

Information Transfers from Management Earnings Forecasts:

Irrational Underreaction and Subsequent Correction

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Abstract

Prior literature has documented intra-industry information transfers from earnings announcements and management forecasts. The underlying cause of these observations is that a firm's earnings announcements or forecasts contain information about earnings prospects of other firms in the same industry. While a majority of papers in this line of literature focuses on peer firms' stock movements in response to the earnings reports or forecasts of the announcing or forecasting firms, respectively, we examine specifically whether investors' reaction to information transfers from management earnings forecasts is rational. For nonforecasting firms, we find that investors consistently underreact to information transfers from peer firms' management forecasts. Further, the underreaction is corrected when nonforecasting firms subsequently make earnings announcements. For late forecasting firms, the underreaction is only partly corrected when they release earnings forecasts subsequent to early forecasters, presumably due to the credibility concerns of management forecasts. The underreaction is further corrected when late forecasting firms later announce earnings. Finally, we partition forecast news based on whether the news implies industry commonalities or competitive shifts. We find evidence of underreaction to both the news containing industry commonalities and that containing competitive shifts.

Keywords: Management earnings forecast, Intra-industry information transfer, Market efficiency, Mispricing

1. Introduction

Information transfers refer to the impact of the information released by one firm on the price movements of other firms. (Note 1) The news disclosed by one firm is used by investors to not only revise expectations on the disclosing firm, but update their beliefs about the business prospects of other firms operating in similar fields as the disclosing firm because such news contains information that is also informative to value other firms. Prior literature has investigated information transfers from earnings announcements, management forecasts, and accounting restatements among firms in the same industry or along the supply chain. (Note 2)

In this paper, we examine intra-industry information transfers from management earnings forecasts because management earnings forecasts are an important mechanism for information flow in the capital markets. Management earnings forecasts provide information about future earnings and cash flows of the forecasting firms and mitigate the information asymmetry between the firms and investors. Additionally, management earnings forecasts are timelier than mandatory earnings announcements. Ball & Shivakumar (2008) show that on average, a quarterly earnings announcement conveys about 1% to 2% of the total information annually, while a management earnings forecast is associated with about 25% of quarterly return volatility, suggesting that a substantial amount of information is preempted through management forecasts.

In spite of the importance of management forecasts, whether or not firms choose to release earnings forecasts and, if they do, when to make earnings forecasts are at the discretion of the managers. For firms that do not provide earnings forecasts, investors likely rely on forecasts made by forecasting firms (hereafter, *F* firms) in order to gauge the implications of the information contained in these forecasts on the nonforecasting firms' earnings. Similarly, for firms that provide forecasts subsequent to early forecasting firms in the industry, investors likely incorporate the information contained in the earnings forecasts made by the early forecasting firms (hereafter, *EF* firms) in forming

their expectations of late forecasting firms' earnings. Thus, information transfers from management forecasts serve as an alternative timelier source of information for investors of nonforecasting firms (hereafter, *NF* firms) as well as late forecasting firms (hereafter, *LF* firms).

Prior studies find that around the event window in which one firm provides a forecast, the stock prices of other firms in the same industry respond to the information released in the management forecast (Baginski, 1987; Han, Wild, & Ramesh, 1989; Pyo & Lustgarten, 1990; Kim, Lacina, & Park, 2008). However, none of these papers investigates whether market participants fully incorporate the information transfers from management earnings forecasts. In other words, is the stock price response by *NF* firms (*LF* firms) around the earnings forecasts of *F* firms (*EF* firms) complete? This paper fills this gap by examining specifically these questions: 1) Do investors underreact to information transfers from peer firms' management earnings forecasts, and 2) Do investors correct this mispricing subsequent to peer firms' management earnings forecasts?

Using quarterly management earnings forecast data spanning the period between 2001 and 2008, we examine whether market participants incorporate the information transfers from management earnings forecasts efficiently. In the first sample (*NF* vs. *F* firms), we include firms that do not issue forecasts (i.e., *NF* firms) in the entire quarter and firms that issue forecasts (i.e., *F* firms) and test whether *NF* firms experience information externalities during *F* firms' forecasting window as well as during information events subsequent to *F* firms' forecasting window. In the second sample (*LF* vs. *EF* firms), we only include firms that forecast in the same quarter and test whether *LF* firms experience information externalities during *EF* firms' forecasting windows as well as during information events subsequent to *EF* firms' forecasting windows.

Specifically, following the research design adopted in Thomas and Zhang (2008), we examine the correlations between the stock returns of *NF* firms (*LF* firms) around the forecasts made by *F* firms (*EF* firms) and the stock returns of *NF* firms (*LF* firms) around their own earnings announcements (their own earnings forecasts or earnings announcements). This research design facilitates the examination of not only the identification of market inefficiency caused by the underreaction of market participants of *NF* firms (*LF* firms) during the forecasting events of *F* firms (*EF* firms) but also the subsequent corrective action when the *NF* firms announce their earnings (the *LF* firms make their own earnings forecasts or actual earnings announcements).

The empirical results show a positive correlation between stock price movements during the two information events described above for both the *NF* vs. *F* sample and the *LF* vs. *EF* sample, consistent with market participants underreacting to the implications of intra-industry information transfers from management earnings forecasts. In particular, the positive association of the price movements of *NF* firms during their own earnings announcements and the price movements of *NF* firms during *F* firms' earnings forecasts suggest that investors underreact to the implications of *F* firms' earnings forecasts on the innovations of *NF* firms' earnings prospects and take a corrective action when *NF* firms later announce their earnings. Similarly, the positive correlation between the price movements of *LF* firms during their own earnings forecast/earnings announcements and the price movements of *LF* firms during *EF* firms' earnings forecasts also suggests that the investors of *LF* firms do not fully incorporate the implications of *EF* firms' earnings forecasts on the innovations of *LF* firms' own earnings prospects. Moreover, market participants correct this mispricing when *EF* firms issue their own earnings forecasts and further correction occurs when *LF* firms announce actual earnings. (Note 3)

The results are robust to controlling for other anomalies and risk factors, including size, book-to-market ratio, price momentum, accruals, and post-earnings announcement drift. We also test how these results hold when partitioning the responses of *NF* firms' (*LF* firms') stock price movements based on whether the price movement is in the same or opposite direction of the stock price movement of *F* firms (*EF* firm). This partitioning is conducted in Kim et al. (2008) who find different implications of information transfers from management forecasts around the news releases, where some firms' stock prices react positively, and other firms' stock prices respond negatively, to *F* firms' or *EF* firms' earnings forecasts. Their paper attributes the positive reaction to industry-wide commonalities and the negative reaction to competitive shifts. Following their construct, we partition information transfers from management earnings forecasts into two scenarios. In one scenario, *NF* firms' (*LF* firms') stock prices move in the same direction as the stock prices of the *F* firms (*EF* firms) during earnings forecasts of the *F* firms (*EF* firms). Similar to Kim et al. (2008), we term this phenomenon industry commonalities. In a contrasting scenario, where the stock prices of *NF* firms (*LF* firms) move in the opposite direction to the stock prices of *F* firms (*EF* firms), we term the phenomenon competitive shifts. Empirical results built on this partitioning suggest that market participants underreact to the implications of both industry commonalities and competitive shifts and that the underreaction to industry commonalities is more pronounced.

