Temporal Disaggregation and Post-Earnings Announcement Drift: Evidence from Monthly Comparable Store Sales Disclosures

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Abstract

We investigate whether a firm's information temporal disaggregation facilitates investors' more efficient processing of earnings news by enhancing information environments. We find that the post-earnings announcement drift (PEAD), which likely appears in weak information environments according to the prior literature, is less pronounced for firms that disclose monthly comparable store sales (CSS) than for firms that disclose only quarterly CSS. We also find that analysts' underreaction to earnings news in revising earnings forecasts is lower for monthly CSS firms than for quarterly only CSS firms, providing corroborating evidence that monthly CSS disclosures mitigate PEAD by improving information environments. Monthly CSS firms also have larger analyst following, lower analyst forecast errors, and lower analyst forecast dispersion, indicating lower information asymmetry, higher forecast accuracy, and greater agreement among security analysts, respectively, thus substantiating better information environments. Overall, our evidence supports the argument that temporal disaggregation through the release of monthly CSS leads to more efficient functioning of stock markets by improving information environments.

JEL Classification: G14, M41.

Keywords: monthly comparable store sales, security analysts, forecast error, forecast dispersion, post earnings announcement drift, underreaction.

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1. Introduction

We investigate whether the voluntary disclosure of *temporally disaggregated* financial information (as opposed to aggregated information) facilitate investors' more efficient processing of earnings news by improving the firm's information environments. Prior theoretical and empirical studies show that voluntary disclosures benefit investors by reducing information asymmetry and thus enhancing information environments (Lang and Lundholm, 1996).[1]

It is, however, not clear whether information disaggregation improves the firm's information environments and provide any benefits to the efficient functioning of the capital market. Information disaggregation can improve the firm's information environments because all else being equal, finer information is of superior quality than coarser information (Blackwell 1951, 1953), generally leading to better informed decision-making by investors. On the other hand, more disaggregated information disclosures could induce analysts and investors to acquire more private information and thereby leading to greater information asymmetry among them (McNichols and Trueman, 1994; Kim and Verrecchia, 1994, 1997). Therefore, the relationship between information disaggregation and the quality of information environments is an empirical issue.

In this paper we use firms that disclose monthly comparable store sales (CSS) and those that disclose only quarterly CSS as the temporal disaggregation and aggregation groups, respectively, and address two research questions. First, is the post earnings announcement drift (PEAD) less pronounced with monthly CSS disclosures than with quarterly only CSS disclosures? Second, do firms' monthly CSS disclosures improve their quality of information environments?

[1] See Verrecchia (2001), Healy and Palepu (2001) and Beyer et al. (2010) for surveys of the voluntary disclosure literature.

Addressing these questions is important in understanding whether information disaggregation improves capital market efficiency.

Comparable store sales (CSS), i.e., sales growth at existing retail outlets as opposed to new stores, is a key valuation metric for retail firms. Quarterly and annual CSS information is routinely included in the MD&A section of 10-K and 10-Q filings of retail firms. In addition, some retail firms voluntarily release their CSS information monthly via monthly press releases. Compared with quarterly-only CSS (QCSS) firms, while the total information content with regards to same store sales released over a quarter is identical, the reporting frequency is on average three times greater for monthly CSS (MCSS) firms, leading to more *temporally* disaggregated disclosure of CSS information. Therefore, we expect MCSS firms to have superior information environments compared with QCSS firms, facilitating investors' more efficient processing of information released with earnings announcements.

Prior studies document evidence that the underlying cause of PEAD phenomenon is due to market participants' inefficient pricing of earnings information released by firms. If MCSS disclosures help investors to process earnings persistence information more efficiently on the earnings announcement date, we predict that the PEAD of firms that release more disaggregated sales information (i.e., MCSS firms) is less pronounced than that of firms releasing more aggregated sales information (i.e. QCSS firms). Our evidence supports this prediction, suggesting that stock prices of MCSS firms reflect the implications of current earnings for future earnings more efficiently and more quickly than those of QCSS firms. Further analysis reveals that analysts' underreaction to earnings news in revising earnings forecasts is lower for MCSS firms than for QCSS firms, providing corroborating evidence that monthly CSS disclosures mitigate PEAD by facilitating the market's improved processing of earnings information.

To provide further evidence of improved information environments, we examine the properties of analysts’ earnings forecasts. Compared with QCSS firms, MCSS firms have higher analyst following. This result suggests that analysts receive relatively higher net benefits from following MCSS firms and that issuing *temporally disaggregated* disclosures attracts analysts more than issuing aggregated disclosures. MCSS firms also have lower analyst forecast errors and lower analyst forecast dispersion, indicating higher accuracy and greater agreement among analysts following MCSS firms than QCSS firms. In our empirical tests, we explicitly control for self-selection, i.e., the firm’s decision to release MCSS information. Our results are also robust to alternative variable measurement and test specifications. Taken together, our findings are consistent with the argument that the release of monthly CSS leads to better information environments.

This study first contributes to the disclosure literature by documenting evidence that *temporally disaggregated* CSS disclosure facilitates investors’ more efficient processing of earnings news on the earnings announcement date by enhancing the firm’s information environments with finer sales information. A few prior studies have examined the impact of disaggregated information on capital market participants in different settings: management earnings forecasts (Hirst, Koonce and Venkataraman, 2007), segment earnings reporting (Baldwin 1984; Greenstein and Sami, 1994) and revenue forecasts (Jegadeesh and Livnat, 2006), and measurement of disclosure quality based on the level of disaggregation of accounting data in annual reports (Chen, Miao and Shevlin, 2015). Most prior studies, however, provide little evidence on PEAD, which has been a long-standing puzzle for market efficiency since investors do not appear to fully incorporate earnings news into prices. Abarbanell and Bernard (1992) argue that the anomalous stock price behavior is at least partly driven by inefficiencies in analysts' forecasts, specifically analysts' under-reaction to earnings news. Our study provides evidence that the more disaggregated disclosures of financial information can alleviate analyst's under-reaction to earnings news and mitigate PEAD. Our corroborating evidence suggests that the efficiency gain results from improvement in information environments evidenced by greater analysts following, more accurate forecasts, and lower forecast dispersion for monthly CSS (MCSS) firms than for quarterly only CSS (QCSS) firms.

Our results also contribute to the recent debate over changing the financial reporting frequency. Specifically, in 2018 the President asked the SEC to examine whether requiring semi-annual (six-monthly interim) reports, as opposed to quarterly reports, would reduce the reporting burden on companies and mitigate short-termism. This request was widely covered in the business press (see, e.g., Isidore and Alesci, 2018; Michaels, Rapoport and Maloney, 2018). In response the SEC Chairman Clayton confirmed that the SEC was studying the issue and invited public comments.[2]Supporters of the proposal argue that reducing the frequency of interim reporting would reduce the pressure to meet short-term goals and, hence, promote long-term planning. However, critics of the proposed change argue that it would reduce transparency and adversely affect the firm's information environment. Our results shed light on this debate by highlighting that more frequent disclosures reduce information asymmetry as evidenced by the reduced PEAD magnitude and speedier price adjustment for MCSS firms.

Among studies focusing on CSS disclosures by retail firms, Van Buskirk (2012) documents that bid-ask spreads (quoted depths) are not significantly different, and are actually somewhat higher (lower), for firms disclosing CSS information on a more frequent basis. His findings indicate that monthly CSS disclosures lead to a weak increase in information symmetry. His

[2] Public comments are available to view on the SEC's website, 'Comments on Earnings Releases and Quarterly Reports': https://www.sec.gov/comments/s7-26-18/s72618.htm.

evidence suggests that more frequent disclosure attracts more sophisticated investors, increasing the information asymmetry among informed and uninformed investors. Our study differs from Van Buskirk (2012) because we focus on the impacts of CSS disclosures on PEAD that measures the degree of stock market efficiency and the properties of analysts' earnings forecasts that reveal firms' information environments instead of focusing on bid-ask spread. We find less pronounced PEAD, reduced analysts' underreactions to earnings news in revising earnings forecasts, greater analysts following, lower analyst forecast errors, and lower analyst forecast dispersion for MCSS firms than for QCSS firms. These findings suggest that the market processes earnings news of MCSS firms more efficiently and that the information environments of MCSS firms exhibit better information quality compared to those of QCSS firms.

This paper proceeds as follows. We discuss the institutional background in section 2. We review prior studies and develop hypotheses in Section 3. Section 4 describes our research design, the sample selection procedure and descriptive statistics. Results of our empirical analyses are presented in section 5 and section 6 concludes.

2. Background on Comparable Store Sales (CSS) Disclosures

Retail firms typically disclose comparable store sales (CSS) growth on quarterly and annual bases. CSS growth is defined as the percentage change in revenues generated by the same stores, i.e., stores that have been open for at least 12 months, over a particular period of time (a quarter or year) compared to sales over the same period of time in the previous fiscal year. CSS is also referred to as same store sales, comp store sales, or simply comps. By focusing on sales from existing outlets, the metric isolates growth produced by continuing stores from growth attributed to new store openings. It also factors out seasonal and geographical variations to reveal changes in the same store's performance. Positive CSS growth may thus be attributed to market share gains, higher average purchases, or more frequent buying by existing customers.

Retail companies typically release CSS through two information outlets. The majority of retail firms voluntarily disclose CSS in the "Management's Discussion and Analysis" (MD&A) section of quarterly or annual reports. The firm claims in its MD&A that, along with segment operating income, CSS is the most useful information for analyzing its performance. Appendix shows an example included in a Wal-Mart quarterly report. This measure is so ingrained in the industry that the firm is expected to disclose the change consequences in quarterly or annual reports if firm changes the definition of the metric.

While a majority of retail firms disclose quarterly or annual CSS information in their 10-Q or 10-K filings, respectively, some retailers choose to voluntarily disclose monthly CSS growth via press releases in *PR Newswire* and *Business Wire*. Such disclosures of several firms get compiled together in the business press such as *Wall Street Journal*. Monthly CSS information for month *t* is generally released on the first Thursday of month *t+1*. We illustrate the timeline of monthly and quarterly CSS disclosures in Figure 2. Compared with quarterly CSS firms, monthly CSS firms therefore make a deliberate choice to make more *temporally disaggregated* disclosures (three reports of $MCSS_{1,1}$, $MCSS_{1,2}$, and $MCSS_{1,3}$ for one report of $QCSS_1$) concerning same store sales. These firms, labeled as MCSS firms, are the primary focus of our study.[3]

3. Prior Studies and Hypothesis Development

[3] We should note that while analysts demand more frequent disclosure of information from managers, managers in the retail industry have increasingly moved away from issuing monthly CSS releases. In 2004, over 100 retailers reported monthly sales performance, but by 2011 only 27 of them still reported monthly sales results. The managers argue that they discontinued issuing CSS reports on a monthly basis to focus more on long-term growth, removing short-term share price volatility. In our empirical tests we account for these competing pressures that may discourage the issuance of MCSS information by implementing a first-stage disclosure model (see Section 4.3 for more details).

