I require all observations to have the necessary data to calculate cumulative abnormal returns and unexpected earnings. To calculate abnormal returns I use stock return data from CRSP, market values of equity and book-to-market data from COMPUSTAT, and portfolio returns and cutoff points from Kenneth French's data library.[18] To reduce the effects of data errors and outliers and to be consistent with prior ERC literature (see for example DeFond and Park (2001), Keung et al. (2010) and Williams

[16] This design choice implies that EAs designated as occurring the day of the employment report include after-market-hours EAs the day before the employment report and excludes after-market-hours EAS the day of the employment report. (The same goes for EAs designated as occurring the day before the employment report.)
[17] Berkman and Truong (2009) obtain announcement times from WSJ.com which provides times from January 1999 forward. I select a random sample of 100 post-1999 announcement times from I/B/E/S and find that of the 100 observations, three differ from the WSJ.com times to the extent that the event day classification would be affected.
[18] I use the procedure discussed in Beaver, McNichols, and Price (2007) to merge the CRSP and COMPUSTAT data.

(2010)) I truncate the sample at the 1st and 99th percentiles of CAR[-1,1] and UE. The final sample contains 100,372 EAs from September 1998 to December 2009.

3.3 Descriptive statistics

Table 1 provides descriptive statistics for the full sample in Panel A, and for EAs the day before (of) the ES in Panel B (Panel C). Panel A shows that the mean and median values of UE for the full sample are close to zero and mean and median values of CAR[-1,1] are slightly positive. These statistics are similar to those in prior studies using similarly defined variables (see Livnat and Mendenhall (2006)). Panels B and C show that the sample distributions of CAR[-1,1] for EAs the day before and the day of employment reports are similar to that of the full sample but with slightly longer right tails; the 99th percentiles for EAs the day before and the day of the ES are .219 and .220, respectively, as compared to .137 for the entire sample. The sample distributions of UE and BTM are also similar. The mean SIZE (market capitalization at fiscal quarter end in millions) values for firm-quarter observations of EAs the day before and the day of employment reports are 3,925 and 3,341, as opposed to 5,825 for the full sample, indicating EAs around the employment report are from smaller firms (differences are significant at the 1% level). Finally, the sample percentages of bad-news EAs the day before (30%) and the day of (34%) employment reports are reliably higher than that of the full sample (28%).

From September 1998 through December 2009 there are 136 releases of the ES. Of these, 132 are released on Fridays and 4 on Thursdays. To account for possible day-of-the-week effects[19] and because most employment reports are issued on Fridays, in Table 2 I compare Thursday (Friday) EAs for which PRE1 = 1 (POST0 = 1) with Thursday (Friday) EAs for which

[19] The sample distribution of EAs across weekdays is the following: Monday = 5.8%, Tuesday = 20.2%, Wednesday = 24.5%, Thursday = 32.8%, and Friday = 16.7%.

PRE1 = 0 (POST0 = 0).[20] (Recall that PRE1 = 1 for EAs the day before the ES and 0 otherwise, and POST0 = 1 for EAs the day of the ES and 0 otherwise.) Table 2 shows that, controlling for the day of the week, sample observations the day before or the day of the employment report have lower market capitalizations, higher book-to-market ratios, and report more bad-news announcements. In addition, within this sample the average daily number of EAs on PRE1 = 1 Thursdays (POST0 = 1 Fridays) is lower than PRE1 = 0 Thursdays (POST0 = 0 Fridays).

4. Main results

4.1 Primary specification

My hypotheses assume that managers do not determine the timing of EAs to coincide with or avoid employment reports.[21] However, firms whose managers seek to or try to avoid announcing near employment reports may have characteristics that are correlated with omitted variables which affect investors' reactions to earnings news. To address this concern, I include firm fixed effects in all regressions and exploit within-firm variation to test my hypotheses. (Appendix B provides several examples and distributional statistics of within-firm variation in the timing of EAs with respect to the ES.) I also control for several variables that have been shown by prior research to affect the market response to earnings news.

Another concern is that the sign of earnings news could be related to the timing of EAs around the ES. For example, if investors under respond to earnings news announced the day before or the day of the ES, managers who anticipate reporting poor earnings news may

[20] I exclude Thursdays with POST0 = 1 and Fridays with PRE1 = 1. This yields 126 PRE1 = 1 Thursdays, 428 PRE1 = 0 Thursdays, 128 POST0 = 1 Fridays, and 409 POST0 = 0 Fridays.

[21] EA dates are often set by management months in advance, before the exact nature of the earnings news can be known, and earnings calendars such as the following, http://www.bloomberg.com/apps/ecal?c=US list upcoming earnings announcements. In addition, Doyle and Magilke (2009) investigate whether firms opportunistically time earnings announcements to take advantage of apparent under reactions to earnings issued on Fridays or after market hours and find no evidence of opportunism.

strategically time their announcement dates to coincide with the issuance of the ES, and managers with good earnings news may avoid announcing earnings near the ES. To address this concern, I include in the regression analyses an indicator variable BADNEWS, equal to 1 for firm announcements with negative UE, and 0 otherwise, as well as the interactive term UE*BADNEWS.

To test investors' immediate response to EAs the day before the employment report, I first estimate (using OLS with year and firm fixed effects) the following specification:

$$CAR[-1,1]_{iq} = \beta_0 + \beta_1 PRE1_{iq} + \beta_2 UE_{iq} + \beta_3 UE_{iq} * PRE1_{iq} + \varepsilon_{iq} . \quad (3)$$

Table 3 (model 1) shows the coefficient for the interaction of UE and PRE1 when estimating equation (3) is -0.351 (t-stat of -3.19), negative and significant as predicted, and consistent with macroeconomic uncertainty affecting the market response to earnings. In model 2 of Table 3 I add FRIDAY and UE*FRIDAY to equation (3) and find that the coefficient for UE*FRIDAY is -0.196 (t-stat of -1.88) indicating a lower market response to Friday EAs. This result indicates investors' initial response to Friday EAs is 12% lower than the response for non-Friday announcements (the ERC for non-Friday EAs is 1.624 whereas the ERC for Friday EAs is 1.624 – 0.196, or 1.428). The magnitude of this result is similar to the magnitude of the lower response (15%) reported in DellaVigna and Pollet (2009). To test whether the initial market reaction to EAs the day of the ES is greater than or equal the muted response to EAs on other Fridays, I estimate equation (2). The ERC for earnings announced the day of the employment report is 1.178 ($\beta_4 + \beta_6 + \beta_7$), 28% lower than the ERC of 1.624 for all non-Friday EAs not reported the day before an employment report. Contrary to my prediction, the estimate for β_7 is negative and significant (-0.446 with a t-stat of -2.411) indicating the market response to EAs on employment report Fridays is significantly lower than the response to EAs on non-employment report Fridays.

Interestingly, when controlling for EAs the day of the employment report, the ERC for EAs on Fridays without an employment report ($\beta_4 + \beta_6$) is statistically indistinguishable from the ERC for non-Friday EAs. These results imply that for my sample and research design, the market response to EAs on non-employment-report Fridays is not reliably different from the response to EAs on non-Fridays. Put another way, I find little support for a Friday effect on non-employment-report Fridays but do find a significantly muted response for EAs on Fridays of the ES. In model 4 I include BADNEWS and UE *BADNEWS and show that these inferences from estimating equation (2) are unaffected when controlling for the sign of the earnings news.

Kothari (2001) discusses research which identifies determinants of ERCs and notes that these studies rely on two assumptions: first, investors use some type of discounted cash flow valuation model, and second, there is a link between earnings news and cash flows news. Under these assumptions, factors that affect investors' revisions of either future cash flows upon receiving earnings news or the rate investors use to discount expected future cash flows will affect the market response to earnings news. To this point I have included firm fixed effects to control for time-invariant firm characteristics that may affect how investors process earnings news. In model 5 I add control variables to account for time-varying firm characteristics and other factors that have been shown to affect ERCs (see, for example, Blouin et al. (2003), Wilson (2008), and Hirshleifer et al. (2009)).

PERSIST is defined as the first-order autocorrelation coefficient of quarterly income before extraordinary items scaled by average total assets, estimated over the previous four years with a minimum of five observations required. Kormendi and Lipe (1987) and Easton and Zmijewski (1989) show that greater persistence of earnings innovations is associated with larger ERCs. Therefore, I expect the coefficient for the interaction of UE and PERSIST to be positive.

