"Institutional holdings changes and corporate voluntary disclosure"

| **AUTHORS** | Judy Beckman
Fouad K. Moussa
Liem Nguyen
Anh Duc Ngo |

NUMBER OF REFERENCES	NUMBER OF FIGURES	NUMBER OF TABLES
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Judy Beckman (USA), Fouad K. Moussa (USA), Liem Nguyen (USA), Anh Duc Ngo (USA)

Institutional holdings changes and corporate voluntary disclosure

Abstract

The paper studies how institutional shareholders respond to management earnings forecasts. Following the Bushee (1998) classification of three types of institutional investors, dedicated (DED), quasi-indexer (QIX), and transient (TRA) in the 13-F filings between 1994-2000 retrieved from Thompson Reuter's US institutional holdings, the authors find that transient institutional investors unload their shares before management issues negative earnings surprises. The authors also document that quasi-indexers and dedicated institutional investors are likely to increase their holdings for firms with positive surprise management annual earnings forecasts. The article finds that markets react more favorably to firm's actual earnings announcement during the following quarter of management earnings forecasts if dedicated investors previously increased their holdings during the quarter of management earnings forecasts. The authors do not find any evidence that the passage of Regulation Fair Disclosure results in different trading behaviors for these different groups of institutional investors. There is some evidence that firm-level guidance attract different types of institutional investors, and each type of institutional investors trade differently during the earnings guidance event.

Keywords: institutional holdings, institutional investors, earnings forecast.

Introduction

Financial researchers usually consider institutional investors as sophisticated or "informed" investors. Not only do most of them have in-house research teams, but they also have better access to firms' information. Nonetheless, prior studies prove a mixed result of institutional investors' ability to gain profitable returns. On the one hand, Jensen (1968) finds that actively managed mutual funds underperform overall market returns after management and transaction fees are taken into account. Prior studies by Carhart (1997) and Wermers (2000) also support the result that institutional investors such as mutual funds do not outperform passive benchmark portfolios and in many cases underperform passive indices, even before expenses. On the other hand, a number of studies provide evidence that a subset of mutual funds seems to possess superior skill. For example, Malkiel (1995) computes the abnormal returns for a large sample of mutual funds between 1971 and 1991. He finds that mutual funds have tended to underperform the market, not only after management expenses have been deducted, but also gross of all reported expenses except load fees. Moreover, fund returns are analyzed in the context of the capital asset pricing framework. He does not find any evidence of excess returns but also fail to verify the risk return relationship posited by the capital asset pricing model, a conclusion similar to that of Fama and French (1992) for individual securities. A number of recent studies investigate institutional investors' stock-picking skills more directly by examining the performance of their trades. Chen, Jegadeesh and Wermers (2000), and Alexander, Cici and Gibson (2007) find that the stocks that mutual funds purchase earn significantly higher returns than the stocks they sell. Another growing literature uses changes in holdings by specific institutional investors (e.g., mutual funds or transient institutions) find that the positive relation between firms' future earnings and returns (Ali, Durtschi, Lev and Trombley, 204; Ke, Ramalingegowda and Yu, 2006). Finally, prior work shows that institutional investors are attracted to firms with richer public information environments, including greater analyst following O'Brien and Bhushan (1990) and higher disclosure quality (Bushee and Noe, 2000). These studies suggest less opportunity to obtain a private information advantage.

The Regulation Fair Disclosure ("Reg FD") was adopted by the U.S. Securities and Exchange Commission in October 2000. This rule was intended to stop the practice of "selective disclosure," in which companies give material information only to a few analysts and institutional investors prior to disclosing it publicly. Gomes, Gorton and Madureira (2004) find that the adoption of Reg FD caused a significant reallocation of information-producing resources, resulting in a welfare loss for small firms, which now face a higher cost of capital. The loss of the "selective disclosure" channel for information flows could not be compensated for via other information transmission channels. Nevertheless, they suggest that Reg FD had unintended consequences and that "information" in financial markets may be more complicated than current finance theory admits. Sarkar and Wang (2007) explore the market reaction to stock repurchase in the Regulation Fair Disclosure (Reg FD) era. They find that there is a higher level of individual trading activity on the repurchase announcement day in the post-Reg FD period. While the abnormal return on and before announcement day shows no significant differences between pre- and post-Reg FD periods, the four-day, six-day, and eight-day abnormal returns are

significantly higher in the post-Reg FD period. The complementary evidence from both trading activities and abnormal returns supports the notion that Reg-FD has leveled the playing field for individual investors, reducing the information advantage enjoyed by institutional investors in the pre-Reg FD era.