‘Blackwell Theorem’ provides a theoretical background on the studies that examine the relationship between information disaggregation and information environments. The Blackwell Theorem implies that, all else being equal, finer information is of superior quality than coarser information. More specifically, the theory states that a statistical experiment is more informative than another one if and only if information can be reproduced from the former to the latter (Blackwell 1951, 1953). Building on the single agent model in Blackwell (1951), Gossner (2000) shows that in a multi-agent setting an information set *I* is richer than another information set *J* if and only if *J* is faithfully reproducible from *I*. In our setting, monthly CSS disclosures are likely to result in superior information quality than quarterly CSS disclosures since it is possible to construct quarterly CSS amount by aggregating monthly CSS information. However, the reverse does not hold: It is not possible to disaggregate quarterly CSS information into sales figures for individual months in the quarter, absent further information.

In the accounting disclosure literature, the notion of ‘fineness of information’ has been applied to many different settings to examine how information disaggregation affects information environments. For example, segment-reporting disaggregation is known to be positively associated with the precision of investor beliefs (Piotroski 1999, 2003; Greenstein and Sami 1994) and the accuracy of analysts’ forecasts (Venkataraman 2001; Baldwin 1984). Similar findings are documented in other settings such as management earnings forecasts (Hirst, Koonce and Venkataraman, 2007), revenue forecasts (Jegadeesh and Livnat, 2006), and the measurement of disclosure quality based on the level of disaggregation of accounting data in annual reports (Chen, Miao and Shevlin, 2015).

Although monthly same store sales figures average out to total sales for the quarter, which are disclosed by a majority of retail firms in their 10-Q filings, monthly sales data represents more disaggregated and finer information. Disaggregated monthly CSS disclosures allow better insights into seasonality in the overall revenues. Investors are also likely to view monthly CSS disclosures as being more credible compared with quarterly CSS information. When managers release monthly sales information, they reduce their opportunities to manipulate the quarterly sales figure, thereby improving the quality of future sales reports. This results in reduced information risk and greater disclosure credibility for investors (also see Kasznik, 1999, and Hirst et al., 2007, who make similar arguments in the context of management earnings forecasts).

In sum, we argue that monthly CSS disclosures represent a finer and more credible source of information compared with quarterly CSS disclosures. Thus, monthly CSS disclosures should lead to better information environments for the firm. The above conjecture, however, is not without tension. Specifically, if monthly sales reporting is so beneficial to capital market participants, then why not all retail firms disclose MCSS? The answer lies in the potential costs MCSS disclosures could impose on investors as well as firm managers.

First, more disaggregated disclosures are likely to impose increased information processing costs on investors. For example, prior studies such as McNichols and Trueman (1994) show that the public release of information by firms induces investors to engage in private information search, which increases disagreement among investors and analysts (also see Kim and Verrecchia, 1994, 1997). Due to investor heterogeneity, the above increase in information processing costs and differential private information acquisition can lead to more information asymmetry and deterioration in information environments, resulting in increased analyst forecast dispersion and decreased analyst following. More recent studies in behavioral finance argue that limited investor attention and resources affect how investors process value relevant information (see, e.g., Barber and Odeon, 2008; Cohen and Frazzini, 2008; and Dellavigna and Pollet, 2009). Under investor inattention arguments, the release of more disaggregated sales data could impose additional costs on investors.

The release of MCSS information is also likely to impose costs on firms and managers for a variety of reasons. Managers may be concerned about proprietary costs associated with the release of monthly sales information under competitive environments. Also, firms may have to bear administrative costs of gathering, processing, and presenting sales information much more frequently. Finally, as discussed above, releasing monthly sales information could potentially reduce managers' degrees of freedom of managing sales numbers to achieve some thresholds or to smoothen monthly variations in sales. Therefore, the decision to release MCSS information is the outcome of a comprehensive cost-benefit analysis (which we explicitly model as the first stage in our empirical analysis, described in more detail below).

Therefore, we believe whether the disclosure of more disaggregated CSS would improve information environments is an empirical question. If the release of MCSS indeed improves information environments, we should observe more efficient pricing of information provided by firms (i.e. earnings news) for firms releasing MCSS. We test the efficient pricing of earnings news in two different ways. First, prior studies have documented the existence of the well-known post-earnings announcement drift (PEAD) where market participants do not appear to quickly and fully incorporate the news in earnings announcements. As a consequence, predictable abnormal returns persist for a significant length of time following earnings announcements (Bernard and Thomas, 1989, 1990; Abarbanell and Bernard, 1992). If disaggregated sales disclosures improve the firm's information environments, then we would expect monthly CSS firms to experience less PEAD compared with quarterly CSS firms. Based on the above discussion, we state our hypothesis as follows (in alternate form):

Hypothesis H1 (post-earnings announcement drift)*: Firms issuing monthly CSS information have smaller post-earnings announcement drift than firms issuing only quarterly CSS information.*

We also test whether the disclosure of MCSS affects investor's efficient pricing of information by examining how quickly earnings news is incorporated into price. Prior studies have used the intraperiod timeliness measure (IPT) to measure how newly released information affects the efficiency of the price discovery process under different conditions (Bushman et al. 2010, Butler et al. 2007, and Twedt 2016). For example, using management earnings guidance as information release, Twedt (2016) documents that newswire dissemination is associated with a significant increase in the efficiency with which earnings guidance information is incorporated into price. Butler et al. (2007) also examine whether financial reporting frequency affects the speed with which information is incorporated in stock prices using reporting-frequency observations during the period surrounding the mandated quarterly filings by the SEC registrants from 1950 to 1970. Butler et al. (2007) provide evidence that that firms that voluntarily increase reporting frequency from semiannual to quarterly experience a speedier incorporation of earnings information into stock prices. If disaggregated sales disclosures improve a firm's information environments, then we would expect earnings news released by monthly CSS firms is incorporate into stock price more quickly than that with quarterly CSS firms. Based on the above discussion, we state our second hypothesis as follows (in alternate form):

Hypothesis H2 (Intraperiod timeliness)*: Firms issuing monthly CSS information incorporate earnings news more quickly into price than firms issuing only quarterly CSS information.*

Since the post-earnings announcement drift phenomenon was first documented by Ball and Brown (1968), many explanations on the underlying cause of PEAD have been proposed. Among those explanations, Abarbanell and Bernard (1992) show that the investor's underreaction to earnings news (i.e. PEAD) is partially explained by financial analysts' underreaction to earnings news. If monthly CSS disclosures enhance the firm's information environments, we expect financial analysts' underreaction to earnings news will be mitigated. We state our third hypothesis as follows (in alternate form):

> ***Hypothesis H3 (financial analysts underreaction)****: The degree of underreaction to earnings news is smaller for the analysts who follow firms issuing monthly CSS information than for those who follow firms issuing only quarterly CSS information.*

4. Research Design and Data

4.1 Regression Specification

We next discuss the research design and data employed to test our hypotheses. We estimate the following regression model to test *Hypothesis H1* regarding post-earnings announcement drift (time and firm subscripts suppressed):

$$\text{Future RET} = \alpha + \beta_1 \text{ Current UE} + \beta_2 \text{MCSS} + \beta_3 \text{ Current UE*MCSS} + \Sigma\beta_j \text{ Controls} + \Sigma\beta_k \text{ Current UE*Controls} + \varepsilon. \quad (1)$$

The dependent variable, *Future RET*, is buy-and-hold size-adjusted abnormal returns defined as beginning two days after the earnings announcement for the current quarter up to one day after the earnings announcement for the next quarter. *Current UE* captures the news content of the current earnings announcement, and is measured by the firm's actual quarterly earnings-per-share (EPS) minus expected EPS deflated by share price as of the end of the fiscal quarter. The expected EPS is calculated using the median of most recent quarterly EPS forecasts from each analyst that are issued before the quarterly earnings announcement date. *MCSS* is defined as an indicator variable equal to 1 if the firm issues a monthly comparable store sales report during the quarter, 0 otherwise. Consistent with prior studies of post-earnings announcement drift, we expect a positive coefficient on *UE*, which would be indicative of the market not efficiently processing the information contained in the earnings announcement. However, as argued above, the availability of MCSS information is likely to improve investors' ability to process earnings news, leading us to predict a negative coefficient (β_3) of the interaction term (*UE*MCSS*).

We employ control variables commonly used in previous PEAD studies based on a four-factor return model: Size, BTM, Beta, and Momentum (Chordia et al., 2009; Ng et al., 2008). *Size* is firm size calculated by log of total assets at the end of the quarter. *BTM* is book-to-market ratio computed by the book value of common equity divided by the market value of common equity at the end of the quarter. *Beta* is a CAPM beta estimated based on the previous 60 monthly returns. *Momentum* is measured by 12-month cumulative raw returns starting from 12 months before earnings announcement.

Next, to investigate the speed with which earnings information is impounded into price (*H2*), we use the intraperiod timeliness (*IPT*) metric used in prior studies (e.g., Twedt 2016; Butler et al. 2007 and Bushman et al. 2010). The *IPT* metric captures the speed with which information is incorporated into price over the test period by holding the magnitude of the price response and information content constant. To calculate the *IPT* metric, we first compute a cumulative buy-and-hold abnormal return (*CumBHAR*) each trading date starting the earnings announcement date until the date before next the quarters' earnings announcement date, and plot *CumBHAR* scaled by the total cumulative return for the measuring period (y-axis) over the timeline – a quarter (x-axis). The area under the plot measures how fast earnings information is impounded into price. The larger the area, the more efficient pricing of earnings information is.