PREDICT is measured as the root mean square error from the persistence regressions. Based on Lipe's (1990) result that ERCs are increasing in the ability of past earnings to predict future earnings, I expect the coefficient on the interaction of UE and PREDICT to be negative. BETA is the market-model beta estimated using daily returns over the prior year, ending two trading days before the earnings announcement. Given findings in Collins and Kothari (1989) and Easton and Zmijewski (1989), I expect that firms with higher BETAs (a proxy for discount rates) will have lower ERCs. Freeman and Tse (1992) document the nonlinear relation between earnings news and abnormal returns, consistent with extreme earnings news being less persistent. I account for this nonlinearity by including NONLINEAR defined as the absolute value of UE.[22] I expect the relation between NONLINEAR and the market response to earnings to be negative. I also include BTM, the book value of equity divided by the market value of equity, to control for the relation between earnings persistence and growth opportunities (see Collins and Kothari (1989)). I expect the coefficient on the interaction of UE and BTM to be negative. Finally, I include SIZE as the natural log of the market value of equity (measured in millions at the end of the fiscal quarter) to control for differences in information environments (Collins and Kothari (1989)). I do not predict the sign of the coefficient on the interaction of SIZE and UE as SIZE is likely correlated with other firm characteristics.

I delete all observations that do not have all the data necessary to calculate the control variables, and the sample size is reduced from 100,372 to 97,000. I also delete observations below the 1st percentiles and above the 99th percentiles of CAR[-1,1], UE and the control variables listed above. The resulting sample consists of 85,166 firm-quarter EAs. Table 4 provides the mean and median values for the full sample, PRE1 EAs and POST0 EAs,

[22] I do not include BADNEWS because UE*BADNEWS is a linear combination of UE and NONLINEAR: UE*BADNEWS = .5*UE – .5*NONLINEAR. In untabulated results I drop the main effect of NONLINEAR and add UE*BADNEWS to the model and find similar results to those presented in model 5 of Table 3.

respectively. These descriptive statistics indicate that sample firms announcing earnings the day before or the day of an employment report have on average lower market capitalizations and higher betas and book-to-market ratios.

In model 5 of Table 3, I add the control variables discussed above to equation (2) and estimate the following regression model:

$$CAR[-1,1]_{iq} = \beta_0 + \beta_1 PRE1_{iq} + \beta_2 FRIDAY_{iq} + \beta_3 POST0_{iq} + \beta_4 UE_{iq} + \beta_5 UE_{iq} * PRE1_{iq} + \beta_6 UE_{iq} * FRIDAY_{iq} + \beta_7 UE_{iq} * FRIDAY_{iq} * POST0_{iq} + \sum_{i=8}^{13} \beta_i CONTROLS_{iq} + \sum_{i=14}^{19} \beta_i UE_{iq} * CONTROLS_{iq} + \varepsilon_{iq} \quad (4)$$

where CONTROLS = PERSIST, PREDICT, BETA, NONLINEAR, BTM, and SIZE. The results of estimating equation (4) are presented in the final column in Table 3 and indicate that after controlling for ERC determinants identified by previous research, the estimated coefficients (t-stats) for the interactive terms of UE*PRE1 and UE*FRIDAY*POST0 are -0.410 (-2.78) and -0.668 (-2.84), similar to the results from models 3 and 4. In this specification the coefficient for UE*FRIDAY becomes positive, though not reliably different from zero. The signs of the coefficients for the control variables are all as hypothesized with the exception of the coefficient for UE*BETA. In summary, the results in Table 3 indicate a lower ERC for EAs the day before the ES, consistent with uncertainty about state of the economy affecting the market response to earnings. Findings presented in Table 3 also demonstrate that while there is a significantly lower response for EAs the day of the employment report, the market response to EAs of non-employment report Fridays is no different that the response to EAs on all other days (excluding the day before and day of the employment report).

The results in Table 3 indicate that PRE1 and POST0 earnings announcements have reliably lower ERCs than the average ERC for all other announcements. It is possible, however,

that there is significant variation in daily-event-time ERCs. (By daily-event-time ERCs, I mean the ERC for EAs occurring a certain number of days before or after the employment report, e.g. the ERC for all EAs occurring 3 days before the ES, or the ERC for all EAs occurring 8 days after the ES, etc.). If there is significant variability in daily-event-time ERCs, the results in Table 3 may not be attributable to the issuance of the employment report and may just be manifestations of unexplained variation in daily-event-time ERCs. To test this possibility I conduct 20 estimations of the following regression:

$$CAR[-1,1]_{iq} = \beta_0 + \beta_1 DAY_{iq} + \beta_2 UE_{iq} + \beta_3 UE_{iq} * DAY_{iq} + \sum_{i=4}^{9} \beta_i CONTROLS_{iq} + \sum_{i=10}^{15} \beta_i UE_{iq} * CONTROLS_{iq} + \varepsilon_{iq} \quad (5)$$

where for each estimation, the variable DAY takes one of the following values: PRE10, PRE9, …, POST8, or POST9.[23] PRE(j)$_{iq}$ is an indicator variable equal to 1 if the quarter q earnings announcement for firm i occurs j trading days before the closest employment report and 0 otherwise (j goes from 1 to 10). POST(k)$_{iq}$ is an indicator variable equal to 1 if the quarter q earnings announcement for firm i occurs k trading days after the closest employment report, and 0 otherwise (k goes from 0 to 9). This specification allows a comparison of the ERC for each event-time day, PRE10 to POST9, against a baseline ERC generated by all other earnings announcements in the sample. The results of these 20 estimations are presented by row in Table 5. Results indicate that only 3 of the 20 daily-event-time ERCs, those for PRE8, PRE1 and POST0, are statistically different, at the 5% level, from the average ERC of all other days.

4.2 Employment report uncertainty

The results in section 4.1 indicating a lower ERC for EAs the day before the employment report are consistent with the hypothesis that uncertainty about the impending employment report

[23] I use 20 daily event-time indicators because there are usually 20 trading days between the monthly employment reports. The PRE10 to POST9 indicator variables identify over 90 percent of EAs in my sample.

causes a muted response to earnings news. In this section I provide additional evidence on the association between the issuance of the ES and the muted market response to PRE1 earnings news by considering inter-temporal variation in the level of ex-ante uncertainty about the employment report.

If the lower reaction to earnings news from announcements occurring the day before the employment report is attributable to uncertainty about information in the employment report, then the muted reaction should be more pronounced when the uncertainty about the news contained in the employment report is high. Following prior literature (e.g. Anderson et al. (2003)) I use the dispersion of unemployment forecasts as a proxy for ex-ante uncertainty about the employment report. I obtain forecasts of unemployment from the quarterly *Survey of Professional Forecasters* administered by the Federal Reserve Bank of Philadelphia. The survey contains forecasts of expected average unemployment rate for the upcoming quarter; for example, in February, an economist participating in the survey would forecast the average civilian unemployment rate during April, May, and June. I calculate forecast dispersion as the standard deviation of forecasts scaled by the mean forecast and use this measure as a proxy for the uncertainty about unemployment news.[24] I then assign each EA a quarterly measure of forecast dispersion using the quarter of the employment report closest to the EA. For example, EAs for which the closest employment report is the January 2009 ES will be assigned the forecast dispersion value calculated for the first quarter of 2009 (generated by economists' forecasts made in the fourth quarter of 2008).

I test whether the muted response to PRE1 earnings news is more muted when ex-ante uncertainty about the unemployment rate is high. I divide the sample into low- and high-

[24] The average number of unemployment forecasts used to calculate the measure of dispersion is 40.

dispersion subsamples split at the median value of dispersion, and estimate the following equation for the two subsamples:

$$CAR[-1,1]_{iq} = \beta_0 + \beta_1 PRE1_{iq} + \beta_2 POST0_{iq} + \beta_3 UE_{iq} + \beta_4 UE_{iq} * PRE1_{iq} + \beta_5 UE_{iq} * POST0_{iq} + \sum_{i=6}^{11} \beta_i CONTROLS_{iq} + \sum_{i=12}^{17} \beta_i UE_{iq} * CONTROLS_{iq} + \varepsilon_{iq} \quad (6)$$

Table 6 displays the results, which indicate that the muted response to PRE1 earnings news occurs only in the high-dispersion subsample. The estimated coefficient (t-stat) for UE*PRE1 using the low-dispersion subsample is -0.029 (-0.13) and when using the high-dispersion subsample is -0.544 (-2.49). These results provide additional evidence that the muted ERC for earnings news released the day before an employment report is due to ex-ante uncertainty about the information in the ES.[25]

The coefficients for UE*POST0 highlight the difference in the constructs that generate the muted initial responses to EAs the day before and the day of the employment report. For EAs the day of the employment report, I do not expect the initial muted response to vary with the level of ex-ante uncertainty about employment conditions because this uncertainty is resolved before trading occurs for EAs the day of the ES. As expected, and in contrast to the results for PRE1, the muted reaction to POST0 announcements does not differ across the low and high dispersion subsamples. The coefficient (t-stat) on UE*POST0 for the low dispersion subsample is -0.616 (-1.99) and for the high dispersion subsample is -0.672 (-2.42). The market response to EAs the day before the ES is affected by ex-ante uncertainty about the employment report while the market response to EAs the day of the ES is not.