Management generally tries to attract institutional investors with long investment horizons and screens out investors who trade frequently. Management aims at achieving a stable ownership base that will not destabilize a firm's stock price based on institutional short-term speculation. However, prior anecdotal evidence in popular press indicates that improved disclosure could attract institutions that trade aggressively and actually exacerbate stock price volatility around news announcements (Fox, 1997; and Serwer, 1997). These articles imply that there are potentially important connections between a firm's disclosure, the composition of its institutional investor base, and the volatility of its stock price. Prior research has provided evidence on each of these links individually. Lang and Lundholm (1993) find that analysts' assessments of corporate disclosure are weakly and positively associated with firms' stock return volatility. Healy, Hutton and Palepu (1999) document that sustained increases in analysts' assessments of corporate disclosure practices result in higher levels of institutional ownership, which they cite as one of the benefits of improved disclosure. However, yearly improvements in disclosure rankings are associated with increases in ownership primarily by 'transient" institutions, which are characterized by aggressive trading based on short-term strategies. Firms with disclosure ranking improvements resulting in higher transient ownership are found to experience subsequent increases in stock return volatility (Bushee, 1998).

Edmans (2009) shows that existence of large shareholders who have the incentive to collect private information, and who can sell their shares upon receiving bad news, assuming markets are liquid (as would be the case in a sample of large firms like ours), can make prices follow long-term prospects rather than short-term profits. The existence of transient large shareholders and market liquidity make managers make long-term investment decisions rather than focus on short-term one.

This study contributes to the current literature in a several ways. First, we assess relationship between management annual earnings forecasts and trading activity by three types of different investors: transient, dedicated, and quasi-indexers as proposed by Bushee and Noe (1998, 2000). These types of institutional investors have different short-term and long-term trading strategies. We find that each type

of institutional investors trade differently during the period prior to management earnings forecasts. Institutions could be sensitive to corporate disclosure practices if disclosures have an impact on profitable trading opportunities. Kim and Verrecchia (1994) argue that profit-making ability of sophisticated investors lies in their superior ability to interpret the implications of public signals, indicating that different management disclosure information could improve varying opportunities. Thus, the effect of disclosure on the profit opportunities of an institution is likely dependent on its information-gathering and processing capabilities. In addition, Bushee and Noe (2000) find that firms with higher Association for Investment Management and Research (AIMR) disclosure rankings have greater institutional ownership, but the particular types of institutional investors attracted to greater disclosure have no net impact on return volatility[1]. However, yearly improvements in disclosure rankings are associated with increases in ownership primarily by "transient" institutions, which are characterized by aggressive trading based on return volatility. We find that long-term investors, the categories of dedicated and quasi-indexers, are more likely to increase their holdings in advanced management annual positive earnings forecasts while transient investors are more likely to unload their holdings before negative surprise management earnings forecasts. We conjecture that transient investors may have some capability of gathering and analyzing information before management earnings forecasts events.

Last, El-Gazzar (1998) finds that the higher the institutional ownership, the smaller the market reaction to earnings releases, consistent with institutional investors acquiring predisclosure information and trading on this predisclosure information to mitigate the market response when earnings is announced. Hotchkiss and Strickland (2003) examine the relationship between institutional ownership composition and market reaction to negative earnings announcements. They find that when firms report earnings below analysts' expectations, the stock price response is more negative for firms with higher levels of ownership by momentum or aggressive growth investors. In our study, we find that during the period after management earnings forecasts, market on average favor firms which have increasing number of shares held by long-term investors during management earnings forecast event. We conjecture that these long-term investors are likely to be able to increase their holdings in potentially good firms.

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[1] In 2004, the AIMR changed its name to the CFA Institute.

1. Literature review

Institutional investors could be sensitive to corporate voluntary disclosures for a number of reasons. First, institutional investors could be attracted to firms with more informative disclosure practices if such disclosure reduces the price impact of trades (Healy, Hutton and Palepu, 1999). Institutions tend to invest more heavily in firms with greater average trading volumes. This is consistent with institutions preferring firms for which traders are likely to have a lower price impact (Gompers and Metrick, 1990). Diamond and Verrecchia (1991) show that greater disclosure reduces the information asymmetry between the firm and investors, which lessens price impacts of trade by reducing both bid-ask spreads and the amount of information potentially revealed by large trades.