We use the following ordered logit regression to examine the impact of MCSS disclosure on IPT.

$$\begin{aligned} IPT(Q_{i,j}, Q_{i,j+1}) = {} & \alpha + \beta_1 MCSS + \beta_2 Performance + \beta_3 BtoM + \beta_4 MktCap \\ & + \beta_5 BusSeg + \beta_6 GeoSeg + \beta_7 Loss + \beta_8 CapExp + \beta_9 Leverage \\ & + \beta_{10} Follow + \beta_{11} RetVol + \beta_{12} FE + \beta_{13} IMR + \varepsilon. \end{aligned} \quad (2)$$

IPT($Q_{i,j}, Q_{i,j+1}$) is a quarterly measure of the speed with which earnings news is imputed into price from the quarterly earnings announcement date at Q_j to the day before next quarterly earnings announcement date at $Q_{i,j+1}$ for firm *i*. *IPT* $(Q_{i,j}, Q_{i,j+1})$ is equal to $\frac{1}{2}\sum_{t=Q_{i,j}}^{t=Q_{i,j+1}} (Abn\_ret_{i,t-1} + Abn\_ret_{i,t}) / (Abn\_ret_{Q_{i,j+1}})$, where $Abn\_ret_{i,t}$ is computed as daily raw buy-and-hold stock return minus the daily return to a benchmark portfolio formed based on size for firm *i*. *IPT*($Q_{i,j}, Q_{i,j+1}$) is then ranked into decile. The decile ranking is used as a dependent variable in equation (5). *MktCap* is natural logarithm of market value of common equity. *BusSeg* is natural logarithm of (the number of business segment + 1). *GeoSeg* is natural logarithm of (the number of geographic segment + 1). *CapExp* is quarterly total capital expenditure. *Leverage* is total liability divided by total assets. *RetVol* is a standard deviation of daily return over the quarter. *FE* is analyst forecast errors measured by the firm's actual EPS minus analysts' consensus of quarterly earnings-per-share (EPS) forecast deflated by share price as of the beginning of the fiscal quarter. Analysts' consensus of EPS forecast is calculated using the first quarterly EPS forecast from each analyst that is issued before the quarterly earnings announcement date. *IMR* is the inverse Mills ratio from the same selection model used in earlier sections. All other variables are defined as before.

Next, we turn to *H3* regarding whether analysts better reflect current earnings news in their next quarter forecasts due to the benefit of disaggregated sales information. This benefit of MCSS disclosures reducing analysts' under-reaction to current earnings news would at least partially explain the mitigating effect of MCSS on PEAD (*H1*). To test *Hypothesis H3* on analyst forecast revisions, we adopt a similar regression specification used in Abarbanell and Bernard (1992) as follows:

$$\text{Future UE} = \alpha + \beta_1\text{Current UE} + \beta_2\text{MCSS} + \beta_3\text{Current UE *MCSS} + \Sigma\beta_j \text{ Controls} + \Sigma\beta_k \text{ Current UE*Controls} + \varepsilon. \quad (3)$$

The dependent variable, *Future UE* is future earnings surprise calculated by the firm's actual quarterly earnings-per-share (EPS) of the next quarter minus analysts' most recent consensus of quarterly EPS forecast of the next quarter issued before the next quarter earnings announcement date deflated by share price at the end of the current quarter. *Current UE* and *MCSS* are as defined in equation (1). Consistent with prior studies that document analysts' underreact to earnings news (Abarbanell and Bernard, 1992), we expect a positive coefficient on Current UE (β_1). As predicted in *Hypothesis H2*, if disaggregated MCSS information indeed mitigates analysts' underreaction to earnings news, we expect a negative coefficient (β_3) of the interaction term (*UE*MCSS*).

We add a vector of control variables known to affect future forecast revisions of analysts as used in Mohanram and Gode (2013): *Size, Accrual, ΔSales, ΔPPE*, and *ΔOLTA*. *Size* is as defined in equation (1). *Accrual* is total accruals scaled by lagged assets where total accruals is computed as income before extraordinary item minus cash flow from operating activities for the quarter. *ΔSales* is quarterly growth in sales measured by current sales minus previous quarter sales scaled by previous sales. *ΔPPE* is quarterly changes in property, plant, and equipment scaled by total assets at the beginning of the quarter. *ΔOLTA* is quarterly changes in other long-term assets scaled by total assets at the beginning of the quarter.

4.2 Sample Selection

We gather quarterly comparable store sales (CSS) data from the Compustat Industry Specific Quarterly Database for retail firms (SIC codes 5200–5999) over the 2003–2013 period. We then merge this quarterly CSS data with the I/B/E/S analyst forecast data, and Compustat and CRSP databases, yielding a final sample of 4,517 firm-quarter observations.

Firms disclose their monthly CSS information via *PR Newswire*, *Business Wire*, *The Wall Street Journal*, and other outlets in the business press. *U.S. Business Reporter* collects and compiles monthly CSS disclosures into the U.S. Retail Statistics database. We use the U.S. Retail Statistics database to classify the sample between firms issuing monthly CSS (MCSS firms) and firms issuing only quarterly CSS (QCSS firms). Out of the final sample of 4,517 firm-quarter observations, the MCSS sample has 1,021 observations while the QCSS sample has 3,496 observations.

4.3 Descriptive Statistics

Table 1 presents descriptive statistics for the whole sample (Panel A) as well as differences in subsamples containing QCSS and MCSS firms in Panel B. As reported in Panel A, buy-and-hold abnormal returns (*Future RET*) after earnings announcement has a mean (median) of 1.2% (-0.1%) and mean (median) unexpected earnings is 0.6% (0.1%) of stock price. Approximately 22.6% of sample firms release MCSS information. The average firm in the sample is relatively large with a mean (median) of approximately $5.3 billion ($1.3 billion) in terms of asset size. Mean (median) accrual is -1.8% (-1.5%) of total assets. The average sales growth rate is 6.2% with a median of 5.6%. On average property, plant, and equipment (PPE) and operating long-term assets (OLTA) increased by 2.1% and 1.0% of total assets respectively. The mean institutional ownership is nearly 75.5%. Firms in our sample also have fairly high level of growth options as evidenced by the mean (median) value of market-to-book ratio of over 2.7 (2.1). Firm performance measured by return on assets is relatively high at 1.015 on average. Earnings volatility is moderate for our sample with a mean (median) value of 0.018 (0.013). The average number of firms that an analyst covers during the calendar year is 16 firms and brokerage firms have 63 analysts on average. Analysts have a mean (median) experience of 4.1 (3.9) years of issuing forecasts. Analyst following has a mean (median) value of 9.8 (8) indicating firms in our sample are on average well followed by analysts. The absolute value of analyst forecast error, *ABS_AFE*, has a mean (median) of 1.645 (0.296). Analyst forecast dispersion, *DISP*, has mean and median values at 0.238 and 0.086, respectively. 18.5% of our sample firms reported a loss. The analyst forecast horizon (Horizon) measuring *ABS_AFE* and *DISP* has a mean (median) value of 63 (69) days.

Turning to Panel B, there are large and significant differences between MCSS and QCSS subsamples in terms of the information environment variables. For example, the mean (median) analyst following for MCSS firms is 13.6 (13) compared with 8.7 (7) for QCSS firms, implying that firms releasing monthly comparable store sales attract more analysts. In addition, the median absolute forecast error for MCSS firms is 0.235 compared with 0.323 for QCSS firms ($p<0.01$), implying that consensus analyst earnings forecasts for MCSS firms are significantly more accurate for firms that release monthly comparable store sales information. In a similar vein, consensus earnings forecasts for MCSS firms also exhibit a tighter distribution as evidenced by the significantly lower mean forecast dispersion of 0.163, compared with 0.262 for QCSS firms.

It is also noteworthy that the differences between MCSS firms and their counterparts releasing only QCSS are significant for control variables. MCSS subsample has significantly higher performance (1.021 compared to 1.013 for QCSS) and a significantly lower proportion of loss firms (12.4% compared to 20.3% for QCSS) than those of QCSS subsample. The two subsamples are also different in terms of average firm size, *BTM*, institutional ownership, and growth options. The significant differences in two subsamples indicate a potential selection bias in our sample. To address this selection bias issue, we adopt a Heckman's two-stage regression approach.

4.4 Selection Model

As discussed above, it is possible that both the decision to disclose MCSS information and analyst forecast properties are endogenously driven by some firm characteristics or other factors that our research design fails to account for. Thus, any association we may observe between the properties of analyst forecasts and MCSS could be attributable to some (potentially unknown) firm characteristics, and not to the availability of more disaggregated sales information as we argue.

A couple of research design choices mitigate the concerns that some omitted variables could be driving our results. First, our sample is exclusively drawn from the retail industry. Therefore, several industry-wide factors such as litigation risk and competition that could affect disclosure choices are generally held constant across all sample firms. In addition, we restrict the sample to firms that disclose at least quarterly CSS information, i.e., the control sample comprises firms that have chosen to release at least quarterly CSS data (and not decided to remain completely silent with regards to CSS disclosures). Nonetheless, to further allay concerns that our results are driven by potential endogeneity, we implement a two-stage Heckman type estimation approach where we first estimate an empirical model of MCSS disclosure that includes variables likely to influence the decision to release MCSS information. The second stage has our dependent variables of interest (i.e., buy-and-hold stock returns, future earnings surprises, analyst following, forecast errors, and forecast dispersion).

The first stage selection model is estimated as the following probit regression:

$$MCSS = G(\alpha + \beta_1 Size + \beta_2 InstOwn + \beta_3 Growth + \beta_4 Performance + \beta_5 Volatility + \beta_6 Num\_Firms + \beta_7 Experience + \beta_8 Broker\_Size) \quad (4)$$

The dependent variable, *MCSS*, indicates the firm issuing at least one MCSS as defined in equation (1). The explanatory variables are based on findings in the prior voluntary disclosure literature and include firm size (Kasznik and Lev, 1995; Ajinkya et al., 2005); institutional ownership (Ajinkya et al., 2005; Karamanou and Vafeas, 2005); market-to-book ratio as a proxy for proprietary costs (Bamber and Cheon, 1998); operating performance (Hayn 1995; Ajinkya et al., 2005); and earnings volatility (Waymire 1985; Ajinkya et al., 2005). We also add analyst characteristics (the number of firms covered by the analyst and the number of years of experience of issuing forecasts) and brokerage firm size to control analyst ability and resource (Clement 1999).

5. Empirical Results

5.1 Univariate Evidence on the Effect of MCSS on Information Environment

We begin by presenting some graphical evidence on the relationship between MCSS disclosures and the firm's information environment. Figure 1 illustrates how analysts react to the monthly reports of CSS, which suggests an important informational role of CSS reports. Almost 60% of analyst forecasts are issued around monthly sales report release for MCSS firms (i.e., firms issuing monthly CSS as well as quarterly CSS) whereas no specific pattern is evident for non-retailer firms. The figure also shows that 30% of analyst forecasts are issued around comparable store sales report release for QCSS retailers (firms issuing only quarterly CSS). We believe this different reporting cycle (monthly vs. quarterly disclosure) of their sales numbers in a homogenous industry provides a unique setting where we can investigate how firms' disclosure of temporally disaggregated sales affects analysts' information environment in the retail industry.