The finding of underreaction to, and subsequent correction of, information transfers from management forecasts is interesting in that although investors in *NF* firms and *LF* firms have fewer or delayed information sources, they apparently fail to fully incorporate information externalities from peer firms' management forecasts in forming their expectations of their own future earnings. While this paper does not attempt to document reasons for this underreaction, we note a few possible explanations. First, since Ball & Brown (1968), the extant literature has shown that market participants consistently underreact to earnings news (Foster, Olsen, & Shevlin, 1984; Bernard & Thomas, 1989, 1990; among others). Such behavioral bias may cause an anomaly in information externalities documented in the current study. Second, prior studies find that voluntary disclosures in general suffer from the credibility concern due to either managers' lack of ability to predict future earnings or managerial incentives to bias forecasts (Rogers & Stocken, 2005; Hutton & Stocken, 2010). Consequently, investors underreact to their own firms' management forecasts (Ng, Tuna, & Verdi, 2013). The underreaction found in our paper may be analogous to that documented in Ng et al. (2013), i.e., investors of *NF* firms (*LF* firms) underreact to *F* firms' (*EF* firms') management earnings forecasts due to their concern about the credibility of these management forecasts.

This paper adds to the lines of literature on information transfers from management forecasts and earnings-based anomalies. Prior papers on information transfers from management forecasts focus on the price reactions around the time when management forecasts are released, but do not explore whether the reactions surrounding management earnings forecasts are efficient. In addition, most papers examining earnings based anomalies emphasize the market responses to the news of disclosing firms, but few investigate the market responses to information externalities except Ramnath (2002) and Thomas & Zhang (2008), who focus on information transfers from actual earnings announcements. This paper extends these two lines of literature by showing that market participants underestimate the innovations of information transfers from peer firms' management forecasts and correct the mispricing when their own firms release earnings forecasts or actual earnings subsequently.

The remainder of this paper is organized as follows. Section 2 reviews the literature and develops the hypotheses. Section 3 describes the sample selection and research methodology. Section 4 reports descriptive statistics and multivariate results from the model estimations and section 5 concludes.

2. Literature review and hypothesis development

The literature on information transfers examines whether the information released by one firm is useful for market participants to make inferences on the future prospects of related firms and revise their expectations accordingly. Prior studies have examined several sources of information transfers. We briefly review the papers that study the impact of information transfers on stock returns and then develop the hypotheses.

2.1 Information transfers from earnings announcements and restatement announcements

Foster (1981) documents that when a firm announces actual earnings, the stock prices of non-announcing firms in the same industry move in response to such news. Following this line of research, several papers examine the cross-sectional differences in the informativeness of the information transfers from announcing firms' earnings releases. For instance, the spillover effect is more pronounced for non-announcing firms that do not provide management forecasts (Pownall & Waymire, 1989) and for industries where firms' earnings are more correlated (Freeman & Tse, 1992). Examining a different group of market participants, Lim et al. (2001) document that after a firm announces earnings, analysts revise their preceding forecasts on other firms in the same industry, and such analyst revisions are only found when announcing firms' earnings announcements fail to meet analysts' expectations.

Several other papers document information externalities along the supply chain. On the one hand, Olsen & Dietrich (1985) discover upstream externalities suggesting that suppliers' stock prices respond to monthly sales announcements of their customers. In a similar vein, Pandit, Wasley, & Zach (2011) investigate the determinants of the magnitude of the information externalities suppliers experience when their customers announce quarterly earnings. On the other hand, Eshleman & Guo (2014) document downstream information transfers where suppliers' earnings announcements impact their customers' stock prices. Using a different information source, Gleason, Jenkins, & Johnson (2008) find that accounting restatements cause stock prices of non-restating firms in the same industry to decline due to accounting quality concerns and that this effect is more pronounced for non-restating firms with high levels of accruals.

2.2 Information transfers from management forecasts

Baginski (1987) first examines the information transfers conveyed by management forecasts and finds a significantly positive association between the *F* firm's news and unexpected returns of firms similar to the *F* firm. Using different methods to calculate abnormal returns, Han et al. (1989) contend the documentation of the spillover effects from

management forecasts in prior studies are due to prior studies' adoption of a single-index pricing model and failure to control for industry-wide covariation in firms' returns. Once industry covariation in firms' returns is included in a two-index pricing model where both the market return and industry return are controlled for, no directional relation between *F* firms' returns and *NF* firms' returns exists. They argue that their evidence suggests that the primary component of management forecast externalities is associated with industry-wide information rather than firm-specific information.

Subsequent to Han et al. (1989), Pyo & Lustgarten (1990) and Kim et al. (2008) attempt to separate the differing implications of the common news in the industry on peer firms. Pyo & Lustgarten (1990) find that the direction and magnitude of the information transfers between two firms depend on the sign and magnitude of the two firms' earnings covariance. Such pairwise relationship varies across firms due to product substitutes/complements or types/degrees of competition, etc. They further find that, after controlling for earnings covariance, abnormal returns of *NF* firms derived from the two-index pricing model in Han et al. (1989) again are associated with *F* firms' news, suggesting the firm-specific information contained in management forecasts does contain useful information which can be used to arrive at *NF* firms' earnings expectations.

Kim et al. (2008) identify the competitive relationship between two firms in the same industry, i.e., rival firms or nonrival firms, and document positive (negative) information transfers between the *F* firm and *NF* nonrival firm (*NF* rival firm). They posit that the positive information transfers are due to industry commonalities whereas the negative information transfers are caused by competitive shifts. For instance, if the product demand remains constant and the forecasting firm reports a higher market share, forecasting firm's stock price is expected to rise. However, the same news implies a shrinkage in rival firms' market share, thus causing rival firms' stock prices to decrease. In contrast, nonrival firms' future earnings will not be affected by changes in *F* firm's competitive position. Rather, economy-wide information underlying *F* firm's news affects nonrival firms in the same direction. Kim et al. (2008) argue that the positive and negative information transfers cancel out at the aggregate level, possibly causing Han et al. (1989) finding of no information transfer in their two-index pricing model. Collectively, Pyo & Lustgarten (1990) and Kim et al. (2008) support the evidence that both common news and firm-specific news is transferred from *F* firms to *NF* firms.