4.3 Post-earnings announcement drift

[25] In untabulated results I estimate equation (6) using the full sample and include the interaction term UE*PRE1*DISPERSION where DISPERSION is the quintile of forecast dispersion minus three (so DISPERSION takes the values of -2,-1,0,1,2). The coefficient (t-stat) for UE*PRE1 from this regression is -0.208 (-3.03) and for UE*PRE1*DISPERSION is -0.161 (-1.80) with a p-value (one-sided) of 0.036.

In this section I test whether there is abnormal PEAD for EAs the day before and the day of the employment report. By abnormal PEAD I mean PEAD in excess of the average amount of drift associated with EAs on days other than the day before or day of the ES. I hypothesize that there will be abnormal PEAD for EAs the day before an employment report and the abnormal PEAD should become significant just after the release of the employment report when the macroeconomic uncertainty is resolved.

To test the existence of abnormal PEAD, when it begins, and its duration, I examine PEAD windows of different lengths (from two days to 71 days after the EA, though I do not report all results). Table 7 presents the results of estimating equation (6) using the following as dependent variables: CAR[2,2], CAR[2,3], CAR[2,4], CAR[2,7], and CAR[2,11]. Panel A reports the results from estimating equation (6) excluding control variables. In Panel B, all the control variables in equation (6) are estimated, including PERSIST and PREDICT. Persistence and predictability are important controls because they are correlated with accruals quality (see Dechow and Dichev (2002) and Francis et al. (2004)) and Francis et al. (2007) show that the level of PEAD is associated with accruals quality. Equation (6) also includes SIZE which has been shown to be correlated with the magnitude of PEAD (Foster et al. (1984)).

Because the muted initial response for EAs the day before the ES exists primarily in the high-dispersion sample described in section 4.2, I use this subsample, omitting observations for which POST0 = 1, to test for abnormal PEAD. (Because the results in Panels A and B are similar, I discuss only those reported in Panel B, which includes control variables, each demeaned so that the coefficient estimate for UE is more interpretable.) Using CAR[2,2] as the dependent variable, the coefficient (t-stat) for UE*PRE1 is 0.224 (2.60) indicating that abnormal PEAD begins the day after the employment report is released. The magnitude of the coefficient

for UE*PRE1 increases as the CAR window lengthens and by the sixth trading day after the release of the employment report, the magnitude of the drift, 0.512, is approximately equal to the difference between the initial response for PRE1 EAs and earnings announced on other days, -0.544 (the coefficient for UE*PRE1 in the high dispersion subsample in Table 6). Abnormal PEAD peaks 10 trading days after the ES; the coefficient (t-stat) for UE*PRE1 using CAR[2,11] as the dependent variable is 0.675 (2.13). Untabulated results show the coefficients for UE*PRE1 when using CAR[2,21] CAR[2,31] as the dependent variable are 0.33 and 0.34, respectively, but neither is significant at conventional levels. These results combined with the muted initial response are consistent with investors placing a lower weight on earnings signals the day before high-uncertainty employment reports until the uncertainty is resolved, at which point investors place more weight on the earnings signals resulting in PEAD. This pattern of abnormal PEAD differs from patterns of abnormal PEAD resulting from limited investor attention as suggested in Hirshleifer et al (2009) and DellaVigna and Pollet (2009) and described below.

To further differentiate the constructs generating the results for EAs the day before and the day of the ES, I test for abnormal PEAD associated with earnings announced the day of the employment report. Because employment reports are released on Fridays, I expect the pattern of abnormal PEAD to be similar to the pattern documented in DellaVigna and Pollet (2009) who hypothesize and find differential PEAD for Friday versus non-Friday EAs (greater PEAD for Friday announcements). They find the drift differential begins around 30 days after the EA and plateaus at about 60 days after the announcement.

To test the existence of abnormal PEAD, its beginning and duration, I use PEAD windows of differing lengths. I estimate equation (6) using CAR[2,11], CAR[2,21], CAR[2,31],

CAR[2,41] as dependent variables and tabulate the results in Table 8. (As in Table 7, Panel A excludes control variables and Panel B includes demeaned control variables; I discuss only the results reported in Panel B as they are similar to those in Panel A.) Similar to the abnormal drift in DellaVigna and Pollet (2009), and in contrast to the abnormal drift for PRE1 EAs, the abnormal PEAD for POST0 announcements does not become significantly positive until 30 trading days after the employment report. The coefficients (t-stats) for UE*POST0 when using CAR[2,31] and CAR[2,41] as dependent variables are 0.864 (1.68) and 0.866 (2.03). As the PEAD window lengthens the coefficient for UE*PRE1 stays roughly constant but becomes less significant (e.g., the coefficient (t-stat) for UE*POST0 using CAR[2,71] as the dependent variable is 0.831 (1.15)). Again, these drift results for POST0 EAs highlight the difference in the constructs resulting in the initial muted responses to PRE1 and POST0 EAs.

As mentioned above, one possible explanation for the initial muted response to POST0 EAs is limited investor attention. Hirshleifer et al. (2009) find differential PEAD for firms that announce earnings on days with high versus low volumes of EAs (more PEAD for announcements on high volume days). They hypothesize that the abnormal PEAD occurs as a result of investors with finite information processing capabilities being unable to fully process and price all earnings news on days with many earnings announcements. Then, over time, as investors receive new information and revisit their valuation models, prices drift in the direction of the news. They find the abnormal PEAD becomes significant about 45 days after earnings are announced and is insignificant by 90 days after the announcement. Both DellaVigna and Pollet (2009) and Hirshleifer et al. (2009) suggest that the PEAD differential is caused by investor inattention. Hirshleifer et al. (2009) posit that investors are distracted by other firms' earnings reports and DellaVigna and Pollet (2009) posit that investors are distracted by the weekend. If

earnings news is neglected on days with high numbers of EAs or due to weekend distractions, then earnings news may also be neglected on days of attention-demanding news events such as the employment report.

Previous research has shown that news in the employment report has economically and statistically significant effects on financial markets. For example, Boyd et al. (2005) show that the average daily return of the S&P 500 Index is .04% on non-announcement days and a 1% unexpected increase in the unemployment rate during economic contractions results in a 1.4% decrease in S&P 500 returns. McQueen and Roley (1993) find that good and bad employment news have different market effects depending on the state of the economy and estimate that an unanticipated 1% reduction in the unemployment rate results in a 2.2% drop in the S&P 500 Index when industrial production is high (top quartile). Fleming and Remolona (1999) study the intra-day activity in the U.S. Treasury market around the announcement of the employment report and find significant increases in price volatility and trading volume. Brenner et al. (2009) find that conditional return volatility in stock and bond markets is significantly higher (lower) on the day of (preceding) the release of employment report news.

According to Carnes and Slifer (1991), who describe the employment report as the "king of kings" among economic indicators, this report is generally accepted as the most influential monthly macroeconomic report. Results from academic studies help substantiate this claim. Ederington and Lee (1993) analyze the consumer price index, producer price index, employment report, durable goods orders, industrial production, construction spending - National Association of Purchasing Managers survey, and the federal budget, and find that the employment report has a much greater impact on the volatility of prices in interest rate and foreign exchange futures markets than the other scheduled macroeconomic announcements. Ederington and Lee (1996)

conduct a similar study but instead investigate the impact of macroeconomic announcements on implied volatilities from option markets. They find implied volatilities decline substantially more at the release of the employment report than at the release of the other announcements. Brenner et al. (2009) find news from the employment report has a larger impact on return volatilities in stock and bond markets than news from announcements of the consumer price index and the target federal funds rate. Flannery and Protopapadakis (2002) study the effects of 17 SMAs on stock market return volatility and trading volume and find that the employment report has the largest effect.

As described above, the release of the ES is a significant market event and immediately following the release of the report investors may be engaged in the following activities: processing the news from the report, converting the news into inputs for valuation models, trading based on the output from valuation models, and rebalancing portfolio positions. Investors may also unwind speculative or hedging positions created in advance of the employment news. Beber and Brandt (2009) find that in option markets for Treasury bond futures and cyclical stocks there is significantly higher volume the day before and the day of issuance of the employment report (see their Figure 3). They state that given the substantial impact that unemployment news can have on the market, investors may enter hedging positions to protect their portfolios from adverse unemployment news or may open speculative positions to benefit from anticipated employment news. While I do not take a stand on the cause of the market response to EAs the day of the ES, I believe the results in this study are generally consistent with findings in prior studies based on limited investor attention.