5.2 Correlations

Panel A and Panel B of Table 2 present Pearson correlation coefficients. For brevity, we focus on correlations among our main dependent and test variables. First, analysts following is negatively correlated with forecast errors and dispersion, which suggest that the more analysts covering a firm has, the better analysts' information environments captured by forecast errors and dispersion are. Analysts following is positively correlated with our main test variable, *MCSS*. This correlation result indicates that the disclosure of temporally disaggregated sales attract analysts to cover the firm. Second, absolute forecast errors (*ABS_AFE*) is positively correlated with forecast dispersion, *DISP*, (0.428, $p < 0.01$). This is consistent with the findings in prior studies such as Lang and Lundholm (1996) and Lee et al. (2013). Consistent with our expectations, forecast errors and dispersion are negatively correlated with the release of monthly CSS (-0.051 and -0.089 respectively).

5.3 MCSS and Post Earnings Announcement Drift

We next discuss the results of multivariate tests of our hypothesis whether investors fully incorporate the information in earnings announcement in the presence of MCSS disclosures. As discussed in our *Hypothesis H1*, if MCSS issuance improves the firm's information environment, then such firms should experience a lesser degree of PEAD compared with firms that do not release monthly sales data. Table 3 reports the results of our analysis after controlling for potential endogeneity between the decision to disclose MCSS information and analyst forecast properties in the selection model. We briefly note that firms that are larger in size, have higher levels of institutional ownership, have superior operating performance, and have more growth options are more likely to release MCSS information. These associations are consistent with our expectations and results in prior studies. As expected, buy-and-hold abnormal return (*Future RET*) following the quarterly earnings announcement is positively associated with the earnings surprise (*Current UE*). On the other hand, the interaction between *Current UE* and *MCSS* has a significantly negative coefficient (coefficient = -0.908, t-statistic = -3.25). The result suggests that the release of MCSS information helps mitigate PEAD experienced by the disclosing firm, which is consistent with our *Hypothesis H1*.

5.4 MCSS and Timeliness: Speed of adjustment

In previous sections, we show how the intertemporal disclosure of MCSS improves information environments by providing evidence that investors incorporate earnings news more efficiently when underlying firms disclose MCSS information. In this section, we provide corroborating evidence that the disclosure of MCSS improves the information environment by documenting how quickly earnings information is incorporated into price for firms that disclose MCSS.

In Table 4 we report how the disclosure of MCSS affects the speed with which earnings information is impounded into price. The coefficient for *MCSS* is 0.641 (t-statistics = 1.81), which suggests firms that disclose monthly CSS monthly (MCSS firms) has a larger IPT than those that disclose CSS quarterly only (QCSS firms) indicating earnings news for MCSS firms is incorporated into stock price more quickly than QCSS firms, which supports our *Hypothesis H2*. Results in Table 3 and Table 4 together indicate that the release of MCSS information not only helps investors incorporate earnings news more fully into price, but also helps them impound earnings news into price more quickly.

5.5 MCSS and Analyst Underreaction to Earnings News

As discussed above, we find evidence consistent with MCSS disclosure reducing the extent of post-earnings announcement drift, attributable to the underreaction of stock prices to earnings news. We next investigate potential mechanisms through which MCSS disclosures help investors process firm-level earnings information better. Prior studies such as Abarbanell and Bernard (1992) document that the under-reaction of analysts to current earnings surprise news in revising their future forecasts would cause that the market does not efficiently process the information contained in the earnings announcement. In line with their study, we next examine whether the release of MCSS also reduces analysts' under-reaction to earnings news, which could at least partly explain the results we documented in Table 4.

We adopt a two-stage estimation approach to mitigate endogeneity concerns, where the first stage model is identical to that discussed above. The results reported in Table 5 show that current forecast errors have a positive association with future forecast errors, consistent with the findings of analyst underreaction in the prior literature. The interaction terms between current forecast errors and MCSS are significantly negative (coefficient = -0.133, t-statistic = -3.01). The results imply that the issuance of MCSS data mitigates analysts' under-reaction, which is consistent with our *Hypothesis H3* and the previously observed result of reduced PEAD for MCSS firms. Thus the results in Table 5 serve as explanatory evidence of our arguments regarding the effects of MCSS on PEAD and information environment.

5.6 Additional Tests

In this section, we provide additional tests on how more disaggregated CSS information influence analyst following, forecast accuracy and forecast dispersion to provide collaborating evidence to our main argument that the MCSS information improve information environment.

Prior analytical studies such as Barron et al. (1998) show that the quality of a firm's information environment can be evaluated using properties of analyst forecasts. Several empirical studies such as Lang and Lundholm (1996) and Lee et al. (2013) have used the accuracy and dispersion of analyst forecasts as empirical proxies for the firm's information environments. Consistent with the above studies, we use analyst following and analyst forecast properties as our main empirical proxies for the quality of sell-side analysts' information environments.

If monthly CSS information is effective in reducing information asymmetry and helping analysts develop their earnings forecasts, then firms issuing MCSS information should have a greater number of analysts following, more accurate and less dispersed analyst forecasts than firms issuing QCSS information only (e.g., Barron et al., 1998).

MCSS and Analyst Following

To examine the effect of MCSS on the number of analysts, we estimate the following regression:

$$\text{Follow} = \alpha + \beta_1\text{MCSS} + \beta_2\text{Volatility} + \beta_3\text{Loss} + \beta_4\text{Size} + \beta_5\text{InstOwn} + \beta_6\text{Num\_Firms} + \beta_7\text{Broker\_Size} + \varepsilon. \quad (5)$$

The dependent variable, Follow, is the number of analysts providing at least one quarterly EPS forecast during the firm-quarter. MCSS and Size are as defined in equation (1). Because we expect that the availability of MCSS attracts analysts (*H3*), we predict a positive coefficient of β_1. We include control variables commonly used in the analyst forecast literature.[4] Control variables include *Volatility*, defined as the standard deviation of income before extraordinary items over the previous twelve quarters, deflated by total assets at the beginning of the fiscal quarter; *Loss*, which is an indicator variable equal to 1 if the firm has negative income before extraordinary items for the quarter, 0 otherwise; *InstOwn*, which is the percentage of common shares held by institutional investors at the beginning of the fiscal quarter, collected from the Thomson Reuters Mutual Fund Holdings database; *Num_Firms*, which is the average number of firms that analysts cover during the calendar year; and *Broker_Size*, which is average broker size measured by the number of analysts hired by the brokerage during the calendar year.

In Table 6, we report that MCSS has a significantly positive coefficient (1.782, t-statistics 10.71). The results are consistent with the notion that disclosing more disaggregated information by managers improves the firm's information environment. Among the control variables, earnings volatility and loss have significant negative coefficients, indicating that analysts find it more costly to follow firms with difficult-to-predict earnings. Firm size has a positive coefficient, which is consistent with findings in the prior literature that large firms attract greater analyst coverage.

MCSS and the Error and Dispersion in Analyst Forecasts

To examine effect of disclosure of MCSS on analyst forecast error and dispersion, respectively, we estimate the following regression:

$$\text{ABS\_AFE(or DISP)} = \alpha + \beta_1\text{MCSS} + \beta_2\text{Follow} + \beta_3\text{Volatility} + \beta_4\text{Loss} + \beta_5\text{Size}$$

[4] We do not include industry related control variables because we limit our sample to the retail industry.

$$+ \beta_6 \text{InstOwn} + \beta_7 \text{Num\_Firms} + \beta_8 \text{Broker\_Size} + \beta_9 \text{Horizon} + \varepsilon. \quad (6)$$

The dependent variable captures the quality of the firm's information environment, measured through two empirical proxies. The first, *ABS_AFE* is analyst forecast errors measured by the absolute value of the difference between the analysts' consensus of quarterly earnings-per-share (EPS) forecast and the firm's actual EPS deflated by share price as of the beginning of the fiscal quarter.[5] Analysts' consensus of EPS forecast is calculated using the first quarterly EPS forecast from each analyst that is issued before the quarterly earnings announcement date. Our second proxy for the firm's information environment is based on the dispersion in analyst forecasts, *DISP*, defined as the standard deviation of the first analysts' quarterly EPS forecasts comprising the consensus EPS forecast, deflated by beginning share price. As we argue that the disclosure of MCSS improves the quality of the firm's information environment, we predict a negative coefficient of β_1. *Horizon* is the average number of days for the first analysts' quarterly EPS forecasts comprising the consensus EPS forecast. All other variables are as defined before.

Table 7 presents the results testing relation between MCSS issuance and analyst forecast error and Table 8 presents the results related to relation between MCSS issuance and analyst forecast dispersion. In Table 7, we report that the coefficient for *MCSS* is significantly negative (coefficient = -5.822, t-statistic = -6.81). The results suggest that analyst forecast errors are lower for firms that disclose monthly CSS. Other control variables also have coefficients consistent with our expectations and prior findings in the literature. For example, analyst following has a significantly negative coefficient, while earnings volatility and loss indicators both load positively.

We next turn to the dispersion in analyst forecasts, which is designed to capture the extent

[5] We use alternative measures for analyst forecast accuracy, such as, undeflated forecast errors and forecast errors deflated by earnings per share. Our results are robust to the above alternative variable definitions.

of disagreement among security analysts following the firm. In Table 8, we report that *MCSS* has a significantly negative coefficient (coefficient = -1.647, t-statistic -9.00). The results imply that the availability of same store sales information is likely to reduce the heterogeneity of analyst expectations of future earnings. Other variables in regression load consistently with our expectations and similar to the results in Table 7. For example, earnings volatility and loss are positively associated with forecast dispersion. Overall, results reported in Table 7 and Table 8 provide additional evidence that more disaggregated CSS disclosure improves information environment.

5.8 Revisiting MCSS and Analyst Following

In Table 6 we provide evidence that the disclosure of disaggregated sales information attracts more analysts and thereby improves the firm's information environment. However, one can argue a potential reverse causality, that it, analysts who follow the firm actually demand more disaggregated information. Thus, we address this reverse causality issue by using simultaneous equations between MCSS disclosures and analyst following.[6] The simultaneous equations used in Table 9 mainly differ from the Heckman model in Table 6 by including Follow variable in the determinant model of MCSS disclosures. In addition, the simultaneous equations do not assume the orders of determinant models, whereas the Heckman model assumes the MCSS disclosure model as its first stage. The results show that MCSS has a significantly positive coefficient ($p<0.01$ for both). Interestingly, analyst following (*Follow*), is not significantly associated with the disclosure of MCSS, which suggests that analysts' demand for more information is not driving our results.