Corporate disclosure practices could be more important to institutions if they rely on public disclosure. Bushman et al. (2000) argue that a critical input into the effective operation of corporate governance mechanisms is information on how and why equity value is changing. Institutions that are active in corporate governance and/or do not have resources to engage in private information collection will likely prefer more transparent firms through more frequent disclosure practices.

Prior research documents that institutional investors have information advantage. With the advantage of private information gathering and/or public information processing, some institutional investors appear to engage in informed trading in response to future information. For example, institutional investors trade actively in anticipation of impending events, such as breaks in consecutive earnings increases (Ke and Petroni, 2004), future earnings implication of current accruals (Collins, Gong and Hribar, 2003), and future dividend increases (Amihud and Li, 2006). The institutional investors' trading patterns can be used to evaluate the level of information advantage.

Overall, the importance of corporate disclosure practices to institutional investors depends on their investment horizons, information gathering capabilities, and governance activities. To capture key differences along the dimensions, we use the methodology of Bushee (1998; 2000) to separate institutions into three groups based on their prior investment behaviors. The first group of institutions, called "transient" institutions, is characterized as having high levels of portfolio turnover and diversification. These characteristics reflect the fact that transient institutions tend to be short-term-focused investors with little interest in long-term capital appreciation or dividends (Porter, 1992). Because

transient institutions focus on attaining short-term returns from their position in a firm's stock, high liquidity will likely be important to them so that the price impact of their trading does not erode any potential trading gains. Thus, transient institutions are expected to be attracted to firms with more informative disclosure practices.

The second group of institutions, called "dedicated" institutions, is characterized as taking large stakes in firms and having low portfolio turnover, both of which are consistent with a relationship approach to their investing (Potter, 1992; Dobzynski, 1993). Due to their large stable ownership positions, dedicated institutions often have better access to private information about their private portfolio firms. As a result, public information is less important in monitoring firms and is potentially costly if it reveals proprietary information. Because dedicated investors are no frequent traders, the liquidity benefits of disclosure are likely to be less important to them than to other types of institutions. Thus, dedicated institutions are likely to be indifferent to disclosure practices or even to prefer firms with less forthcoming disclosure.

The final group of institutions called 'quasi-indexers," is characterized as having low portfolio turnover and highly diversified holdings. These characteristics suggest a passive, buy-and-hold strategy of investing (Porter, 1992). This strategy is prevalent among institutions like public pensions and bank trusts, which have substantial sums to invest and/or lack the resources to actively manage their portfolios. Like dedicated institutions, the low portfolio turnover of these institutions limits the importance of disclosure in reducing price impacts of trading. However, for quasi-indexers with large, diversified portfolios, corporate disclosures are often a cost-effective method of monitoring firm performance, indicating that quasi-indexers should prefer firms with more forthcoming disclosures.

One commonly cited benefit of disclosure is that, by mitigating information asymmetry, it reduces the magnitude of periodic surprises about a firm's performance and makes its stock price less volatile (Lang and Lundholm, 1993; Healy, Hutton and Palepu, 1999). Lang and Lundholm (1993) find a weakly positive association between analysts' assessments of corporate disclosure practices and firms' stock return volatility. They conjecture that a positive association could result if stock return volatility proxies for information asymmetry and managers are attempting to reduce this asymmetry with improved disclosure.

Another potential explanation for such an association is that improved disclosure attracts greater

holdings by transient institutions, whose aggressive trading behavior and alleged propensity to engage in large-scale selling when faced with bad news indirectly lead to higher stock return volatility (Potter, 1992). Prior research suggests that high levels and large changes of institutional ownership are associated with higher future stock return volatility (Sias, 1996; Potter, 1992). Moreover, Chan and Lakosishok (1993; 1995) find that both individual trades and packages of trades by institutional investors have quite large price impacts over short horizons, with high turnover institutions producing the largest price impacts.