In conclusion, I find that for EAs the day before (day of) the ES, there is abnormal PEAD beginning the day after (30 days after) the release of the ES. These results present a hurdle for

alternative explanations for the initial muted response to EAs on the day before or the day of the ES. That is, explanations for the lower initial reaction to earnings news must also be able to explain the subsequent abnormal PEAD. For example, one possible explanation for the lower market response to earnings news for PRE1 and POST0 EAs is that the EAs are less informative. This explanation, however, does not explain why there is subsequent abnormal PEAD for PRE1 and POST0 EAs.

4.4 Fridays and bad news earnings announcements

Because I find a muted initial response to EAs the day of the ES, in this section I compare the proportion of bad news (negative unexpected earnings) EAs on Fridays of employment reports to the proportion of bad news EAs on other days. Several studies including Damodaran (1989) and Penman (1987) find more bad news EAs on Fridays than on other weekdays. Damodaran (1989) notes that managers have some discretion in their timing of the earnings reports and that there is evidence suggesting their decision is a function of the sign of the earnings news. In other words, managers may strategically time their earnings reports and hide bad news on Friday, when media and investor attention may be low. If managers attempt to hide bad news announcements on days of reduced investor attention, then I expect there to be a higher proportion of bad news announcements on days of employment reports.

Panel A of Table 9 shows that for my sample, and consistent with prior literature, the percentage of bad news EAs is significantly higher for Friday EAs (30.0%) than non-Friday EAs (27.5%). Panel B shows that the proportion of bad news announcements is significantly higher for employment-report Fridays (33.8%) than non-employment-report Fridays (29.0%). This result is consistent with managers strategically announcing poor earnings news on high distraction (or low attention) days and stands in contrast to the findings in Doyle and Magilke

(2009). Doyle and Magilke (2009) find no statistically significant evidence that firms switching from announcing earnings on a non-Friday in the previous quarter to a Friday in the current quarter are more likely to announce bad earnings news in the current quarter than in the previous quarter.

To provide additional evidence of the strategic timing of EAs, I consider the proportion of firms announcing bad news when ex-ante uncertainty about the employment report is high versus low. Panel C of Table 9 shows that the proportion of bad news announcements is higher on employment-report Fridays when ex-ante uncertainty about employment conditions is high and there is a greater likelihood that the employment report will contain news. To control for the possibility that there are more bad news announcements during times when ex-ante uncertainty about the employment report is high, I calculate the difference between the proportions of bad news announcements on non-employment-report Fridays when uncertainty is high versus low. Panel C indicates that there is no significant difference between these proportions and in untabulated results I find that the proportion of bad news announcements for non-Friday EAs is actually lower (27.0%) when ex-ante uncertainty is high than when it is low (28.0%). In summary, these results provide evidence that managers strategically time bad news EAs to coincide with the release of the employment report.

4.5 Robustness checks

In this section I report results from several robustness checks. I first add several additional control variables to equation (6) estimated as model (5) in Table 3. I include the natural log of analyst coverage[26] as an additional control for differences in firms' information environments. I also include an indicator variable equal to 1 if reported earnings are negative

[26] I define analyst coverage as the number of analysts who issue or confirm an earnings forecast within 30 days of the earnings announcement.

(and 0 otherwise) because Hayn (1995) shows that negative earnings are less informative than positive earnings. In addition, I include an indicator variable equal to 1 if the EA is for the final fiscal quarter (and 0 otherwise) as Mendenhall and Nichols (1988) find lower market reactions to earnings news announced for the fourth quarter. When including these additional control variables, the coefficients for the interactions of UE*PRE1 and UE*POST0 are of similar magnitude as those in Table 3 and have smaller standard errors. I also re-estimate the specifications used in Tables 6, 7, and 8 including these additional control variables and find results similar to those presented in the tables.

I also examine whether the results are robust to the definitions of cumulative abnormal returns. I first calculate CAR[-1,1] by adjusting for the CRSP value-weighted market return as opposed to a matched size/btm portfolio return. The results using this abnormal returns measure are qualitatively and quantitatively similar to those presented in the tables. In additional robustness checks, I also use a seasonal random walk measure of unexpected earnings and cluster standard errors at the firm level and find similar results.

Given that my measure of abnormal returns CAR[-1,1] for PRE1 and POST0 EAs overlaps with the employment report, a potential concern is that news from the employment report is affecting the results. To help mitigate these concerns, I re-estimate the models presented in Tables 3 and 5 using CAR[-1,0] as the dependent variable and obtain similar results (though this change in the dependent variable really only addresses the concern for PRE1 EAs). These findings, along with the existence of abnormal PEAD, ease concerns that employment news is affecting the results.

As a final robustness check and following Easton and Zmijewski (1989) I add CAR[-20,-2] as an independent variable to equation (7). The inclusion of this variable helps control for any

news released in the 20 days leading up to the EA that is not reflected in my measure of UE. The coefficient on CAR[-20,-2] is negative and significant as expected and the magnitudes and significance levels of the coefficients of interest are very similar to those reported in the tables.

5. Conclusion

I use a prominent scheduled macroeconomic announcement, the employment report, to examine the effects of macroeconomic uncertainty on investor responses to earnings news. Because employment reports are significant market events, have pre-determined timing, and resolve uncertainty about the state of the economy, they create a unique setting in which to examine the effects of macroeconomic uncertainty on the pricing of earnings news. I find that the initial market response to EAs the day before the employment report (when uncertainty about the employment report is highest) is muted. I also show this effect is strongest around employment reports associated with high ex-ante uncertainty about the employment news. I document significant abnormal PEAD for EAs the day before an employment report and find the abnormal drift begins the day after the release of the employment report when the uncertainty about the employment news has been resolved. These results are consistent with macroeconomic uncertainty affecting the market response to earnings news.

As part of my investigation of the effects of macroeconomic uncertainty on the pricing of earnings news, I also consider EAs the day of the employment report. Employment reports are released on Fridays and previous research has documented an initial muted reaction to earnings announced on Fridays (DellaVigna and Pollet (2009)). However, because ex-ante uncertainty related to the ES is resolved before trading for these EAs begins, I predict the initial market response to these EAs will be greater than or equal to the response to EAs on all other Fridays.

Contrary to my prediction, I find that initial response for EAs the day of ES is lower than the initial response to EAs on all other Fridays. I also show that after controlling for EAs on employment-report Fridays, the market response to EAs on all other Fridays is not reliably different than the market response to EAs on other weekdays. In other words, for the sample and research design used in this study, there is a Friday effect, but only for employment-report Fridays.

To differentiate between the market reactions for EAs the day before and the day of the ES, I show that in contrast to the initial response to EAs the day before the ES, the initial reaction to EAs the day of the ES does not vary with ex-ante uncertainty about the employment report. I also show that there is abnormal PEAD associated with EAs the day of the ES, but the abnormal PEAD does not become significant until after 30 trading days; this pattern is consistent with PEAD patterns found in the limited investor attention literature.

Finally, I consider the proportion of bad news (negative unexpected earnings) EAs on the day of the employment report. I show that the proportion of bad news announcements is higher on Fridays than other weekdays (consistent with findings in prior research) and higher on employment-report Fridays than non-employment-report Fridays. I also find that the proportion of bad news announcements on employment-report Fridays is higher when ex-ante uncertainty about the employment report is high. However, the proportion of bad news EAs does not vary with the level of ex-ante uncertainty about the employment report for non-employment-report Fridays or other weekdays. These results suggest that managers believe the ES consumes investor attention and strategically announce bad earnings news on the day of the ES.

Taken together these findings demonstrate that the release of the ES has a significant impact on investor responses to earnings news as well as managers' timing of earnings

announcements. The results in this study help provide a better understanding of the information environment and speak to how factors such as macroeconomic uncertainty and scheduled macroeconomic information events affect the pricing of earnings news.