[6] It is relatively less likely that other results testing H1, H2, H4a, and H4b suffer potential reverse causality. Thus, we run simultaneous equations only for *H3* revisiting Table 5.

6. Conclusion

This study examines how information disaggregation through the release of monthly comparable store sales (MCSS) information by retailers facilitates investors' more efficient processing of earnings news by enhancing information environments. Compared with quarterly comparable store sales (QCSS) disclosures, MCSS disclosures represent more temporally disaggregated information releases. We expect and find that MCSS disclosures mitigate post-earnings announcement drift and analysts' underreactions to earnings news compared to QCSS disclosures. We also find that firms issuing monthly CSS have greater analyst following, lower absolute analyst forecast errors, and lower analyst forecast dispersion, compared with firms releasing only quarterly CSS information. Together, these results are consistent with the beneficial effects of MCSS disclosures on the firm's information environment.

This study contributes to the literature by documenting the usefulness of temporally disaggregated disclosures. Even though disaggregation is an important accounting principle, due to a variety of constraints and limitations there has been scant prior research on the usefulness of disaggregated information. In MCSS we identify a distinct setting where the release of monthly comparable store sales data represents disaggregated voluntary disclosure. Our findings have implications for not only researchers, but also practitioners and standard setter as they consider the capital market implications of more timely and disaggregated disclosures.

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Appendix

An Excerpt from Wal-Mart's Management's Discussion and Analysis

Company Performance Metrics

Management uses a number of metrics to assess the Company's performance including: Total sales; Comparable store sales; Operating income; Diluted income per share from continuing operations; Return on investment; and Free cash flow.

Total Sales

(Amounts in millions)	Fiscal Year Ended January 31, 2009			2008			2007	
	Net Sales	Percent of Total	Percent Increase	Net Sales	Percent of Total	Percent Increase	Net Sales	Percent of Total
Walmart U.S.	$255,745	63.7%	6.8%	$239,529	64.0%	5.8%	$226,294	65.6%
International	98,645	24.6%	9.1%	90,421	24.1%	17.6%	76,883	22.3%
Sam's Club	46,854	11.7%	5.6%	44,357	11.9%	6.7%	41,582	12.1%
Total net sales	$401,244	100.0%	7.2%	$374,307	100.0%	8.6%	$344,759	100.0%

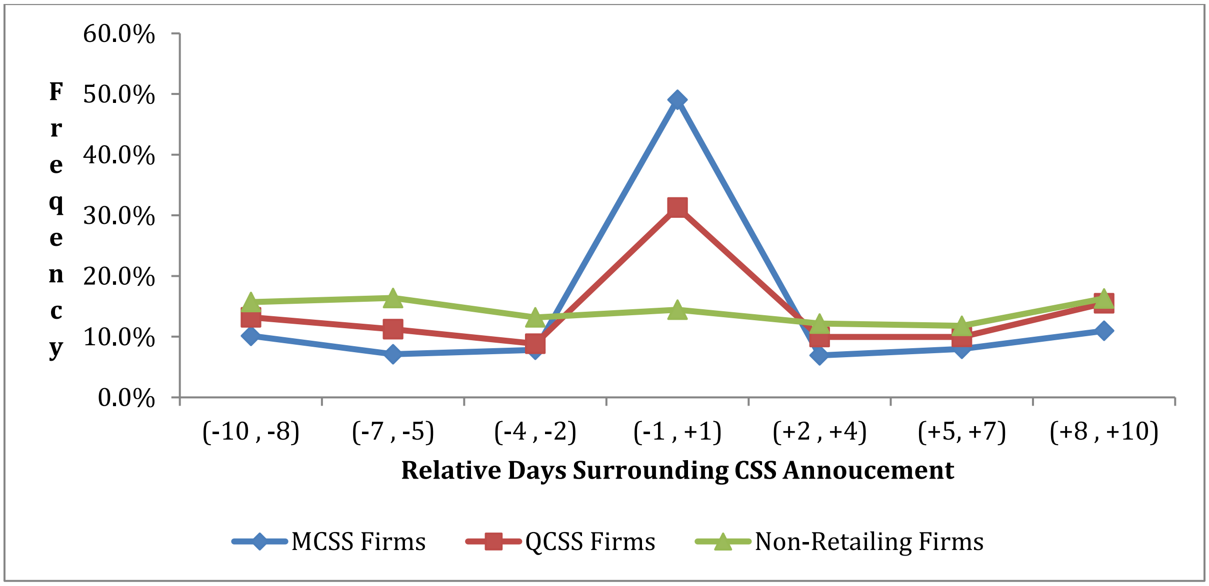
Comparable Store Sales

	Fiscal Year Ended January 31, 2009	2008	2007
Walmart U.S.	3.2%	1.0%	1.9%
Sam's Club [1]	4.8%	4.9%	2.5%
Total U.S.	3.5%	1.6%	2.0%

Our total net sales increased by 7.2% and 8.6% in fiscal 2009 and 2008 when compared to the previous fiscal year. Those increases resulted from our global store expansion programs, comparable store sales increases and acquisitions.

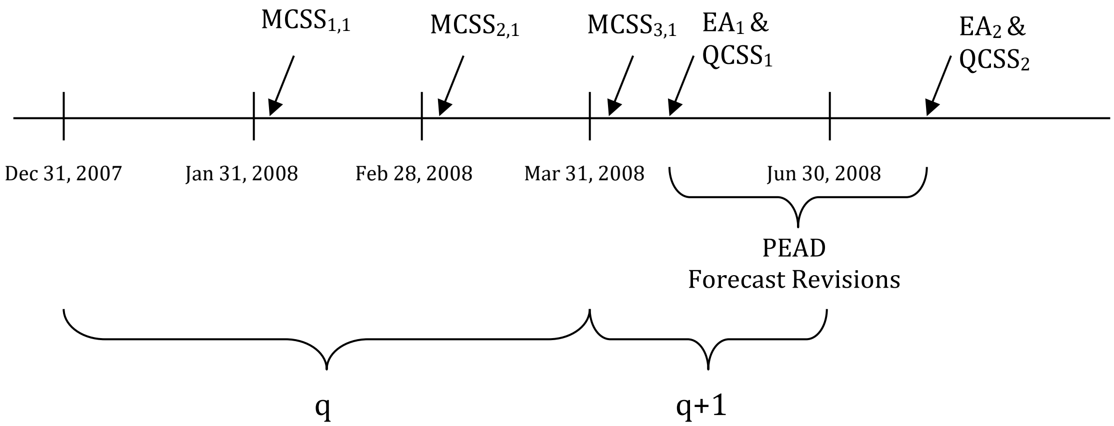
Comparable store sales is a measure which indicates the performance of our existing stores by measuring the growth in sales for such stores for a particular period over the corresponding period in the prior year. Comparable store sales in the United States increased 3.5% in fiscal 2009 and 1.6% in fiscal 2008. Comparable store sales in the United States in fiscal 2009 were higher than fiscal 2008 due to an increase in customer traffic c as well as an increase in average transaction size per customer. As we continue to add new stores in the United States, we do so with an understanding that additional stores may take sales away from existing units. During fiscal 2008, in connection with our revisions to our capital efficiency model, we revised our methodology for calculating the negative impact of new stores on comparable store sales. Using our new methodology, we estimate the negative impact on comparable store sales as a result of opening new stores was approximately 1.1% in fiscal 2009 and 1.5% in fiscal 2008. With our planned reduction in new store growth, we expect the impact of new stores on comparable store sales to decline over time.

Figure 1
Analyst Forecast Frequency around Quarterly and Monthly Comparable Store Sales News



The figure shows the distribution of analysts forecast revision frequency for firms that report quarterly comparable store sales (*QCSS firms*), firms that report monthly comparable store sales (*MCSS firms*), and firms that report neither monthly nor quarterly comparable store sales news (*Non-retailing firms*). The horizontal axis represents days surrounding the announcement of comparable store sales (CSS), and the vertical axis represents the relative frequency of analysts' forecasts for the corresponding 3-day window.

Figure 2
Timeline of Comparable Store Sales Reporting



$MCSS_{i,j}$: Monthly Comparable Store Sales Report at month i, quarter j
$QCSS_j$: Quarterly Comparable Store Sales Report at quarter j
EA_j: Quarterly Earnings Announcement at quarter j

Table 1
Descriptive Statistics

Panel A. Whole sample (N=4,517)

Variable	N	Mean	Std. Dev.	Q1	Median	Q3
Future RET	4,517	0.012	0.199	-0.106	-0.001	0.107
Future UE	4,079	0.006	0.031	0.000	0.001	0.008
Current UE	4,517	0.006	0.031	0.000	0.001	0.009
MCSS	4,517	0.226	0.418	0.000	0.000	0.000
Size	4,517	5,288	10,951	442	1,328	3,789
BTM	4,517	0.601	0.501	0.285	0.459	0.749
Beta	4,517	1.232	0.649	0.785	1.141	1.621
Momentum	4,517	0.149	0.511	-0.167	0.089	0.371
Accrual	4,517	-0.018	0.045	-0.038	-0.015	0.005
ΔSales	4,517	0.062	0.118	-0.003	0.056	0.122
ΔPPE	4,517	0.021	0.059	-0.012	0.012	0.045
ΔOLTA	4,517	0.010	0.057	-0.005	0.002	0.015
InstOwn	4,517	0.755	0.224	0.630	0.796	0.901
Growth	4,517	2.715	2.005	1.317	2.136	3.495
Performance	4,517	1.015	0.024	1.005	1.015	1.027
Volatility	4,517	0.018	0.016	0.007	0.013	0.022
Num_Firms	4,517	15.971	3.255	14.200	15.944	17.667
Experience	4,517	4.112	2.345	2.418	3.918	5.539
Broker_Size	4,517	63.063	29.597	40.333	63.588	81.000
Follow	4,517	9.804	7.169	4.000	8.000	15.000
ABS_AFE	4,517	1.645	3.115	0.080	0.296	2.036
DISP	4,108	0.238	0.469	0.042	0.086	0.210
Loss	4,517	0.185	0.388	0.000	0.000	0.000
Horizon	4,517	63.158	23.146	47.000	69.000	83.500