2.3 Intra-industry information transfers and market efficiency

Whether the market incorporates new information efficiently has been an ongoing topic in accounting and finance research. The extant literature has documented inefficiencies in reflecting earnings news in forming investors' beliefs. Since Ball & Brown (1968), the post-earnings-announcement drift literature documents that market participants consistently underreact to actual earnings news, and stock prices continue to drift after earnings are announced. Similarly in the information transfer literature, Ng et al. (2013) document that investors underreact to their own firms' management earnings forecasts due to the concern of forecast credibility (Rogers & Stocken, 2005; Hutton & Stocken, 2010) and that abnormal returns also continue to drift after management releases earnings forecasts.

The mispricing of earnings announcements is also discovered in information externalities. Ramnath (2002) documents that the investors of late earnings announcers do not fully incorporate the earnings news of early earnings announcers into late earnings announcers' stock prices and that the analysts who follow late earnings announcers do not fully incorporate the earnings news of the early announcers in revising their earnings forecasts on late earnings announcers. Using a different research design, Thomas & Zhang (2008) show an opposite stock market anomaly associated with information transfers from earnings announcements. They document that stock price responses of late announcers to earnings announcements of early announcers are negatively associated with subsequent price responses of late announcers to their own earnings announcements. This negative correlation suggests that the investors of late announcers overreact to the implications of earnings news transferred from early announcers and that the overreaction is corrected when late announcers report their own earnings. The authors provide a possible explanation to this surprising finding of overreaction of late announcers to early announcers' earnings releases. They contend that the late announcer reacts positively to each of early announcers' earnings announcements. The late announcer's price response to all of the early announcers' earnings announcements in aggregate causes the late announcer's price to exceed the price that correctly reflects the aggregate information content in early announcers' earnings releases. This overreaction is then corrected at the late announcer's earnings announcement.

2.4 Hypotheses

While timely disclosures of management forecasts are informative for the investors of *NF* firms and *LF* firms to infer the industry-wide information and competitive interactions between firms, behavioral bias may still cause investors to respond inefficiently to peer firms' forecasts, similar to the evidence of underreaction or overreaction documented

in earnings announcement based anomalies. In addition, investors may not fully incorporate the news in management voluntary disclosures due to creditability concerns and therefore underreact to information transfers from management forecasts. Taken together, whether market participants irrationally react to, and specifically whether market participants underreact to, information transfers from management forecasts is an empirical question.

To study the empirical question above regarding market efficiency, we examine the correlation between the stock returns of *NF* firms (*LF* firms) around the forecast releases by *F* firms (*EF* firms) and the stock returns of *NF* firms around their own earnings announcements (*LF* firms' own earnings forecasts or actual earnings announcements). First, we focus on *NF* firms. If the investors of *NF* firms do not efficiently incorporate *F* firms' earnings information to form predictions of their own firms' earnings, they should be surprised when their own firms announce actual earnings numbers and accordingly correct such inefficiency. As such, a positive or negative correlation of *NF* firms' stock returns between these two information events (i.e., *F* firms' forecast disclosures and *NF* firms' earnings announcements) should be observed. Our first hypothesis stated in the alternative form is as follows:

H1: The investors of NF firms do not efficiently react to F firms' forecasts, and subsequently correct the mispricing when NF firms announce actual earnings.

Next, we study a group of firms that also disclose earnings forecasts in the same quarter but do so after *EF* firms do. Unlike *NF* firms, *LF* firms issue forecasts to reveal their earnings news subsequent to *EF* firms' earnings predictions. Consequently, the investors of *LF* firms can use the information contained in their own earnings forecasts to correct the mispricing due to inefficient responses to *EF* firms' earnings forecasts. Thus, we should observe a positive or negative correlation of *LF* firms' stock returns between these two information events (i.e., *EF* firms' earnings forecasts and *LF* firms' earnings forecasts). (Note 4) The second hypothesis is stated as follows:

H2: The investors of LF firms do not efficiently react to EF firms' forecasts, and subsequently correct the mispricing when EF firms forecast earnings.

While the investors of *LF* firms can correct the mispricing to *EF* firms' forecasts when they receive their own firms' forecasts, they may not fully correct the mispricing due to the credibility concerns of their own firms' management forecasts, as evidenced in Ng et al. (2013). Thus, the investors of *LF* firms may further correct the mispricing to *EF* firms' forecasts when *LF* firms announce their actual earnings, during which time the credibility concerns are resolved. Thus, we should observe a positive or negative correlation of *LF* firms' returns between *EF* firms' earnings forecasts and *LF* firms' earnings announcements. The third hypothesis is stated as follows:

H3: The investors of LF firms do not efficiently react to EF firms' forecasts or fully correct the mispricing when LF firms forecast earnings, and further correct the mispricing when LF firms' announce actual earnings.

For all three hypotheses, a positive (negative) correlation between the returns during the two information events in each scenario indicates underreaction (overestimation) to information transfers from management earnings forecasts and subsequent correction of the mispricing.

3. Sample selection and research design

3.1 Sample selection

We obtain firms' quarterly earnings, announcement dates, and other accounting data from quarterly COMPUSTAT files. Stock return data are from CRSP and management earnings forecast data are from First Call. We use quarterly management earnings forecasts to test the hypotheses. We keep only point forecasts and closed range forecasts. In addition, since forecasts provided after the accounting period often serve as earnings preannouncements, we only keep forecasts released before the quarter end in our sample. Finally, we keep the first forecast if a firm makes multiple forecasts in a quarter.

Consistent with prior research (e.g., Freeman & Tse, 1992; Thomas & Zhang, 2008), we focus on firms with December fiscal year-ends to ensure that the management earnings forecasts and actual earnings announcements are for the same quarter. *H1* requires a *NF* firm-quarter sample with at least one *F* firm in the same quarter and same industry in order to examine the correlation of *NF* firms' returns between the two periods of time, i.e., when *F* firms release earnings forecasts and when *NF* firms make actual earnings announcements. *H2* and *H3* require a *LF* firm-quarter sample with at least one prior earnings forecast released by an *EF* firm in the same quarter and same industry. Industries are defined according to the four-digit SIC industry codes. Given that management forecasts are not popular in First Call before year 2001 and that we require at least 30 observations in each quarter to run the Fama-MacBeth quarterly regressions, we limit the sample period between 2001 and 2008. The final sample for testing *H1* includes 80,317 *NF* firm-quarter observations in response to *F* firms' quarterly earnings forecasts. The

sample for testing *H2* and *H3* tests include 4,286 *LF* firm-quarter observations in response to *EF* firms' quarterly forecasts.