Regarding the strands of prior literature related to the management earnings forecast, Hsieh et al. (2006) indicate that the motivations may also include volatility and liquidity considerations. In any case one might argue that managers view such announcements as providing different information from that in earnings, dividends, and other firm announcements: promoting firm transparency. With the implementation of Regulation Fair Disclosure (Reg FD) on October 23, 2000, the number of firms provides forecast increased modestly; the number of forecast announcements for these firms doubled[1]. Anilowski, Feng and Skinner (2007) report approximately 25% of the firms by number and 50% of the firms by market value were providing earnings forecast in 2004. In looking at forecast estimates, one must consider whether the management tries to be more transparent or just tries to guide the investors and analysts to the direction they aim at. Cotter et al. (2006) find that the public management forecast plays an important role in leading analysts toward achievable earnings targets. Management is likely to give more forecasts when analysts' initial forecasts are optimistic, and when analysts' forecast dispersion is low. Analysts quickly react to management forecast and they are more likely to issue final beatable earnings targets when management provides public information. Finally, Pownall and Waymire (1989) show the firms that provide management forecast of earnings incur less information transfer from information events of other firms in their industry. This indicates that providing management forecast of earnings allows managers to focus the market more clearly on the information specific to their firm, rather than to have the firm treated as a homogenous member of the industry. Baginski et al. (1994) focus on preliminary quarterly earnings forecast provided by management

after the earnings period has ended, but prior to the actual earnings announcement. They study market reaction to stock price to determine if the news is viewed as good or bad. By determining that good news and bad news disclosures are timed about equally, they find a statistically significant but economically small market reaction at disclosure. Williams (1996) examines the relationship between the usefulness of a prior forecast by management and analyst response to a current forecast, after controlling for other determinants of belief. She suggests that based on prior earnings forecasts management establishes a forecasting reputation which affects analysts' reaction to voluntary disclosures. Lang and Lundholm (1996) use measures of corporate disclosure from the Reports of the Financial Analysts Federation Corporate Information Committee (RAF Reports) to show that higher levels of disclosure are often related to greater analyst following, more accurate market expectations, and reduced information asymmetry.

2. Hypotheses development

Kim and Verrecchia (1994) argue that profit-making ability of sophisticated investors lies in their superior ability to gather and process information. In addition, Bushee and Noe (2000) find that firms with higher AIMR disclosure rankings have greater institutional ownership, but the particular types of institutional investors attracted to greater disclosure have no net impact on return volatility. Each type of institutional investors has distinctive investment preference and information-gathering and analyzing capabilities. As a result, our hypothesis is stated in the null form:

H1A: Each type of institutional investors does not change their holdings differently during the period prior to management annual earnings forecast.

We also conjecture that positive surprise management earnings forecast is more likely to attract more long-term institutional investors thanks to the good prospect of firm performance. Consequently, we state the following null hypothesis:

H1B: Long-term investors are not likely to change their holdings regardless of the nature of management earnings surprise forecasts.

Chiyachantana et al. (2004) examine retail and institutional adjusted trading volume at earnings announcements. To control for the effect of confounding events, they examine adjusted volume for two days before and after an earnings announcement. Adjusted volume is event day volume net of volume for the same firm fourteen days prior to the announcement. They find that adjusted volume before and after earnings announcements actually declined post-FD. For institutional investors, the decline was

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[1] Regulation Fair Disclosure (Reg FD) was a Securities and Exchange Commission (SEC) ruling implemented in October 2000. It mandated that all publicly traded companies must disclose material information to all investors at the same time. The SEC's goal was to stamp out selective disclosure, in which some investors received potentially market moving information before others.

concentrated in the pre-earnings announcement period, whereas for retail investors adjusted trading volume declined before earnings announcements and increased after. They interpret the increase in retail investor volume post-earnings announcements as evidence of a post-FD decline in information asymmetry. Consequently, our hypothesis is stated in the null form:

H2: During the period of management annual earnings forecasts, institutional investors do not trade differently prior to and after the implementation of Reg FD.

We also investigate how market reacts to management annual earnings forecasts after controlling for each type of institutional investor's holdings change. El-Gazzar (1998) finds that market price response to earnings announcement is smaller for securities with higher institutional holdings. In addition, Hotchkiss and Strickland (2003) find that the stock price response is more negative for firms with higher levels of ownership by momentum or aggressive growth investors when firms report earnings below analysts' expectations. Consequently, we conjecture that market is likely to respond differently to changes in each type of institutional investors' holdings. We propose the following hypothesis:

H3: Market responds indifferently to firms in which long-term investors increase their holdings during the period of management annual earnings forecasts.