Panel B. QCSS Sample (N = 3,496) versus MCSS Sample (N = 1,021)

Group Variable	Mean QCSS firms	Mean MCSS firms	Mean Difference	Median QCSS firms	Median MCSS firms	Median Difference
Future RET	0.011	0.015	p = 0.56	-0.003	0.006	p = 0.19
Future UE	0.005	0.007	p = 0.03	0.001	0.001	p < 0.01
Current UE	0.005	0.008	p = 0.03	0.001	0.001	p < 0.01
Size	4,575	7,727	p < 0.01	1,254	2,036	p < 0.01
BTM	0.631	0.499	p < 0.01	0.489	0.381	p < 0.01
Beta	1.242	1.196	p = 0.04	1.162	1.068	p < 0.01
Momentum	0.154	0.129	p = 0.17	0.087	0.093	p = 0.64
Accrual	-0.018	-0.020	p = 0.10	-0.015	-0.015	p = 0.87
ΔSales	0.062	0.065	p = 0.36	0.055	0.060	p = 0.33
ΔPPE	0.020	0.025	p < 0.01	0.011	0.018	p < 0.01
ΔOLTA	0.011	0.008	p = 0.12	0.002	0.002	p = 0.55
InstOwn	0.751	0.769	p = 0.02	0.788	0.816	p < 0.01
Growth	2.607	3.087	p < 0.01	2.017	2.637	p < 0.01
Performance	1.013	1.021	p < 0.01	1.014	1.020	p < 0.01
Volatility	0.018	0.017	p = 0.23	0.013	0.011	p = 0.13
Num_Firms	15.944	16.064	p = 0.29	15.818	16.118	p < 0.01
Experience	3.945	4.685	p < 0.01	3.682	4.658	p < 0.01
Broker_Size	61.898	67.054	p < 0.01	61.707	68.545	p < 0.01
Follow	8.688	13.624	p = 0.01	7.000	13.000	p < 0.01
ABS_AFE	1.732	1.349	p = 0.24	0.323	0.235	p < 0.01
DISP	0.262	0.163	p < 0.01	0.088	0.082	p = 0.07
Loss	0.203	0.124	p < 0.01	0.000	0.000	p < 0.01
Horizon	63.324	62.593	p = 0.37	69.000	63.000	p = 0.01

Future RET= buy and hold size-adjusted abnormal returns 2 days after the earnings announcement for the quarter q to 1 day after the earnings announcement at the next quarter q+1,

Future UE (Unexpected Earnings) = future earnings surprise calculated by the firm's actual quarterly EPS (earnings-per-share) of the next quarter minus analysts' consensus of quarterly EPS forecast of next quarter deflated by share price as of the end of the fiscal quarter,

Current UE (Unexpected Earnings) = current earnings surprise calculated by the firm's actual quarterly EPS (earnings-per-share) minus analysts' consensus of quarterly EPS forecast deflated by share price as of the end of the fiscal quarter. Analysts' consensus of quarterly EPS forecast is calculated using the median of the most recent quarterly EPS forecasts from each analyst that are issued before the quarterly earnings announcement date,

MCSS = an indicator variable equal to 1 if the firm issues a monthly comparable store sales report during the quarter, 0 otherwise,

Size = firm size calculated by log of total assets at the end of the quarter,

BTM = Book-to-market ratio computed by the book value of common equity divided by the market value of common equity at the end of the quarter,

Beta = CAPM beta using previous 60 monthly returns,

Momentum = momentum measured by 12-month raw returns from month t - 12 to month t – 1,

Accrual = total accruals scaled by lagged assets where total accruals is computed as income before extraordinary item minus cash flow from operating activities for the quarter,

ΔSales = quarterly growth in sales measured by current sales minus previous quarter sales scaled by previous sales,
ΔPPE = quarterly changes in property plant and equipment scaled by total assets at the beginning of the quarter,
ΔOLTA = quarterly changes in other long-term assets scaled by total assets at the beginning of the quarter,
InstOwn = the percentage of common shares held by institutional investors at the beginning of the fiscal year, collected from the Thomson Reuters Mutual Fund Holdings database,
Growth = firm growth measured by market value of common equity divided by book value of equity at the beginning of the quarter,
Performance = return on assets of the prior quarter, calculated as income before extraordinary items during the previous fiscal quarter deflated by total assets at the beginning of the prior fiscal quarter,
Volatility = the standard deviation of income before extraordinary items (IB) over the previous twelve quarters, deflated by total assets (AT) at the beginning of the fiscal quarter,
Num_Firms = the average number of firms that analysts cover during the year,
Experience = the average number of years that analysts cover the firm,
Broker_Size = the average broker size of analysts measured by the number of analysts hired by the brokerage during the year.
Follow = the number of analysts providing at least one quarterly EPS forecast during the firm-quarter,
ABS_AFE = the absolute value of the difference between the analysts' consensus of quarterly EPS (earnings-per-share) forecast and the firm's actual quarterly EPS deflated by share price as of the beginning of the fiscal quarter. The analysts' consensus of EPS forecast is calculated using the first quarterly EPS forecast from each analyst after the previous quarterly earnings announcement date,
DISP = the standard deviation of the first analysts' quarterly EPS forecasts comprising the consensus EPS forecast, deflated by share price at the beginning of the quarter,
Loss = an indicator variable equal to 1 if the firm has negative income before extraordinary items for the year, 0 otherwise,
Horizon = the average number of days for the first analysts' quarterly EPS forecasts comprising the consensus EPS forecast.

Table 2
Pearson Correlations

Panel A. Correlation among PEAD Regression Variables

	Future RET	Future UE	Current UE	MCSS	Size	BTM	Beta	Mom-entum	Accrual	ΔSales	ΔPPE	ΔOLTA
Future RET	1.000	0.097	-0.025	0.009	0.001	0.130	0.072	-0.037	-0.077	-0.041	-0.084	-0.040
		<.0001	0.095	0.558	0.972	<.0001	<.0001	0.013	<.0001	0.006	<.0001	0.007
Future UE		1.000	0.039	0.033	0.107	-0.214	-0.109	0.070	-0.008	0.101	0.072	0.047
			0.013	0.034	<.0001	<.0001	<.0001	<.0001	0.590	<.0001	<.0001	0.002
Current UE			1.000	0.032	0.113	-0.224	-0.112	0.077	0.045	0.110	0.092	0.060
				0.030	<.0001	<.0001	<.0001	<.0001	0.003	<.0001	<.0001	<.0001
MCSS				1.000	0.142	-0.110	-0.030	-0.021	-0.024	0.014	0.039	-0.023
					<.0001	<.0001	0.045	0.165	0.101	0.363	0.008	0.124
Size					1.000	-0.182	-0.168	-0.018	0.051	-0.021	0.022	0.030
						<.0001	<.0001	0.226	0.001	0.161	0.131	0.044
BTM						1.000	0.204	-0.351	-0.055	-0.403	-0.265	-0.105
							<.0001	<.0001	0.000	<.0001	<.0001	<.0001
Beta							1.000	0.068	-0.015	-0.108	-0.201	-0.052
								<.0001	0.298	<.0001	<.0001	0.000
Momentum								1.000	0.037	0.314	-0.086	0.044
									0.013	<.0001	<.0001	0.003
Accrual									1.000	0.010	-0.030	0.075
										0.516	0.043	<.0001
ΔSales										1.000	0.517	0.370
											<.0001	<.0001
ΔPPE											1.000	0.290
												<.0001
ΔOLTA												1.000

Panel B. Correlation among Analyst Forecast Properties Regression Variables

	Follow	ABS_AFE	Dispersion	MCSS	Volatility	Loss	Size	InstOwn	Growth	Performance
Follow	1.000	-0.255	-0.219	0.247	-0.219	-0.250	0.454	0.332	0.362	0.312
		<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
ABS_AFE		1.000	0.428	-0.051	0.143	0.228	-0.087	-0.113	-0.195	-0.273
			<.0001	0.001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
Dispersion			1.000	-0.089	0.265	0.461	-0.151	-0.129	-0.312	-0.442
				<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
MCSS				1.000	-0.018	-0.084	0.142	0.034	0.100	0.138
					0.232	<.0001	<.0001	0.023	<.0001	<.0001
Volatility					1.000	0.274	-0.339	-0.116	-0.126	-0.240
						<.0001	<.0001	<.0001	<.0001	<.0001
Loss						1.000	-0.205	-0.081	-0.314	-0.409
							<.0001	<.0001	<.0001	<.0001
Size							1.000	0.125	0.144	0.119
								<.0001	<.0001	<.0001
InstOwn								1.000	0.085	0.093
									<.0001	<.0001
Growth									1.000	0.440
										<.0001
Performance										1.000

Future RET= buy and hold size-adjusted abnormal returns 2 days after the earnings announcement for the quarter q to 1 day after the earnings announcement at the next quarter q+1,

Future UE (Unexpected Earnings) = future earnings surprise calculated by the firm's actual quarterly EPS (earnings-per-share) of the next quarter minus analysts' consensus of quarterly EPS forecast of next quarter deflated by share price as of the end of the fiscal quarter,

Current UE (Unexpected Earnings) = current earnings surprise calculated by the firm's actual quarterly EPS (earnings-per-share) minus analysts' consensus of quarterly EPS forecast deflated by share price as of the end of the fiscal quarter. Analysts' consensus of quarterly EPS forecast is calculated using the median of the most recent quarterly EPS forecasts from each analyst that are issued before the quarterly earnings announcement date,

MCSS = an indicator variable equal to 1 if the firm issues a monthly comparable store sales report during the quarter, 0 otherwise,

Size = firm size calculated by log of total assets at the end of the quarter,

BTM = Book-to-market ratio computed by the book value of common equity divided by the market value of common equity at the end of the quarter,

Beta = CAPM beta using previous 60 monthly returns,

Momentum = momentum measured by 12-month raw returns from month t - 12 to month t – 1,

Accrual = total accruals scaled by lagged assets where total accruals is computed as income before extraordinary item minus cash flow from operating activities for the quarter,

ΔSales = quarterly growth in sales measured by current sales minus previous quarter sales scaled by previous sales,

ΔPPE = quarterly changes in property plant and equipment scaled by total assets at the beginning of the quarter,

ΔOLTA = quarterly changes in other long-term assets scaled by total assets at the beginning of the quarter,

Follow = the number of analysts providing at least one quarterly EPS forecast during the firm-quarter,

ABS_AFE = the absolute value of the difference between the analysts' consensus of quarterly EPS (earnings-per-share) forecast and the firm's actual quarterly EPS deflated by share price as of the beginning of the fiscal quarter. The analysts' consensus of EPS forecast is calculated using the first quarterly EPS forecast from each analyst after the previous quarterly earnings announcement date,

DISP = the standard deviation of the first analysts' quarterly EPS forecasts comprising the consensus EPS forecast, deflated by share price at the beginning of the quarter,

Volatility = the standard deviation of income before extraordinary items (IB) over the previous twelve quarters, deflated by total assets (AT) at the beginning of the fiscal quarter,

Loss = an indicator variable equal to 1 if the firm has negative income before extraordinary items for the year, 0 otherwise,

InstOwn = the percentage of common shares held by institutional investors at the beginning of the fiscal year, collected from the Thomson Reuters Mutual Fund Holdings database,

Growth = firm growth measured by market value of common equity divided by book value of equity at the beginning of the quarter,

Performance = return on assets of the prior quarter, calculated as income before extraordinary items during the previous fiscal quarter deflated by total assets at the beginning of the prior fiscal quarter.