3.2 Research design

Following Thomas and Zhang's (2008) methodology, we use the following model to test *H1* and *H3*. In this design, we test whether the returns of *NF* firms during their own earnings announcement events or the returns of *LF* firms during their own earnings forecast or announcement events are positively correlated with the returns of *NF* firms or *LF* firms during *F* firms or *EF* firms' earnings forecast events:

$$ARET = \beta_0 + \beta_1RESP + \beta_2COMMON + \beta_3COMMON \times RESP + \beta_4PRARET + \beta_5SIZE + \beta_6BM + \beta_7RET6 + \beta_8ARET_{t-1} + \beta_9ARET_{t-4} + \beta_{10}ACC + \varepsilon_i \quad (1)$$

To test *H2*, we use Equation (2) as follows:

$$ARET = \beta_0 + \beta_1RESP + \beta_2COMMON + \beta_3COMMON \times RESP + \beta_4PRARET + \beta_5SIZE + \beta_6BM + \beta_7RET6 + \varepsilon_i \quad (2)$$

where

ARET = the *NF* firm's 3-day abnormal return around its earnings announcement date (*H1*), the *LF* firm's 3-day abnormal return around its management forecast date (*H2*), or the *LF* firm's 3-day abnormal return around its earnings announcement date (*H3*),

RESP = the average of a *NF* firm's 3-day abnormal returns around multiple *F* firms' earnings forecast dates (*H1*), or the average of a *LF* firm's 3-day abnormal returns around multiple *EF* firms' earnings forecast dates (*H2* and *H3*),

PRARET = the average of *F* firms' 3-day abnormal returns around their own earnings forecast dates (*H1*), or the average of *EF* firms' 3-day abnormal returns around their own earnings forecast dates (*H2* and *H3*),

COMMON = 1 if $RESP \times PRARET > 0$, and 0 otherwise,

$ARET_{t-1}$ = *ARET* in prior quarter,

$ARET_{t-4}$ = *ARET* in the same quarter of the prior year,

SIZE = logarithm of the market value of equity at the end of prior fiscal year,

BM = logarithm of book-to-market ratio, where book-to-market ratio is the book value of equity divided by the market value of equity at the end of prior fiscal year,

RET6 = buy-and-hold six-month stock return leading up to one week before the *NF* firm's earnings announcement date (*H1*), buy-and-hold six-month stock return leading up to one week before the *LF* firm's earnings forecast date (*H2*), or buy-and-hold six-month stock return leading up to one week before the *LF* firm's earnings announcement date (*H3*),

ACC = the change in noncash working capital minus depreciation expense divided by average total assets, where the change in noncash working capital equals the change in noncash current assets minus the change in current liabilities less short-term debt.

Appendix A summarizes the variable definitions. Following Kim et al. (2008), we include the interaction between *COMMON* and *RESP* in order to test stock price response to industry commonalities and competitive shifts separately. Specifically, when *COMMON* equals 1, the stock price of the *NF* firm (*LF* firm) on average responds in the same direction to the price movement of the *F* firms (*EF* firms) around earnings forecasts of the *F* firms (*EF* firms). Therefore, *COMMON* proxies for industry commonalities when it takes the value of 1. To the contrary, when *COMMON* assumes a value of zero, the average news contained in peers' forecasts implies competitive shifts. That is, the good news of *F* firms (*EF* firms) implies bad news for *NF* firms (*LF* firms). The models control for risk factors (*SIZE* and *BM*) as well as price momentum (*RET6*). In addition, Equation (1) also controls for the effects of post-earnings announcement drift ($ARET_{t-1}$ and $ARET_{t-4}$) and accrual anomaly (*ACC*) on returns around earnings announcement dates. Following Thomas and Zhang (2008), we run the regressions by quarter and report the mean coefficient estimates and Fama-MacBeth *t*-statistics.

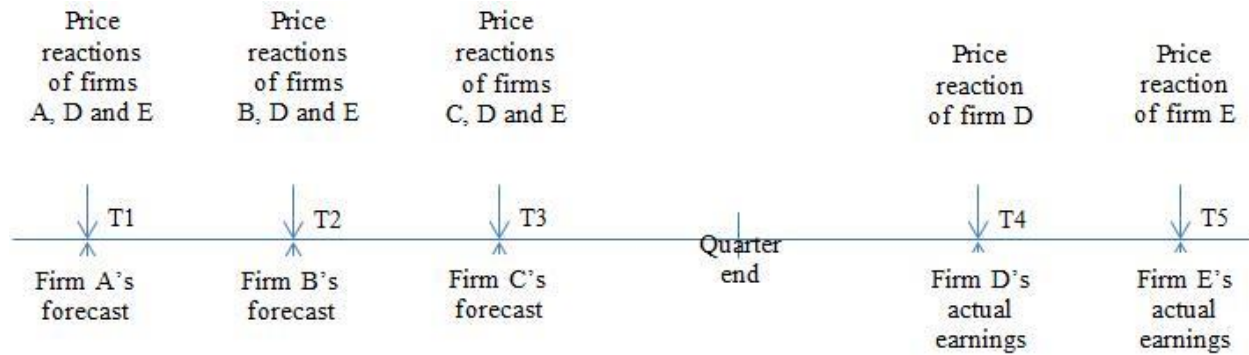


Figure 1. Timeline of various abnormal returns for H1

Figures 1 and 2 provide the timelines to facilitate the understanding of the calculations of various return-related variables. Suppose there are five firms in a given quarter, of which three (A, B, and C) provide earnings forecasts and two (D and E) do not. In Figure 1 for *H1*, *ARET* of the *NF* firm D (E) is its abnormal return around event T4 (T5). *RESP* of the *NF* firm D (E) is the average of D's (E's) abnormal returns around events T1, T2, and T3. D and E have the same *PRARET*, which is the average of A's abnormal return around event T1, B's abnormal return around event T2, and C's abnormal return around event T3.

In Figure 2 for *H2*, *ARET* of the *LF* firm B (C) is its abnormal return around event T2 (T3). *RESP* of the *LF* firm B (C) is B's abnormal return around event T1 (the average of C's abnormal returns around events T1 and T2). *PRARET* of the *LF* firm B (C) is A's abnormal return around event T1 (the average of A's abnormal returns around event T1 and B's abnormal returns around event T2). In Figure 2 for *H3*, *ARET* of the *LF* firm B (C) is its abnormal return around event T6 (T7) when B (C) makes an earnings announcement. The calculations of *RESP* and *PRARET* are the same for *H3* as those for *H2*.