Appendix A: Variable definitions

Variable	Definition
CAR[a,b]	Cumulative abnormal return defined as the sum of a firm's daily raw returns minus the sum of the daily returns from 1 of 25 size/book-to-market portfolios created at the end of June each year. At the end of each June in year t firms are matched to a portfolio based on the firm's market capitalization at the end of June in year t and the firm's book-to-market value calculated using the book value of equity from the fiscal year end in year t-1 and market capitalization at the end of December of year t-1. Returns are calculated over the period from t+a to t+b where t is the day of the earnings announcement.
UE	Unexpected earnings defined as actual EPS minus the median analyst forecast scaled by price 21 trading days before the earnings announcement. Actual EPS and analyst forecasts are from I/B/E/S and only the latest forecast per analyst issued within 30 days of the earnings announcement is used.
PRE(i)	An indicator variable equal to 1 if the earnings announcement occurs i days before the release of the employment report and 0 otherwise (i takes values from 1 to 10).
POST(j)	An indicator variable equal to 1 if the earnings announcement occurs j days after the release of the employment report and 0 otherwise (j takes values from 0 to 9).
SIZE	The log of the market value of equity in millions at the end of the fiscal quarter.
BTM	The book value of equity at the end of the fiscal quarter divided by the market value of equity at the end of the fiscal quarter.
BADNEWS	An indicator variable equal to 1 if unexpected earnings is negative and 0 otherwise.
FRIDAY	An indicator variable equal to 1 if the earnings announcement is on a Friday and 0 otherwise.
PERSIST	Earnings persistence measured as the first-order autocorrelation coefficient of quarterly income before extraordinary item scaled by average total assets, estimated over the previous four years (a minimum of five observations required).
PREDICT	Earnings predictability measured as the root mean squared error from the regression used to obtain the persistence measure.
NONLINEAR	The absolute value of unexpected earnings.
BETA	The market-model beta estimated using daily returns over the prior year and ending two trading days before the earnings announcement.
LOSS	An indicator variable equal to 1 if reported earnings is negative and 0 otherwise.
COVERAGE	The natural log of analyst coverage measured as the number of forecasts used to compute unexpected earnings.
Q4	An indicator variable equal to 1 if the earnings announcement is for the fourth quarter and 0 otherwise.

Appendix B: Within-firm variation in earnings announcement timing

I estimate all regressions using firm fixed effects which require within-firm variation in the timing of earnings announcements with respect to employment reports. Inspection of the data indicates that most firms exhibit substantial variation in the timing of earnings announcements with respect to employment reports. Below I provide several examples of this timing variation within firms.

Firm	Fiscal period end date	Earnings announcement date minus employment report date (trading days)
Alcoa Inc.	3/31/99	-6
	6/30/99	-6
	9/30/99	-6
	12/31/99	4
	3/31/00	0
	6/30/00	-2
	9/30/00	-7
	12/31/00	4
Alliance Data Systems Corp.	3/31/06	8
	6/30/06	9
	9/30/06	9
	12/31/06	-1
	3/31/07	8
	6/30/07	9
	9/30/07	9
	12/31/07	-1
Exxon Mobile Corp.	3/31/07	-6
	6/30/07	-6
	9/30/07	-1
	12/31/07	0
	3/31/08	-1
	6/30/08	-1
	9/30/08	-6
	12/31/08	-5

I also provide the sample distributions for the following firm-level measures: AVG PRE1, calculated as the number of PRE1 EAs divided by the total number of EAs; COUNT PRE1, equal to the number of PRE1 EAs; AVG POST0, defined as the number of POST0 EAs divided by the total number of EAs; COUNT POST0, equal to the number of POST0 EAs.

Percentile	**AVG PRE1**	**COUNT PRE1**	**AVG POST0**	**COUNT POST0**
1st	0	0	0	0
25th	0	0	0	0
50th	0.022	1	0	0
75th	0.093	2	0.036	1
99th	0.500	11	0.385	8

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Table 1: Descriptive Statistics

Panel A (Full sample, 100,372 Obs.)

Variable	Mean	Std. Dev.	1%	25%	50%	75%	99%
CAR[-1,1]	0.002	0.079	-0.222	-0.037	0.002	0.044	0.137
UE	0.000	0.009	-0.042	0.000	0.000	0.002	0.024
SIZE	5,825	20,939	31	320	952	3,140	99,714
BTM	0.57	0.51	0.03	0.28	0.46	0.71	2.43
BADNEWS	0.28	0.45	1.00	1.00	0.00	0.00	0.00

Panel B (PRE1 = 1, 6,473 Obs.)

Variable	Mean	Std. Dev.	1%	25%	50%	75%	99%
CAR[-1,1]	0.004*	0.079	-0.214	-0.038	0.002	0.047	0.219
UE	0.000	0.009	-0.046	0.000	0.000	0.002	0.024
SIZE	3,924***	17,195	37	306	782	2,360	55,376
BTM	0.61***	0.58	0.02	0.30	0.49	0.76	2.53
BADNEWS	0.30***	0.46	1.00	1.00	0.00	0.00	0.00

Panel C (POST0 = 1, 3,510 Obs.)

Variable	Mean	Std. Dev.	1%	25%	50%	75%	99%
CAR[-1,1]	-0.001***	0.085	-0.228	-0.047	-0.001	0.046	0.220
UE	0.000	0.010	-0.050	-0.001	0.000	0.002	0.029
SIZE	3,341***	16,699	32	253	675	1,832	56,244
BTM	0.59***	0.58	0.00	0.29	0.49	0.75	2.50
BADNEWS	0.34***	0.47	1.00	1.00	0.00	0.00	0.00

Table 1 presents descriptive statistics for CAR[-1,1], UE, SIZE, BTM, and BADNEWS using the sample of 100,372 quarterly earnings announcements from September 1998 through December 2009. Earnings announcements (from I/B/E/S) with sufficient data to construct CAR[-1,1] and UE are included in the sample and the sample is truncated at the 1st and 99th percentiles of these variables. Panel A provides statistics for the entire sample, Panel B for earnings announcements occurring the day before the release of the Employment Situation by the Bureau of Labor Statistics, and Panel C for earnings announcements on the day of the release of the Employment Situation. ***, **, and * indicate significance at the 1, 5, and 10% levels respectively (two-sided tests) for tests of means between PRE1=1 observations and all other observations (Panel B) and between POST0=1 observations and all other observations (Panel C).

Variable Definitions:

CAR[-1,1] is the cumulative abnormal return from the day before to the day after an earnings announcement (the firm's raw return is adjusted by a matched portfolio (1 of 25 size/btm portfolios) return).

UE is unexpected earnings calculated as actual earnings minus the median of analyst forecasts issued within the 30 days preceding the earnings announcement scaled by the stock price from 21 days before the announcement (actual earnings and forecasts are from I/B/E/S).

SIZE is the market capitalization at the end of the fiscal quarter in millions.
BTM is the book-to-market ratio at the end of the fiscal quarter.
BADNEWS is an indicator variable equal to 1 if UE is negative and 0 otherwise.

Table 2: Variable Means for Thursday and Friday Earnings Announcements

	Thursday Announcements		Friday Announcements	
Variable	PRE1 = 0	PRE1 = 1	POST0 = 0	POST0 = 1
CAR[-1,1]	0.003	0.004	0.000	-0.001
UE	0.000	0.000	0.000	0.000
SIZE	5,786	3,943***	5,847	3,437***
BTM	0.56	0.61***	0.56	0.59***
BADNEWS	0.27	0.30***	0.29	0.34***
Daily Announcements	61	48	32	26

Table 2 provides the mean values for CAR[-1,1], UE, SIZE, BTM, BADNEWS and the average number of observations for four groups of earnings announcements. The first group (Thursdays and PRE1=0) is all earnings announcements disclosed on Thursdays that are not the day before or the day of the release of an employment report. The second group (Thursdays and PRE1=1) is all earnings announcements disclosed on a Thursday, the day before the release of an employment report. The third group (Fridays and POST0=0) is all earnings announcements disclosed on Fridays that are not the day of or the day before the employment report. The fourth group (Fridays and POST0=1) is all earnings announcements occurring on the Friday of an employment report. ***, **, and * indicate significance at the 1, 5, and 10% levels respectively (two-sided tests) for tests of means between Thursday earnings announcements for which PRE1 = 0 and PRE1=1 and between Friday earnings announcements for which POST0=0 and POST0=1.

Variable Definitions:

PRE1 is an indicator variable equal to 1 for earnings announcements the day before the release of the Employment Situation and 0 otherwise.

POST0 is an indicator variable equal to 1 for earnings announcements the same day as the release of the Employment Situation and 0 otherwise.

CAR[-1,1] is the cumulative abnormal return from the day before to the day after an earnings announcement (the firm's raw return is adjusted by a matched portfolio (1 of 25 size/btm portfolios) return).

UE is unexpected earnings calculated as actual earnings minus the median of analyst forecasts issued within the 30 days preceding the earnings announcement scaled by the stock price from 21 days before the announcement (actual earnings and forecasts are from I/B/E/S).

SIZE is the market capitalization at the end of the fiscal quarter in millions.

BTM is the book-to-market ratio at the end of the fiscal quarter.

BADNEWS is an indicator variable equal to 1 if UE is negative and 0 otherwise.