Table 3
MCSS Report and Post-Earnings Announcement Drift

	Selection Model		Main Model
Dependent Variable	MCSS		Future RET
	Coefficient [t-value]		Coefficient [t-value]
Size	0.097*** [5.37]	Current UE	1.092** [2.07]
InstOwn	0.158 [1.55]	**Current UE*MCSS**	**-0.908*** [-3.25]**
Growth	0.028** [2.37]	MCSS	0.041 [0.99]
Performance	8.408*** [7.82]	Current UE*Size	-0.039 [-0.60]
Volatility	5.978*** [4.18]	Size	0.003 [1.05]
Num_Firms	-0.021*** [-2.80]	Current UE*BTM	-0.341*** [-2.93]
Experience	0.071*** [6.93]	BTM	0.049*** [6.92]
Broker_Size	-0.000 [-0.01]	Current UE*Beta	-0.150 [-1.21]
Intercept	-10.295*** [-9.39]	Beta	0.017*** [3.61]
		Current UE * Momentum	0.065 [0.46]
		Momentum	0.001 [0.15]
		Intercept	-0.070*** [-4.02]
Observations	4,517	Observations	4,517

Future RET= buy and hold size-adjusted abnormal returns 2 days after the earnings announcement for the quarter q to 1 day after the earnings announcement at the next quarter q+1,
Current UE (Unexpected Earnings) = current earnings surprise calculated by the firm's actual quarterly EPS (earnings-per-share) minus analysts' consensus of quarterly EPS forecast deflated by share price as of the end of the fiscal quarter. Analysts' consensus of quarterly EPS forecast is calculated using the median of the most recent quarterly EPS forecasts from each analyst that are issued before the quarterly earnings announcement date,
MCSS = an indicator variable equal to 1 if the firm issues a monthly comparable store sales report during the quarter, 0 otherwise,
Size = firm size calculated by log of total assets at the end of the quarter,

BTM = Book-to-market ratio computed by the book value of common equity divided by the market value of common equity at the end of the quarter,

Beta = CAPM beta using previous 60 monthly returns,

Momentum = momentum measured by 12-month raw returns from month t - 12 to month t – 1,

InstOwn = the percentage of common shares held by institutional investors at the beginning of the fiscal year, collected from the Thomson Reuters Mutual Fund Holdings database,

Growth = firm growth measured by market value of common equity divided by book value of equity at the beginning of the quarter,

Performance = return on assets of the prior quarter, calculated as income before extraordinary items during the previous fiscal quarter deflated by total assets at the beginning of the prior fiscal quarter,

Volatility = the standard deviation of income before extraordinary items (IB) over the previous twelve quarters, deflated by total assets (AT) at the beginning of the fiscal quarter,

Num_Firms = the average number of firms that analysts cover during the year,

Experience = the average number of years that analysts cover the firm,

Broker_Size = the average broker size of analysts measured by the number of analysts hired by the brokerage during the year.

*** denotes significance at the 0.01 level, ** at the 0.05 level, and * at the 0.10 level (2-tailed).

Table 4
MCSS and the Timeliness of Adjustment

	Selection Model		Main Model
Dependent Variable	MCSS		IPT(Q_j, Q_{j+1})
	Coefficient [t-value]		Coefficient [t-value]
Size	0.084*** [4.58]	**MCSS**	0.641* [1.81]
InstOwn	0.139 [1.36]	Performance	0.313 [0.28]
Growth	0.028** [2.39]	BtoM	0.110 [1.63]
Performance	8.301*** [7.69]	MktCap	-0.017 [-0.59]
Volatility	5.626*** [3.88]	BusSeg	0.018 [0.25]
Num_Firms	-0.022*** [-2.95]	GeoSeg	0.011 [0.15]
Experience	0.072*** [6.96]	Loss	0.096 [1.11]
Broker_Size	0.000 [0.12]	CapExp	1.936 [0.84]
Intercept	-10.079*** [-9.16]	Leverage	0.079 [0.49]
		Follow	-0.033 [-0.73]
		RetVol	-0.057 [-0.11]
		FE	-2.090** [-2.18]
		IMR	-0.267 [-1.31]
Observations	4,475	Observations	4,475

IPT(Q_j, Q_{j+1}) = quarterly intraperiod timeliness measure of the speed with which earnings news is imputed into price from the quarterly earnings announcement date at Q_j to the day before next quarterly earnings announcement date at Q_{j+1}. Following Twedt (2016) IPT(Q_j, Q_{j+1}) is calculated as:
$\frac{1}{2}\sum_{t=Q_j}^{t=Q_{j+1}} (Abn\_ret_{t-1} + Abn\_ret_t)/(Abn\_ret_{Q_{j+1}})$, where Abn_ret_t is computed as daily raw buy-and-hold stock return minus the daily return to a benchmark portfolio formed based on size. IPT(Q_j, Q_{j+1}) is ranked into decile and the decile ranking is used as a dependent variable in the ordered logit.

Size = firm size calculated by log of total assets at the end of the quarter,
InstOwn = the percentage of common shares held by institutional investors at the beginning of the fiscal year, collected from the Thomson Reuters Mutual Fund Holdings database,
Growth = firm growth measured by market value of common equity divided by book value of equity at the beginning of the quarter,
Performance = return on assets of the prior quarter, calculated as income before extraordinary items during the previous fiscal quarter deflated by total assets at the beginning of the prior fiscal quarter,
Volatility = the standard deviation of income before extraordinary items (IB) over the previous twelve quarters, deflated by total assets (AT) at the beginning of the fiscal quarter,
Num_Firms = the average number of firms that analysts cover during the year,
Experience = the average number of years that analysts cover the firm,
Broker_Size = the average broker size of analysts measured by the number of analysts hired by the brokerage during the year.
MCSS = an indicator variable equal to 1 if the firm issues a monthly comparable store sales report during the quarter, 0 otherwise,
BtoM = book to market ratio calculated as book value of equity divided by market value of common equity at the beginning of the quarter,
MktCap = natural logarithm of market value of common equity,
BusSeg = natural logarithm of (the number of business segment + 1),
GeoSeg = natural logarithm of (the number of geographic segment + 1),
CapExp = quarterly total capital expenditure,
Loss = an indicator variable equal to 1 if the firm has negative income before extraordinary items for the quarter, 0 otherwise,
Leverage = total liability divided by total assets,
RetVol = a standard deviation of daily return over the quarter,
FE = analyst forecast errors measured by the firm's actual EPS minus analysts' consensus of quarterly earnings-per-share (EPS) forecast deflated by share price as of the beginning of the fiscal quarter. Analysts' consensus of EPS forecast is calculated using the first quarterly EPS forecast from each analyst that is issued before the quarterly earnings announcement date.
IMR = the inverse Mills ratio from the selection model.
*** denotes significance at the 0.01 level, ** at the 0.05 level, and * at the 0.10 level (2-tailed).

Table 5
MCSS Report and Analysts' Underreaction to Current Earnings in Revisions of Earnings Forecasts

	Selection Model		Main Model
Dependent Variable	MCSS		Future UE
	Coefficient [t-value]		Coefficient [t-value]
Size	0.076*** [4.02]	Current UE	0.765*** [8.36]
InstOwn	0.123 [1.14]	**Current UE*MCSS**	**-0.133*** [-3.01]**
Growth	0.042*** [3.39]	MCSS	0.029*** [4.75]
Performance	7.918*** [7.04]	Current UE*Size	-0.097*** [-8.05]
Volatility	6.712*** [4.40]	Size	0.002*** [4.67]
Num_Firms	-0.020*** [-2.59]	Current UE*Accrual	1.033*** [3.68]
Experience	0.080*** [7.35]	Accrual	-0.031*** [-2.82]
Broker_Size	-0.000 [-0.05]	Current UE*ΔSales	-0.950*** [-6.64]
Intercept	-9.670*** [-8.43]	ΔSales	0.023*** [4.67]
		Current UE*ΔPPE	0.797** [2.19]
		ΔPPE	0.007 [0.75]
		Current UE*ΔOLTA	-0.197 [-0.57]
		ΔOLTA	0.007 [0.70]
		Intercept	-0.017*** [-6.40]
Observations	4,079	Observations	4,079

Future UE (Unexpected Earnings) = future earnings surprise calculated by the firm's actual quarterly EPS (earnings-per-share) of the next quarter minus analysts' consensus of quarterly EPS forecast of next quarter deflated by share price as of the end of the fiscal quarter, Current UE (Unexpected Earnings) = current earnings surprise calculated by the firm's actual quarterly EPS (earnings-per-share) minus analysts' consensus of quarterly EPS forecast deflated by share price as of the end of the fiscal quarter. Analysts' consensus of quarterly EPS forecast is calculated using the median of the most recent quarterly EPS forecasts from each analyst that are issued before the quarterly earnings announcement date,

MCSS = an indicator variable equal to 1 if the firm issues a monthly comparable store sales report during the quarter, 0 otherwise,

Size = firm size calculated by log of total assets at the end of the quarter,

Accrual = total accruals scaled by lagged assets where total accruals is computed as income before extraordinary item minus cash flow from operating activities for the quarter,

ΔSales = quarterly growth in sales measured by current sales minus previous quarter sales scaled by previous sales,

ΔPPE = quarterly changes in property plant and equipment scaled by total assets at the beginning of the quarter,

ΔOLTA = quarterly changes in other long-term assets scaled by total assets at the beginning of the quarter,

InstOwn = the percentage of common shares held by institutional investors at the beginning of the fiscal year, collected from the Thomson Reuters Mutual Fund Holdings database,

Growth = firm growth measured by market value of common equity divided by book value of equity at the beginning of the quarter,

Performance = return on assets of the prior quarter, calculated as income before extraordinary items during the previous fiscal quarter deflated by total assets at the beginning of the prior fiscal quarter,

Volatility = the standard deviation of income before extraordinary items (IB) over the previous twelve quarters, deflated by total assets (AT) at the beginning of the fiscal quarter,

Num_Firms = the average number of firms that analysts cover during the year,

Experience = the average number of years that analysts cover the firm,

Broker_Size = the average broker size of analysts measured by the number of analysts hired by the brokerage during the year.