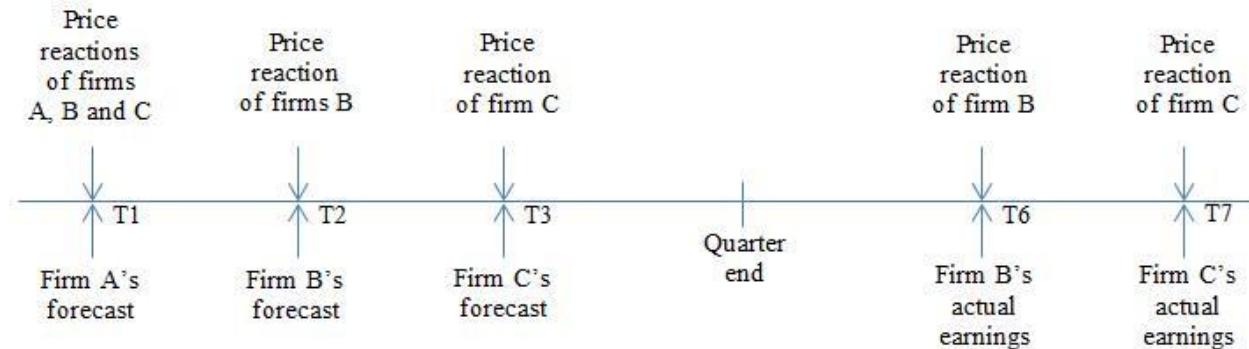


Figure 2. Timeline of various abnormal returns for H2 and H3

Following Han et al. (1989) and Kim et al. (2008), we use the residuals from the single-index pricing model (i.e., the market model) of Equation (3) and the two-index pricing model of Equation (4) as the 3-day abnormal returns for all event windows:

$$R_{i,t} = \alpha_i + \beta_i^M R_{M,t} + u_{i,t} \tag{3}$$

$$R_{i,t} = \alpha_i + \beta_i^M R_{M,t} + \beta_i^I R_{I,t} + e_{i,t} \tag{4}$$

where $R_{i,t}$ is the daily return for firm i on day t , $R_{M,t}$ is the value-weighted market return on day t , and $R_{I,t}$ is the equal-weighted industry return on day t (excluding firm i). Coefficients are first estimated using the OLS from day -220 to day -21 relative to the event dates. We then plug in the estimated coefficients in the equations to calculate the residuals.

4. Results

4.1 Univariate analyses

Table 1, panel A reports the descriptive statistics of the variables for *H1* and panel B presents summary statistics for *H2* and *H3*. Comparing the numbers across the two samples, we note distinct characteristics. Compared to *NF* firms, *LF* firms have a higher mean market value of equity, a smaller mean book-to-market ratio, and a larger mean total accruals. Further, their stock returns in the past six months are on average higher. In panel A, the mean return of *F*

firms around their own forecast dates (*PRARET*) and the mean return of *NF* firms around *F* firms' forecast dates (*RESP*) are -3.10% and -0.20% , respectively, indicating that the information content of information transfers is only about 6% (i.e., $-0.20\%/-3.10\%$) of the information content of *F* firms' own forecasts, consistent with investors of *NF* firms underreacting to *F* firms' earnings forecasts. The negative mean values of *PRARET* and *RESP* suggest that on average management forecasts convey bad news and that investors of *NF* firms react in the same direction.

Table 1. Descriptive statistics

Panel A: Sample for H1 test: Nonforecasting (*NF*) firms

Variable	Mean	Median	STD
Abnormal returns derived from the single-index pricing model			
<i>ARET</i>	0.02%	-0.05%	8.71%
<i>RESP</i>	-0.20%	-0.17%	4.91%
<i>PRARET</i>	-3.10%	-0.86%	11.25%
Abnormal returns derived from the two-index pricing model			
<i>ARET</i>	0.01%	-0.05%	8.12%
<i>RESP</i>	-0.18%	-0.14%	4.29%
<i>PRARET</i>	-3.21%	-0.78%	10.98%
Other variables			
<i>SIZE</i>	5.647	5.596	2.268
<i>BM</i>	-0.812	-0.766	0.948
<i>RET6</i>	0.073	0.040	0.440
<i>ACC</i>	-0.053	-0.044	0.078

Note. This table, Panel A presents the nonforecasting (*NF*) firm sample spanning from 2001 to 2008 for testing H1, with 80,317 non-forecasting firm-quarter observations. Variable definitions are provided in Appendix A. All variables are winsorized at 1% and 99%, respectively.

In panel B, the mean return of *LF* firms around their own earnings forecasts (*ARET-H2*) and the mean return of *EF* firms around their own earnings forecasts (*PRARET*) are -2.96% and -2.27% , respectively, suggesting that the average news of late forecasts are worse than that of early forecasts, consistent with the findings in prior studies. In addition, the magnitude of the mean *RESP* (-0.16%) is much smaller than that of the mean *ARET-H2* (-2.96%), indicating that investors of *LF* firms respond to a much greater extent to their own firms' earnings forecasts than to *EF* firms' earnings forecasts.

Comparing the two panels, we note that the mean return of *NF* firms around their own earnings announcement dates (*ARET* in panel A = 0.02%) and the mean return of *LF* firms around their own earnings announcement dates (*ARET-H3* in panel B = 0.03%) are close to zero, suggesting that much information has been preempted prior to actual earnings announcements for both *NF* firms and *LF* firms. The average return of *LF* firms around *EF* firms' forecast dates (*RESP* in panel B = -0.16%) is slightly smaller in magnitude than the average return of *NF* firms around *F* firms' forecast dates (*RESP* in panel A = -0.20%), suggesting that investors of *NF* firms rely more heavily on forecasts made by *F* firms than investors of *LF* firms on forecasts made by *EF* firms, presumably because investors of *NF* firms have fewer information sources between the *F* firms' forecast events and subsequent *NF* firms' own earnings announcements.

Panel B: Sample for H2 and H3 tests: Late forecasting (*LF*) firms

Variable	Mean	Median	STD
Abnormal returns derived from the single-index pricing model			
<i>ARET-H2</i>	-2.96%	-0.75%	10.59%
<i>ARET-H3</i>	0.03%	-0.02%	8.12%
<i>RESP</i>	-0.16%	-0.15%	4.25%
<i>PRARET</i>	-2.27%	-0.50%	8.96%
Abnormal returns derived from the two-index pricing model			
<i>ARET-H2</i>	-3.04%	-0.68%	10.14%
<i>ARET-H3</i>	0.03%	-0.03%	8.60%
<i>RESP</i>	-0.14%	-0.13%	3.98%
<i>PRARET</i>	-2.29%	-0.55%	9.05%
Other variables			
<i>SIZE</i>	6.811	6.692	1.647
<i>BM</i>	-0.971	-0.923	0.733
<i>RET6-H2</i>	0.087	0.041	0.506
<i>RET6-H3</i>	0.084	0.040	0.492
<i>ACC</i>	-0.044	-0.041	0.066

Note. This table, Panel B presents the late forecasting (*LF*) firm sample spanning from 2001 to 2008 for testing H2 and H3, with 4,286 late forecasting firm-quarter observations. Variable definitions are provided in Appendix A. All variables are winsorized at 1% and 99%.