3. Data description

Our sample of management earnings forecast, obtained from First Call, covers the period from January 1, 1995 to December 31, 2009. We only use the EPS forecast, and we retain only quantitative point and range forecasts. To be consistent with Baik and Jiang (2006) and McNichols (1989), we use the midpoint as the management forecast when the forecast gives a range; however, we study on annual forecasts to analyze long-term forecasts which give managers more room to EPS forecasts. We delete management forecasts if the actual earnings per share or CUSIP are not available in the First Call database. We also delete management forecasts without market price on CRSP and those that do not satisfy the standards in running value-weighted market adjusted returns.

We also delete management forecasts which do not have accounting information in COMPUSTAT. In addition, we eliminate observations that do not have positive book price.

We obtain data on institutional holdings from the Thompson Reuter, which contains all 13-F filings between 1994-2010, to measure the percentage ownership relative to total shares outstanding for

each of the three groups of institutions: transient (TRA), dedicated (DED), and quasi-indexers (QIX). Institutions are classified into these groups using a factor and cluster analysis approach described in Bushee (1998; 2000). Since our main interest is institutional investors, we add institutional holdings to these variables. As Chen, Harford, and Li point out, "all institutions with greater than $100 million of equity securities under discretionary management report their holdings quarterly using the SEC's Form 13-F; common stock positions greater than 10,000 shares or $200,000 must be disclosed". We obtain the 13-F data from WRDS, Thomson Reuters. 13-F reports are quarterly, but since we are working with annual data, we look at the year-end reports only. Each institutional investment manager needs to report its holdings of equity securities (where identifiers include CUSIP). Note that the data is disclosed at the Investment Management level. For instance, fidelity will report its holdings of GE Corp at the aggregate level in this dataset. For each firm in our sample, we aggregate institutional holdings from the 13-F filings at the end of each year. For each Management Number in the 13-F filings, Bushee's website provides this classification[1].

Table 1 presents this filtering process. Our final sample includes 216,892 firm-annual forecast observations.

Table 1. Sample selection criteria

	Estimates
Institutional investors (1995-2009)	21,842,465
Institutional investors categorized as dedicated, quasi-indexer, and transient investors	6,739,634
Institutional investors with changing holdings during the earnings guidance event	1,040,563
Merge with First Call	282,021
Merge with COMPUSTAT	216,892

Figure 1 illustrates the sequence of events in our analysis. As described in the timeline, the institutional holdings in each quarter are documented as the date of report of 13-F filing. Since we investigate institutional holdings change surrounding management annual earnings forecasts, we include only institutional holdings data within two quarters prior to or one quarter after management earnings forecast. We also exclude institutional holdings without changes within one quarter after management earnings forecasts; however, the institutional holdings report should occur prior to actual earnings date.

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[1] A small percentage of institutions cannot be classified into any of these three groups. Thus, there may be a small discrepancy between total institutional ownership and the sum of the three groups of institutions.
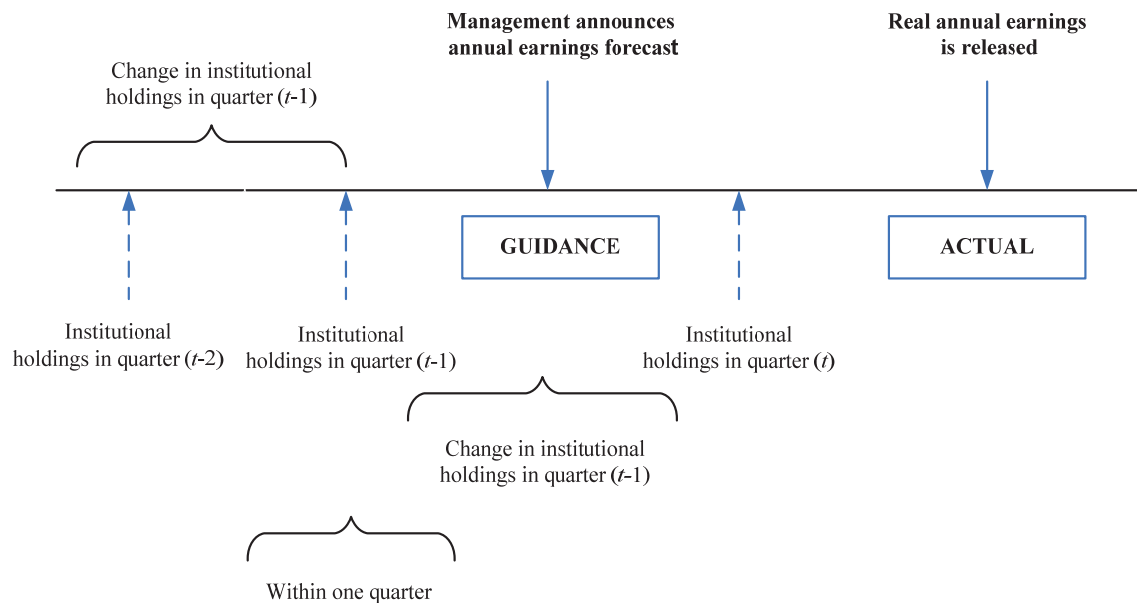
Fig. 1. The sequence of management annual earnings guidance and institutional investor's holding change (1995-2009)