Table 3: ERCs the day before and day of the release of the Employment Situation

Independent Variables	Model 1	Model 2	Model 3	Model 4	Model 5
PRE1	0.003**	0.002**	0.002**	0.002**	0.003**
	[2.141]	[1.983]	[1.985]	[1.824]	[2.094]
FRIDAY		-0.001	-0.001*	-0.001	-0.001
		[-1.533]	[-1.373]	[-1.123]	[-0.737]
POST0			-0.000	-0.000	-0.001
			[-0.00288]	[-0.218]	[-0.566]
UE	1.584***	1.624***	1.624***	2.295***	3.728***
	[35.46]	[32.08]	[32.08]	[23.39]	[12.95]
UE*PRE1	-0.351***	-0.390***	-0.390***	-0.362***	-0.410***
	[-3.186]	[-3.445]	[-3.447]	[-3.469]	[-2.778]
UE*FRIDAY		-0.196**	-0.076	-0.031	0.089
		[-1.879]	[-0.665]	[-0.290]	[0.616]
UE*FRIDAY*POST0			-0.446***	-0.474***	-0.668***
			[-2.411]	[-2.846]	[-2.841]
UE*BADNEWS				-2.076***	
				[-18.16]	
UE*PERSIST					0.116
					[1.159]
UE*PREDICT					-6.887***
					[-3.954]
UE*BETA					0.133*
					[1.581]
UE*NONLINEAR					-49.13***
					[-18.71]
UE*BTM					-0.357***
					[-3.957]
UE*SIZE					0.099***
					[2.751]
Observations	100,372	100,372	100,372	100,372	85,166
Adj. R-squared	0.123	0.123	0.123	0.152	0.146

Model: $CAR[-1,1]_{iq} = \beta_0 + \beta_1 PRE1_{iq} + \beta_2 FRIDAY_{iq} + \beta_3 POST0_{iq} + \beta_4 UE_{iq} +$

$\beta_5 UE_{iq} * PRE1_{iq} + \beta_6 UE_{iq} * FRIDAY_{iq} + \beta_7 UE_{iq} * FRIDAY_{iq} * POST0_{iq} +$

$\sum_{i=8}^{13} \beta_i \, CONTROLS_{iq} + \sum_{i=14}^{19} \beta_i \, UE_{iq} * CONTROLS_{iq} + \varepsilon_{iq}$

Table 3 reports estimated ERCs for quarterly earnings announcements announced around the issuance of the Employment Situation by the Bureau of Labor Statistics using variations of the model above. Models 1, 2, and 3 are estimated without control variables; in model 4 BADNEWS is used as a control variable and in model 5 PERSIST, PREDICT, NONLINEAR, BETA, BTM, and SIZE are used as control variables. All regressions are done using OLS with year fixed effects, firm fixed effects, and standard errors clustered at the firm level. ***, **, and * indicate significance at the 1, 5, and 10% levels respectively (one-sided tests) and t-stats are reported below the coefficient estimates.

Variable Definitions:

PRE1 is an indicator variable equal to 1 for earnings announcements announced the day before the release of the Employment Situation and 0 otherwise.

POST0 is an indicator variable equal to 1 for earnings announcements the same day as the release of the Employment Situation and 0 otherwise.

CAR[-1,1] is the cumulative abnormal return from the day before to the day after an earnings announcement (the firm's raw return is adjusted by a matched portfolio (1 of 25 size/btm portfolios) return).

UE is unexpected earnings calculated as actual earnings minus the median of analyst forecasts issued within the 30 days preceding the earnings announcement scaled by the stock price from 21 days before the announcement (actual earnings and forecasts are from I/B/E/S).

BADNEWS is an indicator variable equal to 1 if UE is negative and 0 otherwise.

PERSIST is the first-order autocorrelation coefficient of quarterly income before extraordinary item scaled by average total assets, estimated over the previous four years (a minimum of five observations required).

PREDICT is the root mean square error from the regression used to obtain the persistence measure.

NONLINEAR is the absolute value of UE.

BETA is the market-model beta estimated using daily returns over the prior year and ending two trading days before the earnings announcement.

BTM is the book-to-market ratio at the end of the fiscal quarter.

SIZE is the log of market capitalization at the end of the fiscal quarter in millions.

Table 4: Descriptive statistics for control variables

	Full Sample			PRE1 = 1			POST0 = 1		
Variable	Obs.	Mean	Median	Obs.	Mean	Median	Obs.	Mean	Median
CAR[-1,1]	85,166	0.003	0.003	5,525	0.005	0.003	2,942	0.000	-0.001
UE	85,166	0.000	0.000	5,525	0.000	0.001	2,942	0.000	0.001
PERSIST	85,166	0.229	0.153	5,525	0.217	0.145	2,942	0.219	0.149
PREDICT	85,166	0.018	0.009	5,525	0.020	0.010	2,942	0.022	0.011
NONLINEAR	85,166	0.004	0.001	5,525	0.004	0.002	2,942	0.005	0.002
BETA	85,166	1.04	0.99	5,525	1.08	1.04	2,942	1.10	1.06
BTM	85,166	0.55	0.47	5,525	0.60	0.50	2,942	0.57	0.50
SIZE	85,166	4,255	1,014	5,525	3,067	835	2,942	2,533	721

Table 4 presents means and medians for CAR[-1,1], UE, PERSIST, PREDICT, NONLINEAR, BETA, BTM, and SIZE using a sample of 85,166 quarterly earnings announcement from September 1998 through December 2009. Earnings announcements (taken from I/B/E/S) with sufficient data to construct the variables of interest are included in the sample (the sample is truncated at the 1st and 99th percentiles of these variables). The first column of results provides means and medians for the entire sample, the second column for earnings announcements occurring the day before the release of the Employment Situation, and the third column for earnings announcements the day of the release of the Employment Situation.

Variable Definitions:

CAR[-1,1] is the cumulative abnormal return from the day before to the day after an earnings announcement (the firm's raw return is adjusted by a matched portfolio (1 of 25 size/btm portfolios) return).

UE is unexpected earnings calculated as actual earnings minus the median of analyst forecasts issued within the 30 days preceding the earnings announcement scaled by the stock price from 21 days before the announcement (actual earnings and forecasts are from I/B/E/S).

PERSIST is the first-order autocorrelation coefficient of quarterly income before extraordinary items scaled by average total assets, estimated over the previous four years (a minimum of five observations required).

PREDICT is the root mean square error from the regression used to obtain the persistence measure.

NONLINEAR is the absolute value of UE.

BETA is the market-model beta estimated using daily returns over the prior year and ending two trading days before the earnings announcement.

BTM is the book-to-market ratio at the end of the fiscal quarter.

SIZE is the market capitalization at the end of the fiscal quarter in millions.

Table 5: ERCs before and after the release of the Employment Situation

DAY	UE	tstat	UE*DAY	tstat	Obs.	Adj. R2
PRE10	3.681***	[12.98]	0.447	[1.147]	85,166	0.146
PRE9	3.696***	[13.06]	-0.0554	[-0.131]	85,166	0.146
PRE8	3.690***	[13.03]	0.116	[0.469]	85,166	0.146
PRE7	3.669***	[12.95]	0.570***	[3.097]	85,166	0.146
PRE6	3.692***	[13.02]	0.226	[1.267]	85,166	0.146
PRE5	3.687***	[12.96]	0.135	[0.654]	85,166	0.146
PRE4	3.702***	[13.10]	-0.473	[-1.141]	85,166	0.146
PRE3	3.707***	[13.06]	-0.213	[-0.853]	85,166	0.146
PRE2	3.697***	[13.08]	0.141	[0.658]	85,166	0.146
PRE1	3.701***	[13.07]	-0.392***	[-2.672]	85,166	0.146
POST0	3.739***	[13.17]	-0.544***	[-2.706]	85,166	0.146
POST1	3.718***	[13.10]	-0.802*	[-1.700]	85,166	0.146
POST2	3.727***	[13.11]	-0.308	[-1.475]	85,166	0.146
POST3	3.703***	[13.12]	-0.0818	[-0.322]	85,166	0.146
POST4	3.719***	[13.11]	-0.272*	[-1.690]	85,166	0.146
POST5	3.701***	[13.04]	-0.0678	[-0.301]	85,166	0.146
POST6	3.703***	[13.07]	-0.16	[-0.576]	85,166	0.146
POST7	3.714***	[13.06]	-0.237	[-1.118]	85,166	0.146
POST8	3.692***	[13.08]	0.34	[1.371]	85,166	0.146
POST9	3.703***	[13.03]	-0.0618	[-0.343]	85,166	0.146

Model: $CAR[-1,1]_{iq} = \beta_0 + \beta_1 DAY_{iq} + \beta_2 UE_{iq} + \beta_3 UE_{iq} * DAY_{iq} + \sum_{i=4}^{9} \beta_i CONTROLS_{iq} + \sum_{i=10}^{15} \beta_i UE_{iq} * CONTROLS_{iq} + \varepsilon_{iq}$

Table 5 reports the results from 20 estimations of equation (5). In each regression DAY takes a different value of one of the following: PRE10, PRE9, … , POST8, POST9. The estimated ERCs are for quarterly earnings announcements announced before and after the issuance of the Employment Situation by the Bureau of Labor Statistics. PERSIST, PREDICT, NONLINEAR, BETA, BTM and SIZE are used as control variables and regressions are done using OLS with year fixed effects, firm fixed effects, and standard errors clustered at the firm level. ***, **, and * indicate significance at the 1, 5, and 10% levels respectively (one-sided tests) and t-stats are reported below the coefficient estimates. The table reports estimates and significance levels for only the primary variables of interest, β_2 and β_3.