Table 2 provides Pearson correlations among the variables related to abnormal returns around the event dates. The correlations between *PRARET* and *RESP* are positive across the two samples and two pricing models, suggesting that the investors of *NF* firms (*LF* firms) respond to *F* firms' (*EF* firms') earnings forecasts in the same direction as stock price movements of the *F* firms (*EF* firms) during their forecast windows. The positive correlations between *RESP* and *ARET* in panel A indicate that investors of *NF* firms underreact to *F* firms' forecasts and fail to fully incorporate the implications of *F* firms' earnings forecasts in valuing the *NF* firms. The positive correlations also suggest that the investors of *NF* firms correct the initial underreaction when *NF* firms subsequently announce their own actual earnings. In panel B, *RESP* is positively correlated with *ARET-H2* and *ARET-H3*, suggesting that investors of *LF* firms correct the mispricing caused by their underreaction to *EF* firms' forecasts when *LF* firms make earnings forecasts as well as when *LF* firms subsequently make their earnings announcements.

Table 2. Pearson correlations

Panel A: Sample for H1 test: Nonforecasting (*NF*) firms

	Single-index pricing model		Two-index pricing model		
	<i>ARET</i>	<i>RESP</i>	<i>ARET</i>	<i>RESP</i>	
<i>RESP</i>	0.119		<i>RESP</i>	0.105	
<i>PRARET</i>	0.022	0.030	<i>PRARET</i>	0.017	0.021

Note. This table, Panel A presents correlations among *ARET*, *RESP*, and *PRARET* for the nonforecasting (*NF*) firm sample. The sample period spans between 2001 and 2008, with 80,317 *NF* firm-quarter observations. Variable definitions are provided in Appendix A. Correlations appearing in bold are significant at the 5% level or better.

Panel B: Sample for H2 and H3 tests: late forecasting firms

	Single-index pricing model			Two-index pricing model		
	<i>ARET</i> -H2	<i>ARET</i> -H3	<i>RESP</i>	<i>ARET</i> -H2	<i>ARET</i> -H3	<i>RESP</i>
<i>RESP</i>	0.127	0.079		<i>RESP</i>	0.120	0.063
<i>PRARET</i>	0.029	0.015	0.048	<i>PRARET</i>	0.021	0.010 0.039

Note. This Table, Panel B presents correlations among *ARET*, *RESP*, and *PRARET* for the late forecasting (*LF*) firm sample. The sample period spans from 2001 to 2008, with 4,286 *LF* firm-quarter observations. Variable definitions are provided in Appendix A. Correlations appearing in bold are significant at the 5% level or better.

4.2 Multivariate regression analyses

4.2.1 Empirical results for testing H1

Table 3 reveals the regression results for testing *H1*. If the investors of *NF* firms do not fully incorporate *F* firms' earnings forecasts in revising their beliefs about their own firms' earnings prospects and if they make a price correction when their own firms announce actual earnings, we should observe a positive association between the returns of *NF* firms around *F* firms' forecast dates and the returns of *NF* firms around their own earnings announcements. In Table 3, column 1, where the abnormal returns are computed using the single-index pricing model and controlling for risk factors and other anomalies, we find that the coefficient on *RESP* is positive (0.146) and significant at the 1% level ($t = 14.83$), suggesting that market participants of *NF* firms underreact to the implication of *F* firms' earnings forecasts and that they further respond to *F* firms' forecast news when they confirm the implications of the information transfers through their own firms' earnings announcements. This finding is in line with the findings of extant literature on investors' underreaction to earnings news. Using the two-index pricing model to calculate abnormal returns (column 3), we obtain similar results in column 3 (coefficient on *RESP* = 0.137; $t = 13.85$).

Columns 2 and 4 examine whether the underreaction observed in columns 1 and 3 varies with the different innovations of information externalities. Since *COMMON* captures the news of industry commonalities, the coefficient on *RESP* reflects the response of investors of *NF* firms to *F* firms' news implying competitive shifts, whereas the coefficient on *COMMON* \times *RESP* measures the incremental response of investors of *NF* firms to *F* firms' news implying industry commonalities. The coefficients on *RESP* in columns 2 and 4 are 0.129 and 0.120, respectively, and the coefficients on *COMMON* \times *RESP* in columns 2 and 4 are 0.031 and 0.028, respectively. All these coefficients are statistically significant. The results suggest that while market participants underreact to both news of competitive shifts and news of industry commonalities, they react to industry commonalities news in an even less efficient way than to competitive shifts news.

4.2.2 Empirical results for testing H2

Table 4 reports the results for testing *H2*. If the investors of *LF* firms do not fully incorporate *EF* firm's forecast news in revising their beliefs about their own firms' future earnings, we should observe a positive association between the returns of *LF* firms around *EF* firms' forecast dates and the returns of *LF* firms around their own subsequent forecast dates. Columns 1 and 3 show that the coefficients on *RESP* are 0.180 and 0.183 ($t = 13.17$ and 14.02) under the single- and two-index pricing models, respectively. The significantly positive coefficients suggest that the investors of *LF* firms underestimate the effect of information transfers on their expected earnings, similar to the results in Table 3. The investors of *LF* firms correct the mispricing when *LF* firms make their earnings forecasts.

Columns 2 and 4 provide evidence on the difference in investors' underreaction to competitive shifts news versus industry commonalities news. Specifically, the positive coefficients on *RESP* (0.155 in column 2 and 0.159 in column 4) suggest that investors of *LF* firms underreact to the innovations of competitive shifts news. Further, the positive coefficients on *COMMON* \times *RESP* (0.042 in both columns 2 and 4) indicate that the underreaction of market participants to industry commonalities news is more pronounced than the underreaction to competitive shifts news. The positive coefficients above also suggest that investors of *LF* firms make a price correction when *LF* firms provide their own earnings forecasts.

Table 3. Results for testing H1 regarding *NF* firms

	Single-index pricing model				Two-index pricing model			
	1		2		3		4	
	Coef.	<i>t</i> -stat	Coef.	<i>t</i> -stat	Coef.	<i>t</i> -stat	Coef.	<i>t</i> -stat
Intercept	0.003	1.25	0.003	1.10	0.002	0.85	0.002	0.71
<i>RESP</i>	0.146 ***	14.83	0.129 ***	10.04	0.137 ***	13.85	0.120 ***	9.36
<i>COMMON</i>			0.005	0.98			0.006	0.89
<i>COMMON</i> × <i>RESP</i>			0.031 ***	2.86			0.028 **	2.47
<i>PRARET</i>	0.012 **	2.49	0.009 **	2.22	0.009 **	2.34	0.008 **	2.09
<i>SIZE</i>	0.002	0.61	0.002	0.78	0.001	0.35	0.001	0.30
<i>BM</i>	0.005 ***	3.46	0.005 ***	3.35	0.005 ***	3.05	0.005 ***	3.18
<i>RET6</i>	0.004 *	1.67	0.004 *	1.78	0.003	1.30	0.003	1.19
<i>ARET</i> _{<i>t</i>-1}	0.021 ***	3.21	0.019 ***	2.90	0.015 ***	2.74	0.015 ***	2.88
<i>ARET</i> _{<i>t</i>-4}	-0.001	-0.39	-0.001	-0.45	-0.001	-0.33	-0.001	-0.47
<i>ACC</i>	-0.008 ***	-2.98	-0.008 ***	-2.89	-0.007 ***	-2.71	-0.007 ***	-2.80
N	80,317		80,317		80,317		80,317	
Adj. <i>R</i> ²	0.028		0.029		0.026		0.026	