4. Empirical results

4.1. Descriptive statistics. Table 2 presents the descriptive statistics of our annual management forecast sample. It is interesting that management does not provide as many pessimistic earnings forecasts as we expect. Only 44% of their forecasts are pessimistic. A management forecast is pessimistic/neutral/optimistic if it is less than/equal to/greater than actual earnings. It is quite different from prior literature in quarterly earnings forecast documented in Soffer et al. (2000), Baik and Jiang (2006). Majority of management forecasts are neutral surprise, which contributes 57% of all forecasts. And positive surprise earnings forecast is more than two times than negative surprise. This can show that management is likely to be optimistic in the long horizon forecasts. And, there is only 14 percent of management annual earnings forecasts take place within the last quarter of the fiscal year end.

Table 2. Descriptive statistics of variables in management annual earnings forecast

Variables	Min	Max	Mean	Median	Std. dev.
Positive	0.00	1.00	0.30	0.00	0.46
Negative	0.00	1.00	0.13	0.00	0.34
Pessimistic	0.00	1.00	0.45	0.00	0.49
Log(M/B)	-9.28	7.22	0.74	0.70	0.80
Loss	0.00	1.00	0.03	0.00	0.18
Number_days	-93.00	93.00	-7.93	-1.00	50.57
FDDum	0.00	1.00	0.95	1.00	0.23
Fiscal	0.00	1.00	0.09	0.00	0.28
Last_quarter	0.00	1.00	0.02	0.00	0.14
Issue_now	0.00	1.00	0.00	0.00	0.09
Issue_next	0.00	1.00	0.00	0.00	0.08
Logsize	15.02	26.80	21.27	21.14	1.70
Analyst_dispersion	0.00	4.51	0.01	0.01	0.05

Note: No of observation: 216,892. *Positive* is a dummy variable taking value of one if management earnings forecast is a positive surprise, and zero otherwise. *Negative* is a dummy variable taking value of one if management earnings forecast is a negative surprise, and zero otherwise. *Pessimistic* is a dummy variable having value of one if firm also provided pessimistic annual forecast, otherwise zero. *Log(M/B)* is the logarithm of market over book price of the firm at the beginning of year of management forecast. *Loss* is a dummy variable having value of one if the actual earning is negative, and zero otherwise. *Number_days* is the number of days between the institutional holding change report date and management earnings forecast date. *FDDum* is a dummy variable having value of one if a management forecast takes place after Fair Disclosure, otherwise zero. *Fiscal* is a dummy variable having value of one if a management forecast is for a fiscal year end within one calendar year, and zero otherwise. *Last_quarter* is a dummy variable having value of one if the management annual forecast occurs within the last quarter before the actual earnings announcement. *Issue_now* is the dummy variable having value of one if a firm issues either IPO/SEO or Bond within one quarter after management forecast, otherwise zero. *Issue_next* is the dummy variable having value of one if a firm issues either IPO/SEO or Bond in the second quarter after management forecast, otherwise zero. *Logsize* is the logarithm of firm size at the beginning of the year of management forecast. *Analyst_dispersion* is the standard deviation of all analysts' EPS estimates before the management forecast.