Variable Definitions:

PRE(j) is an indicator variable equal to 1 for earnings announcements announced j trading days before the release of the Employment Situation and 0 otherwise (j = 1,…10).

POST(k) is an indicator variable equal to 1 for earnings announcements k days after the release of the Employment Situation and 0 otherwise (k = 0,…9).

CAR[-1,1] is the cumulative abnormal return from the day before to the day after an earnings announcement (the firm's raw return is adjusted by a matched portfolio (1 of 25 size/btm portfolios) return).

UE is unexpected earnings calculated as actual earnings minus the median of analyst forecasts issued within the 30 days preceding the earnings announcement scaled by the stock price from 21 days before the announcement (actual earnings and forecasts are from I/B/E/S).

PERSIST is the first-order autocorrelation coefficient of quarterly income before extraordinary item scaled by average total assets, estimated over the previous four years (a minimum of five observations required).

PREDICT is the root mean square error from the regression used to obtain the persistence measure.

NONLINEAR is the absolute value of UE.

BETA is the market-model beta estimated using daily returns over the prior year and ending two trading days before the earnings announcement.

BTM is the book-to-market ratio at the end of the fiscal quarter.

SIZE is the log of market capitalization at the end of the fiscal quarter in millions.

Table 6: Dispersion of unemployment forecasts and ERCs the day before and the day of the release of the Employment Situation

Independent Variables	Low Dispersion	High Dispersion
PRE1	0.00156	0.00488**
	[0.922]	[2.224]
POST0	-0.00138	-0.00269
	[-0.687]	[-1.022]
UE	4.206***	4.074***
	[9.536]	[10.20]
UE*PRE1	-0.0291	-0.544***
	[-0.131]	[-2.488]
UE*POST0	-0.616**	-0.672***
	[-1.991]	[-2.417]
UE*PERSIST	0.142	0.0528
	[0.840]	[0.422]
UE*PREDICT	-7.420***	-7.687***
	[-2.863]	[-2.936]
UE*BETA	0.325***	-0.0139
	[2.663]	[-0.113]
UE*NONLINEAR	-58.07***	-45.94***
	[-13.51]	[-13.75]
UE*BTM	-0.361***	-0.397***
	[-2.702]	[-3.123]
UE*SIZE	0.0638	0.058
	[1.167]	[1.128]
Observations	42,619	42,547
Adj. R-squared	0.212	0.214

Model: $CAR[-1,1]_{iq} = \beta_0 + \beta_1 PRE1_{iq} + \beta_2 POST0_{iq} + \beta_3 UE_{iq} + \beta_4 UE_{iq} * PRE1_{iq} +$

$\beta_5 UE_{iq} * POST0_{iq} + \sum_{i=6}^{11} \beta_i \, CONTROLS_{iq} + \sum_{i=12}^{17} \beta_i \, UE_{iq} * CONTROLS_{iq} + \varepsilon_{iq}$

Table 6 reports estimated ERCs for quarterly earnings announcements from September 1998 to December 2009. Control variables used in the model are PERSIST, PREDICT, BETA, NONLINEAR, BTM and SIZE. The sample is divided into low dispersion and high dispersion subsamples (split at the median value of dispersion) where dispersion is measured as the coefficient of variation of quarterly unemployment rate forecasts collected from the Survey of Professional Forecasters (administered by the Federal Reserve Bank of Philadelphia). Each earnings announcement is assigned a value of dispersion based on the quarter of the closest employment report. Regressions are done using OLS with year fixed effects, firm fixed effects, and standard errors clustered at the firm level. ***, **, and * indicate significance at the 1, 5, and 10% levels respectively (one-sided tests) and t-stats are

reported below the coefficient estimates. For control variables, only the interactive effects are reported (i.e. β_6 to β_{11} are not reported).

Variable Definitions:

CAR[-1,1] is the cumulative abnormal return from the day before to the day after a firm's earnings announcement (the firm's raw return is adjusted by a matched portfolio (1 of 25 size/btm portfolios) return).

UE is unexpected earnings calculated as the actual earnings minus the median of analyst forecasts issued within the 30 days preceding the earnings announcement scaled by the stock price from 21 days before the announcement (actual earnings and forecasts are from I/B/E/S).

PRE1 is an indicator variable equal to 1 for earnings announcements announced the day before the release of the Employment Situation and 0 otherwise.

PERSIST is the first-order autocorrelation coefficient of quarterly income before extraordinary item scaled by average total assets, estimated over the previous four years (a minimum of five observations required).

PREDICT is the root mean square error from the regression used to obtain the persistence measure.

NONLINEAR is the absolute value of UE.

BETA is the market-model beta estimated using daily returns over the prior year and ending two trading days before the earnings announcement.

BTM is the book-to-market ratio at the end of the fiscal quarter.

SIZE is the log of market capitalization at the end of the fiscal quarter in millions.

Table 7: Post-earnings announcement drift for earnings announcements the day before the release of the Employment Situation

PANEL A (WITHOUT CONTROLS)

Independent Variables	CAR[2,2]	CAR[2,3]	CAR[2,4]	CAR[2,7]	CAR[2,11]
PRE1	-0.002**	-0.003***	-0.005***	-0.004***	-0.008***
	[-2.173]	[-2.370]	[-3.279]	[-2.212]	[-2.417]
UE	0.0760***	0.139***	0.139***	0.297***	0.306***
	[2.634]	[2.989]	[2.355]	[3.295]	[2.878]
UE*PRE1	0.242***	0.284**	0.366***	0.533**	0.718**
	[2.821]	[2.233]	[2.427]	[2.322]	[2.307]
Obs.	41,207	41,205	41,203	41,188	41,169
Adj. R2	0.191	0.191	0.192	0.200	0.217

PANEL B (WITH CONTROLS, DEMEANED)

Independent Variables	CAR[2,2]	CAR[2,3]	CAR[2,4]	CAR[2,7]	CAR[2,11]
PRE1	-0.002**	-0.003***	-0.005***	-0.005***	-0.008***
	[-2.235]	[-2.508]	[-3.474]	[-2.510]	[-2.745]
UE	0.240***	0.394***	0.458***	0.675***	0.779***
	[4.707]	[4.912]	[4.892]	[5.361]	[5.061]
UE*PRE1	0.224***	0.275**	0.394***	0.512**	0.675**
	[2.604]	[2.090]	[2.430]	[2.098]	[2.130]
Obs.	41,207	41,205	41,203	41,188	41,169
Adj. R2	0.193	0.194	0.195	0.204	0.225

Model: $CAR[2,X]_{iq} = \beta_0 + \beta_1 PRE1_{iq} + \beta_2 UE_{iq} + \beta_3 UE_{iq} * PRE1_{iq} + \sum_{i=4}^{9} \beta_i \, CONTROLS_{iq} + \sum_{i=10}^{15} \beta_i \, UE_{iq} * CONTROLS_{iq} + \varepsilon_{iq}$

Table 7 reports estimated abnormal PEAD associated with earnings announced the day before the release of the Employment Situation. The sample includes earnings announcements from September 1998 to December 2009 associated with employment reports for which the dispersion of economists' forecasts of the unemployment rate is above the median level of dispersion. Earnings announcements disclosed the day of the release of the Employment Situation are excluded from the sample. Panel A reports results of estimating the model without control variables. Panel B reports results of estimating the model using as control variables PERSIST, PREDICT, BETA, NONLINEAR, BTM and SIZE, though estimated coefficients for the control variables (β_4 to β_{15}) are not included in the panel. Regressions are done using OLS with year fixed effects, firm fixed effects, and standard

errors clustered at the firm level. ***, **, and * indicate significance at the 1, 5, and 10% levels respectively (one-sided tests) and t-stats are reported below the coefficient estimates.