Note. This Table reports the results for H1 from the following regression:

$$ARET = \beta_0 + \beta_1RESP + \beta_2COMMON + \beta_3COMMON \times RESP + \beta_4PRARET + \beta_5SIZE + \beta_6BM + \beta_7RET6 + \beta_8ARET_{t-1} + \beta_9ARET_{t-4} + \beta_{10}ACC + \varepsilon_i$$

Variable definitions are provided in Appendix A. The sample period spans over the years from 2001 to 2008, with 80,317 *NF* firm-quarter observations. The reported coefficient estimates are the mean coefficient estimates of quarterly regressions over the sample period. *t*-statistics are Fama-MacBeth *t*-statistics. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Table 4. Results for testing H2 regarding *LF* firms

	Single-index pricing model				Two-index pricing model			
	1		2		3		4	
	Coef.	<i>t</i> -stat	Coef.	<i>t</i> -stat	Coef.	<i>t</i> -stat	Coef.	<i>t</i> -stat
Intercept	-0.000	-0.16	-0.000	-0.13	0.001	0.31	0.001	0.25
<i>RESP</i>	0.180 ***	13.17	0.155 ***	8.04	0.183 ***	14.02	0.159 ***	8.76
<i>COMMON</i>			0.006	0.72			0.005	0.55
<i>COMMON</i> × <i>RESP</i>			0.042 ***	2.73			0.042 ***	2.89
<i>PRARET</i>	0.034 ***	3.07	0.040 ***	3.44	0.029 ***	2.72	0.037 ***	2.95
<i>SIZE</i>	0.004 *	1.77	0.004 *	1.69	0.003	1.22	0.003	1.34
<i>BM</i>	0.002 *	1.91	0.002 *	1.83	0.002 *	1.70	0.002 *	1.81
<i>RET6</i>	0.001	0.88	0.001	0.80	0.001	0.69	0.000	0.60
N	4,286		4,286		4,286		4,286	
Adj. <i>R</i> ²	0.021		0.021		0.017		0.017	

Note. This Table reports the results for H2 from the following regression:

$$ARET = \beta_0 + \beta_1RESP + \beta_2COMMON + \beta_3COMMON \times RESP + \beta_4PRARET + \beta_5SIZE + \beta_6BM + \beta_7RET6 + \varepsilon_i$$

Variable definitions are provided in Appendix A. The sample spans over the years from 2001 to 2008, with 4,286 late forecasting firm-quarter observations. The reported coefficient estimates are the mean coefficient estimates of quarterly regressions over the sample period. *t*-statistics are Fama-MacBeth *t*-statistics. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Table 5. Results for H3

	Single-index pricing model				Two-index pricing model			
	1		2		3		4	
	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat
Intercept	0.001	0.37	0.001	0.30	0.002	0.57	0.002	0.65
<i>RESP</i>	0.068 ***	4.94	0.054 ***	2.92	0.060 ***	4.15	0.045 **	2.48
<i>COMMON</i>			0.004	0.53			0.004	0.63
<i>COMMON</i> × <i>RESP</i>			0.018 **	1.99			0.015 *	1.76
<i>PRARET</i>	0.007 **	2.06	0.009 **	2.47	0.005 **	2.01	0.006 **	2.20
<i>SIZE</i>	0.004 *	1.66	0.004	1.56	0.003	1.47	0.003	1.32
<i>BM</i>	0.004 ***	2.84	0.004 ***	2.70	0.003 **	2.52	0.003 ***	2.65
<i>RET6</i>	0.002	1.39	0.002	1.28	0.003	1.57	0.003 *	1.66
<i>ARET</i> _{<i>t-1</i>}	0.016 ***	2.78	0.018 ***	2.91	0.014 **	2.52	0.013 **	2.40
<i>ARET</i> _{<i>t-4</i>}	-0.002	-0.75	-0.001	-0.64	-0.001	-0.48	-0.001	-0.52
<i>ACC</i>	-0.006 **	-2.52	-0.007 ***	-2.64	-0.006 **	-2.40	-0.006 **	-2.47
N	4,286		4,286		4,286		4,286	
Adj. R ²	0.018		0.018		0.016		0.016	

Note. This Table reports the results for H3 from the following regression:

$$ARET = \beta_0 + \beta_1 RESP + \beta_2 COMMON + \beta_3 COMMON \times RESP + \beta_4 PRARET + \beta_5 SIZE + \beta_6 BM + \beta_7 RET6 + \beta_8 ARET_{t-1} + \beta_9 ARET_{t-4} + \beta_{10} ACC + \varepsilon_i$$

Variable definitions are provided in Appendix A. The sample spans over the years from 2001 to 2008, with 4,286 late forecasting firm-quarter observations. The reported coefficient estimates are the mean coefficient estimates of quarterly regressions over the sample period. *t*-statistics are Fama-MacBeth *t*-statistics. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

4.2.3 Empirical results for testing H3

While Table 4 provides evidence that investors' underreaction to information externalities is corrected when late forecasting firms provide their own earnings forecasts, it does not show whether the mispricing is fully corrected during this event window. Due to market participants' concern about the credibility of management forecasts (Ng et al., 2013), the investors of *LF* firms still may not fully incorporate the news in their own earnings forecasts. Thus, we test *H3* and examine whether further correction is observed when *LF* firms announce earnings because actual earnings announcements should mitigate investors' concern regarding the credibility of *LF* firms' earnings forecasts.

The results in Table 5 confirm *H3*. The positive coefficients on *RESP* (0.068 in column 1 and 0.060 in column 3) show that the abnormal returns of *LF* firms around *EF* firms' forecast releases are positively associated with the abnormal returns of *LF* firms around their own earnings announcements, suggesting that further correction of the mispricing occurs around *LF* firms' earnings announcement dates. The magnitude of these two coefficients is smaller than that of the corresponding coefficients in Table 3, columns 1 and 3, presumably because part of mispricing was corrected when *LF* firms previously made earnings forecasts (in *H2*).