*** denotes significance at the 0.01 level, ** at the 0.05 level, and * at the 0.10 level (2-tailed).

Table 6
MCSS Report and Analysts Following

	Selection Model		Main Model
Dependent Variable	MCSS		Follow
	Coefficient [t-value]		Coefficient [t-value]
Size	0.097*** [5.37]	**MCSS**	**1.782*** [10.71]**
InstOwn	0.158 [1.55]	Volatility	-4.045*** [-4.60]
Growth	0.028** [2.37]	Loss	-0.182*** [-6.63]
Performance	8.408*** [7.82]	Size	0.108*** [8.74]
Volatility	5.978*** [4.18]	InstOwn	0.801*** [13.65]
Num_Firms	-0.021*** [-2.80]	Num_Firms	0.033*** [8.03]
Experience	0.071*** [6.93]	Broker_Size	-0.000 [-0.31]
Broker_Size	-0.000 [-0.01]	Intercept	-0.075 [-0.77]
Intercept	-10.295*** [-9.39]		
Observations	4,517	Observations	4,517

Follow = the number of analysts providing at least one quarterly EPS forecast during the firm-quarter,
MCSS = an indicator variable equal to 1 if the firm issues a monthly comparable store sales report during the quarter, 0 otherwise,
Volatility = the standard deviation of income before extraordinary items (IB) over the previous twelve quarters, deflated by total assets (AT) at the beginning of the fiscal quarter,
Loss = an indicator variable equal to 1 if the firm has negative income before extraordinary items for the year, 0 otherwise,
Size = firm size calculated by log of total assets at the end of the quarter,
InstOwn = the percentage of common shares held by institutional investors at the beginning of the fiscal year, collected from the Thomson Reuters Mutual Fund Holdings database,
Num_Firms = the average number of firms that analysts cover during the year,
Broker_Size = the average broker size of analysts measured by the number of analysts hired by the brokerage during the year.
Growth = firm growth measured by market value of common equity divided by book value of equity at the beginning of the quarter,
Performance = return on assets of the prior quarter, calculated as income before extraordinary items during the previous fiscal quarter deflated by total assets at the beginning of the prior fiscal quarter,
Experience = the average number of years that analysts cover the firm,
*** denotes significance at the 0.01 level, ** at the 0.05 level, and * at the 0.10 level (2-tailed).

Table 7
MCSS Report and Forecast Accuracy

	Selection Model		Main Model
Dependent Variable	MCSS		ABS_AFE
	Coefficient [t-value]		Coefficient [t-value]
Size	0.097*** [5.37]	**MCSS**	**-5.822*** [-6.81]**
InstOwn	0.158 [1.55]	Follow	-0.687*** [-9.04]
Growth	0.028** [2.37]	Volatility	19.887*** [5.10]
Performance	8.408*** [7.82]	Loss	1.013*** [7.90]
Volatility	5.978*** [4.18]	Size	0.249*** [4.52]
Num_Firms	-0.021*** [-2.80]	InstOwn	-0.482* [-1.83]
Experience	0.071*** [6.93]	Num_Firms	0.022 [1.16]
Broker_Size	-0.000 [-0.01]	Experience	0.136*** [4.41]
Intercept	-10.295*** [-9.39]	Broker_Size	0.002 [0.94]
		Horizon	-0.019*** [-9.93]
		Intercept	2.600*** [5.89]
Observations	4,517	Observations	4,517

ABS_AFE = the absolute value of the difference between the analysts' consensus of quarterly EPS (earnings-per-share) forecast and the firm's actual quarterly EPS deflated by share price as of the beginning of the fiscal quarter. The analysts' consensus of EPS forecast is calculated using the first quarterly EPS forecast from each analyst after the previous quarterly earnings announcement date,

MCSS = an indicator variable equal to 1 if the firm issues a monthly comparable store sales report during the quarter, 0 otherwise,

Follow = the number of analysts providing at least one quarterly EPS forecast during the firm-quarter,

Volatility = the standard deviation of income before extraordinary items (IB) over the previous twelve quarters, deflated by total assets (AT) at the beginning of the fiscal quarter,

Loss = an indicator variable equal to 1 if the firm has negative income before extraordinary items for the year, 0 otherwise,

Size = firm size calculated by log of total assets at the end of the quarter,

InstOwn = the percentage of common shares held by institutional investors at the beginning of the fiscal year, collected from the Thomson Reuters Mutual Fund Holdings database,
Num_Firms = the average number of firms that analysts cover during the year,
Broker_Size = the average broker size of analysts measured by the number of analysts hired by the brokerage during the year.
Horizon = the average number of days for the first analysts' quarterly EPS forecasts comprising the consensus EPS forecast.
Growth = firm growth measured by market value of common equity divided by book value of equity at the beginning of the quarter,
Performance = return on assets of the prior quarter, calculated as income before extraordinary items during the previous fiscal quarter deflated by total assets at the beginning of the prior fiscal quarter,
Experience = the average number of years that analysts cover the firm,
*** denotes significance at the 0.01 level, ** at the 0.05 level, and * at the 0.10 level (2-tailed).

Table 8
MCSS Report and Forecast Dispersion

	Selection Model		Main Model
Dependent Variable	MCSS		DISP
	Coefficient [t-value]		Coefficient [t-value]
Size	0.069***	**MCSS**	**-1.647*** **
	[3.57]		**[-9.00]**
InstOwn	-0.029	Follow	-0.008
	[-0.26]		[-0.49]
Growth	0.017	Volatility	6.250***
	[1.43]		[7.33]
Performance	8.852***	Loss	0.405***
	[7.81]		[15.33]
Volatility	5.948***	Size	0.009
	[3.97]		[0.74]
Num_Firms	-0.019**	InstOwn	-0.245***
	[-2.34]		[-4.08]
Experience	0.079***	Num_Firms	-0.014***
	[6.71]		[-3.08]
Broker_Size	0.000	Experience	0.054***
	[0.51]		[7.20]
Intercept	-10.427***	Broker_Size	0.002***
	[-9.03]		[3.07]
		Horizon	-0.000
			[-0.05]
		Intercept	0.496***
			[4.77]
Observations	4,108	Observations	4,108

DISP = the standard deviation of the first analysts' quarterly EPS forecasts comprising the consensus EPS forecast, deflated by share price at the beginning of the quarter,
MCSS = an indicator variable equal to 1 if the firm issues a monthly comparable store sales report during the quarter, 0 otherwise,
Follow = the number of analysts providing at least one quarterly EPS forecast during the firm-quarter,
Volatility = the standard deviation of income before extraordinary items (IB) over the previous twelve quarters, deflated by total assets (AT) at the beginning of the fiscal quarter,
Loss = an indicator variable equal to 1 if the firm has negative income before extraordinary items for the year, 0 otherwise,
Size = firm size calculated by log of total assets at the end of the quarter,
InstOwn = the percentage of common shares held by institutional investors at the beginning of the fiscal year, collected from the Thomson Reuters Mutual Fund Holdings database,
Num_Firms = the average number of firms that analysts cover during the year,
Broker_Size = the average broker size of analysts measured by the number of analysts hired by the brokerage during the year.
Horizon = the average number of days for the first analysts' quarterly EPS forecasts comprising the consensus EPS forecast.
Growth = firm growth measured by market value of common equity divided by book value of equity at the beginning of the quarter,
Performance = return on assets of the prior quarter, calculated as income before extraordinary items during the previous fiscal quarter deflated by total assets at the beginning of the prior fiscal quarter,
Experience = the average number of years that analysts cover the firm,
*** denotes significance at the 0.01 level, ** at the 0.05 level, and * at the 0.10 level (2-tailed).

Table 9
Simultaneous Equation between MCSS Report and Analysts Following

	Selection Model		Main Model
Dependent Variable	MCSS		Follow
	Coefficient [t-value]		Coefficient [t-value]
Follow	0.274	**MCSS**	**2.081*** **
	[1.01]		**[9.55]**
Size	-0.021	Volatility	-4.593***
	[-0.41]		[-4.57]
InstOwn	-0.206	Loss	-0.134***
	[-0.93]		[-3.24]
Growth	-0.014	Size	0.097***
	[-0.61]		[6.72]
Performance	0.963	InstOwn	0.793***
	[0.74]		[12.20]
Volatility	1.950***	Num_Firms	0.033***
	[4.04]		[7.33]
Num_Firms	-0.013	Broker_Size	-0.000
	[-1.62]		[-0.25]
Experience	0.020***	Intercept	-0.059
	[6.78]		[-0.55]
Broker_Size	0.000		
	[0.44]		
Intercept	-0.912		
	[-0.64]		
Observations	4,517	Observations	4,517

Follow = the number of analysts providing at least one quarterly EPS forecast during the firm-quarter,
MCSS = an indicator variable equal to 1 if the firm issues a monthly comparable store sales report during the quarter, 0 otherwise,
Volatility = the standard deviation of income before extraordinary items (IB) over the previous twelve quarters, deflated by total assets (AT) at the beginning of the fiscal quarter,
Loss = an indicator variable equal to 1 if the firm has negative income before extraordinary items for the year, 0 otherwise,
Size = firm size calculated by log of total assets at the end of the quarter,
InstOwn = the percentage of common shares held by institutional investors at the beginning of the fiscal year, collected from the Thomson Reuters Mutual Fund Holdings database,
Num_Firms = the average number of firms that analysts cover during the year,
Broker_Size = the average broker size of analysts measured by the number of analysts hired by the brokerage during the year.
Growth = firm growth measured by market value of common equity divided by book value of equity at the beginning of the quarter,
Performance = return on assets of the prior quarter, calculated as income before extraordinary items during the previous fiscal quarter deflated by total assets at the beginning of the prior fiscal quarter,

Experience = the average number of years that analysts cover the firm,
*** denotes significance at the 0.01 level, ** at the 0.05 level, and * at the 0.10 level (2-tailed).