Variable Definitions:

CAR[2,X] is the cumulative abnormal return from 2 to X days after a firm's earnings announcement (the firm's raw return is adjusted by a matched portfolio (1 of 25 size/btm portfolios) return).

UE is unexpected earnings calculated as the actual earnings minus the median of analyst forecasts issued within the 30 days preceding the earnings announcement scaled by the stock price from 21 days before the announcement (actual earnings and forecasts are from I/B/E/S).

PRE1 is an indicator variable equal to 1 for earnings announcements announced the day before the release of the Employment Situation and 0 otherwise.

PERSIST is the first-order autocorrelation coefficient of quarterly income before extraordinary item scaled by average total assets, estimated over the previous four years (a minimum of five observations required).

PREDICT is the root mean square error from the regression used to obtain the persistence measure.

NONLINEAR is the absolute value of UE.

BETA is the market-model beta estimated using daily returns over the prior year and ending two trading days before the earnings announcement.

BTM is the book-to-market ratio at the end of the fiscal quarter.

SIZE is the log of market capitalization at the end of the fiscal quarter in millions.

Table 8: Post-earnings announcement drift for earnings announcements the day of the release of the Employment Situation

PANEL A (WITHOUT CONTROLS)

Independent Variables	CAR[2,11]	CAR[2,21]	CAR[2,31]	CAR[2,41]
POST0	-0.001	0.001	0.002	0.006
	[-0.625]	[0.351]	[0.442]	[1.240]
UE	0.411***	0.457***	0.281***	0.179*
	[5.551]	[4.869]	[2.499]	[1.356]
UE*POST0	-0.535***	0.222	0.815*	0.771**
	[-2.353]	[0.561]	[1.627]	[1.786]
Observations	79,580	77,591	77,439	77,298
Adj. R-squared	0.137	0.142	0.144	0.137

PANEL B (WITH CONTROLS, DEMEANED)

Independent Variables	CAR[2,11]	CAR[2,21]	CAR[2,31]	CAR[2,41]
POST0	-0.002	-0.000	0.000	0.004
	[-0.976]	[-0.0440]	[0.0233]	[0.789]
UE	0.812***	0.977***	0.681***	0.769***
	[7.729]	[6.962]	[3.924]	[3.664]
UE*POST0	-0.473**	0.29	0.864**	0.866**
	[-1.917]	[0.699]	[1.680]	[2.030]
Observations	79,580	77,591	77,439	77,298
Adj. R-squared	0.145	0.155	0.159	0.157

Model: $CAR[2,X]_{iq} = \beta_0 + \beta_1 POST0_{iq} + \beta_2 UE_{iq} + \beta_3 UE_{iq} * POST0_{iq} + \sum_{i=4}^{9} \beta_i \, CONTROLS_{iq} + \sum_{i=10}^{15} \beta_i \, UE_{iq} * CONTROLS_{iq} + \varepsilon_{iq}$

Table 8 reports estimated abnormal PEAD associated with earnings announced the day of the release of the Employment Situation. The sample includes earnings announcements from September 1998 to December 2009. Earnings announcements disclosed the day before the release of the Employment Situation are excluded from the sample. Panel A reports results of estimating the model without control variables. Panel B reports results of estimating the model using as control variables PERSIST, PREDICT, BETA, NONLINEAR, BTM and SIZE, though estimated coefficients for the control variables (β_4 to β_{15}) are not included in the panel. Regressions are done using OLS with year fixed effects, firm fixed effects, and standard errors clustered at the firm level. ***, **, and * indicate significance at the 1, 5, and 10% levels respectively (one-sided tests) and t-stats are reported below the

coefficient estimates. Estimated coefficients for the main effects of control variables (β_4 to β_9) are not included in the table.

Variable Definitions:

CAR[2,X] is the cumulative abnormal return from 2 to X days after a firm's earnings announcement (the firm's raw return is adjusted by a matched portfolio (1 of 25 size/btm portfolios) return).

UE is unexpected earnings calculated as the actual earnings minus the median of analyst forecasts issued within the 30 days preceding the earnings announcement scaled by the stock price from 21 days before the announcement (actual earnings and forecasts are from I/B/E/S).

POST0 is an indicator variable equal to 1 for earnings announcements announced the day of the release of the Employment Situation and 0 otherwise.

PERSIST is the first-order autocorrelation coefficient of quarterly income before extraordinary item scaled by average total assets, estimated over the previous four years (a minimum of five observations required).

PREDICT is the root mean square error from the regression used to obtain the persistence measure.

NONLINEAR is the absolute value of UE.

BETA is the market-model beta estimated using daily returns over the prior year and ending two trading days before the earnings announcement.

BTM is the book-to-market ratio at the end of the fiscal quarter.

SIZE is the market capitalization at the end of the fiscal quarter in millions.

Table 9: Daily proportions of negative earnings surprises

Panel A: Fridays versus non-Fridays

	Fridays	Non-Fridays	Difference	tstat
% Negative earnings surprises	0.300	0.275	0.025***	5.914
Observations	13,975	71,191		

Panel B: Employment Situation Fridays versus non-Employment Situation Fridays

	ES	non-ES	Difference	tstat
% Negative earnings surprises	0.338	0.290	0.048***	4.992
Observations	2,906	11,069		

Panel C: Employment Situation Fridays - high versus low uncertainty

	High	Low	Difference	tstat
% Negative earnings surprises	0.361	0.318	0.043***	2.418
Observations	1,309	1,597		

Panel D: Non-Employment Situation Fridays - high versus low uncertainty

	High	Low	Difference	tstat
% Negative earnings surprises	0.293	0.287	0.006	0.612
Observations	5,231	5,838		

Table 9 reports the percentages of negative earnings surprises (unexpected earnings less than zero) for various days of interest. The sample includes IBES earnings announcements from September 1998 to December 2009. Panel A compares the difference between the percentages of negative earnings surprises for Friday announcements and non-Friday announcements. Panel B compares the percentages for employment-report Fridays with non-employment-report Fridays. Panel C compares the percentages of negative earnings surprises for employment-report-Fridays when dispersion is high versus low (where dispersion is the dispersion of economists' forecasts of the unemployment rate). Panel D compares the percentages of negative earnings surprises for non-employment-report Fridays when dispersion is high versus low. ***, **, and * indicate significance at the 1, 5, and 10% levels respectively (two-sided tests).

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EDUCATION

Ph.D. Accounting, Duke University, 2012 (anticipated)
Dissertation: "Monthly employment reports and the pricing of firm-level earnings news"
Committee: Alon Brav, Bill Mayew, Per Olsson, Katherine Schipper (chair), Mohan Venkatachalam

M.S. Economics, University of Utah, 2007

B.S. Business (emphasis Finance), Brigham Young University, 2001

RESEARCH

Interests

The interactions between capital markets and financial reporting; the financial reporting environment including the macro economy; earnings quality

Working Papers

"Monthly employment reports and the pricing of firm-level earnings news"
Job market paper

"The effects of aggregate demand for meeting earnings expectations on managerial behavior" (with Qi Chen and Ning Zhang)

"Small investors and the usefulness of reported earnings: evidence from stock predictions" (with Justin Murfin)

TEACHING

Interests

Financial accounting; financial statement analysis; valuation and fundamental analysis

Experience

Instructor: Financial Accounting (Undergraduate); Summer 2011; Duke University (Rating 5.0/5.0)
Instructor: Pre-M.B.A. Financial Accounting Course; Fall 2010 & Fall 2011; Duke University, The Fuqua School of Business

Teaching Assistant: Financial Accounting (M.M.S.); Fall 2009 & Fall 2010; Duke University, The Fuqua School of Business
Teaching Assistant: Fundamentals of Financial Analysis (M.M.S.); Spring 2011; Duke University, The Fuqua School of Business
Teaching Assistant: Valuation and Fundamental Analysis (M.B.A); Fall 2009 & Fall 2010; Duke University, The Fuqua School of Business

PROFESSIONAL EXPERIENCE

Merrill Lynch, 2004 – 2005
Financial Advisor (held CFP designation) – Wealth Management Division

Morgan Stanley Smith Barney, 2001 – 2004
Financial Advisor – Wealth Management Division

CONFERENCES

Journal of Accounting & Economics Conference (MIT), 2009, 2011
UNC International Accounting Conference (Doctorial Consortium), 2010
University of Texas at Austin Corporate Governance Conference, 2009
Duke/UNC Fall Accounting Camp, 2008 – 2011
Journal of Business, Finance & Accounting (UNC), 2010
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