The same conclusion can be drawn when information transfers are further partitioned into competitive shifts and industry commonalities. Specifically, the positive coefficients on *RESP* and *COMMON* × *RESP* in columns 2 and 4, together with the coefficients on the same variables in Table 4, columns 2 and 4, suggest that the investors of *LF* firms correct the underreaction to both competitive shifts news and industry commonalities news contained in *EF* firms' earnings forecasts around both their own firms' forecast release dates and actual earnings announcement dates.

In robustness checks, we follow Thomas & Zhang (2008) and replicate all regressions in Tables 3–5 by computing abnormal returns as raw returns minus value-weighted market returns. Untabulated results show that the conclusions drawn above are not sensitive to this alternative measure of abnormal returns.

Overall, the findings in our study suggest that investors of *NF* firms (*LF* firms) underreact to intra-industry information transfers from management earnings forecasts made by *F* firms (*EF* firms) and that these investors correct this underreaction when the *NF* firms announce their earnings (when the *LF* firms subsequently make their own earnings forecasts or actual earnings announcements).

5. Conclusion

Management earnings forecasts have long been recognized as an important forward-looking information source for market participants to revise their beliefs about firms' future prospects. Since firms in the same industry operate in a similar environment, the management forecast disclosed by one firm should also be informative about the earnings expectations of the peer firms. In other words, when one firm provides a forecast, we should observe price movements of the peer firms in the same industry due to information transfers from management earnings forecasts. Since management forecasts are voluntary and only a fraction of firms voluntarily disclose them, the information spillover from forecasting firms' earnings predictions should be informative for investors in peer firms. This study examines whether market participants efficiently respond to information transfers from management forecasts.

We find that market participants consistently underreact to information externalities of management forecasts and they make a correction of the mispricing in future information events. Specifically, the investors of nonforecasting firms (late forecasting firms) underreact to the overall information transfers from management earnings forecasts issued by forecasting firms (early forecasting firms). Subsequently, the investors of nonforecasting firms (late forecasting firms) make a price correction when nonforecasting firms issue actual earnings announcements (late forecasting firms issue earnings forecasts or earnings announcements). Moreover, market participants underreact to both competitive shift news and industry commonalities news contained in peer firms' management earnings forecasts. The inefficiencies in how industry commonalities news is incorporated in peer firms' stock returns is more pronounced relative to competitive shifts news. Additionally, we find that investors of late forecasting firms make a price correction around both late forecasting firms' earnings forecast dates and earnings announcement dates. This is presumably due to investors' concern about the credibility of late forecasting firms' management forecasts.

This paper adds to the literatures on information transfers from management forecasts and earnings-based anomalies. On the one hand, prior papers examining information transfers from management forecasts focus on stock price movements around management forecast release dates of forecasting firms (early forecasting firms). They do not investigate whether such stock price responses are efficient. On the other hand, papers in the earnings anomalies literature largely emphasize on the market reactions to the news of the disclosing firms, while a few studies examine the efficiency of information transfers from actual earnings announcements. This paper fills these gaps by showing that market participants underestimate the implications of information transfers from management forecasts and subsequently correct the underreaction when their own firms release earnings forecasts or earnings announcements.

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Notes

Note 1. Information transfers are also referred to as information externalities or spillovers. These terms are interchangeable throughout the paper.

Note 2. Papers that study information transfers among firms in the same industry include Foster (1981), Baginski (1987), Pownall & Waymire (1989), Han, Wild, & Ramesh (1989), Han & Wild (1990), Pyo & Lustgarten (1990), Freeman & Tse (1992), Lim, Ro, & Pyo (2001), Ramnath (2002), Thomas & Zhang (2008), Kim, Lacina, & Park (2008), Gleason, Jenkins, & Johnson (2008), Ng, Tuna, & Verdi (2013), etc. Papers that study the spillover effects along the supply chain include Olsen & Dietrich (1985), Pandit, Wasley, & Zach (2011), and Eshleman & Guo (2014). See section 2 below for a brief review.

Note 3. Since we do not examine the price movements beyond earnings announcements of NF firms and LF firms, our results are not evident as to whether the mispricing is fully corrected during earnings announcements. It is possible that the price movements during future information events subsequent to earnings announcements of NF firms and LF firms are also correlated with the price movements during peer firms' forecasting windows. This is beyond the scope of the current paper.

Note 4. Another reason to separately study stock price responses to information transfers from management earnings forecasts for NF firms and LF firms is that investors of these two groups of firms may incorporate information transfers to different extents. For instance, investors of LF firms that forecast regularly may expect their own firms' earnings forecasts to be available soon and consequently revise their expectations based on EF firms' forecasts. In contrast, investors of firms that do not forecast regularly may expect to receive earnings information only through earnings announcements. Therefore, these two groups of investors may incorporate the implications of F firms' forecasts differently.

Appendix A. Variable definitions

Variable	Definition
<i>ARET</i>	
<i>ARET</i> for H1	the <i>NF</i> firm's 3-day abnormal return around its earnings announcement date
<i>ARET</i> for H2	the <i>LF</i> firm's 3-day abnormal return around its management forecast date
<i>ARET</i> for H3	the <i>LF</i> firm's 3-day abnormal return around its earnings announcement date
<i>RESP</i>	
<i>RESP</i> for H1	the average of a <i>NF</i> firm's 3-day abnormal returns around <i>F</i> firms' forecast release dates
<i>RESP</i> for H2 and H3	the average of a <i>LF</i> firm's 3-day abnormal returns around <i>EF</i> firms' forecast release dates
<i>PRARET</i>	
<i>PRARET</i> for H1	the average of <i>F</i> firms' 3-day abnormal returns around their forecast release dates
<i>PRARET</i> for H2 and H3	the average of <i>EF</i> firms' 3-day abnormal returns around their forecast release dates
<i>COMMON</i>	equals 1 if $RESP \times PRARET > 0$, and 0 otherwise
$ARET_{t-1}$	<i>ARET</i> in prior quarter
$ARET_{t-4}$	<i>ARET</i> in the same quarter in the prior year
<i>SIZE</i>	logarithm of the market value of equity at the end of prior fiscal year
<i>BM</i>	logarithm of book-to-market ratio, where book-to-market ratio is the book value of equity divided by the market value of equity at the end of prior fiscal year
<i>RET6</i>	
<i>RET6</i> for H1	buy-and-hold six-month stock return leading up to one week before the <i>NF</i> firm's earnings announcement date
<i>RET6</i> for H2	buy-and-hold six-month stock return leading up to one week before the <i>LF</i> firm's forecast release date
<i>RET6</i> for H3	buy-and-hold six-month stock return leading up to one week before the <i>LF</i> firm's earnings announcement date
<i>ACC</i>	the change in noncash working capital minus depreciation expense divided by average total assets, where the change in noncash working capital equals the change in noncash current assets minus the change in current liabilities less short-term debt

Note. This Table summarizes the definitions of variables used in Equations (1) and (2).