Table 3 presents the correlation matrix for variables in the following regression models. These variables are not very highly correlated to each other. We drop number of analysts following to avoid the multicollinearity potential while we select firm *Logsize* as a control variable.

Table 3. Correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Positive (1)	1.00	-0.25[a]	0.08[a]	-0.15[a]	-0.02[a]	0.01[a]	0.11[a]	-0.05[a]	-0.02[a]	0.04[a]	0.02[a]	-0.08[a]	0.03[a]
Negative (2)		1.00	-0.06[a]	-0.07[a]	0.12[a]	0.02[a]	-0.06[a]	0.03[a]	0.04[a]	-0.01[a]	0.01[a]	-0.15[a]	0.04[a]
Pessimistic (3)			1.00	0.06[a]	-0.11[a]	-0.02[a]	0.11[a]	-0.07[a]	0.03[a]	0.02[a]	0.01[b]	0.11[a]	-0.01[a]
Log(M/B) (4)				1.00	-0.12[a]	-0.01[a]	-0.04[a]	0.03[a]	-0.01[a]	-0.02[a]	-0.01[a]	0.36[a]	-0.11[b]
Loss (5)					1.00	0.01[a]	-0.01[a]	0.02[a]	-0.01[a]	0.01	0.01	-0.21[a]	0.15[a]
Number_days (6)						1.00	-0.03[a]	0.03[a]	0.05[a]	-0.01	-0.01	-0.01[a]	0.01
FDDum (7)							1.00	-0.06[a]	-0.06[a]	0.02[a]	0.01[a]	-0.01	-0.01[a]
Fiscal (8)								1.00	-0.04[a]	-0.01	-0.01[b]	0.03[a]	-0.01
Last_quarter (9)									1.00	-0.01[a]	-0.01	-0.01	0.01[a]
Issue_now (10)										1.00	-0.01[a]	-0.02[a]	0.01[a]
Issue_next (11)											1.00	-0.02[a]	-0.01
Logsize (12)												1.00	-0.08[a]
Analyst_dispersion (13)													1.00

Note: No of observation: 216,892. *Positive* is a dummy variable taking value of one if management earnings forecast is a positive surprise, and zero otherwise. *Negative* is a dummy variable taking value of one if management earnings forecast is a negative surprise, and zero otherwise. *Pessimistic* is a dummy variable having value of one if firm also provided pessimistic annual forecast, otherwise zero. *Log(M/B)* is the logarithm of market over book price of the firm at the beginning of year of management forecast. *Loss* is a dummy variable having value of one if the actual earning is negative, and zero otherwise. *Number_days* is the number of days between the institutional holding change report date and management earnings forecast date. *FDDum* is a dummy variable having value of one if a management forecast takes place after Fair Disclosure, zero otherwise. *Fiscal* is a dummy variable having value of one if a management forecast is for a fiscal year end within one calendar year, and zero otherwise. *Last_quarter* is a dummy variable having value of one if the management annual forecast occurs within the last quarter before the actual earnings announcement. *Issue_now* is the dummy variable having value of one if a firm issues either IPO/SEO or Bond within one quarter after management forecast, otherwise zero. *Issue_next* is the dummy variable having value of one if a firm issues either IPO/SEO or Bond in the second quarter after management forecast, otherwise zero. *Logsize* is the logarithm of firm size at the beginning of the year of management forecast. *Analyst_dispersion* is the standard deviation of all analysts' EPS estimates before the management forecast.

4.2. Each type of institutional investors changes its holdings prior to different management earnings forecasts. We run the OLS regression on institutional holdings change during the management annual earnings forecasts for each type of institutional investors: dedicated, quasi-indexer, and transient.

$$\Delta INS_{t-2,t-1} = \alpha + \beta_1 Positive_t + \beta_2 Negative_t + \beta_3 LogMB_t + \beta_4 Number\_days_t + \beta_5 FDDum_t +$$
$$+ \beta_6 Fiscal_t + \beta_7 Last\_quarter_t + \beta_8 LogSize_t + \beta_9 Analyst\_dispersion_t + \varepsilon_t. \tag{1}$$

$\Delta INS_{t-2,t-1}$ is a variable representing change in institutional holdings during the two quarters prior to surrounding earnings forecast date scaled by number of shares outstanding. *Positive* is a dummy variable having value of one if it is a positive surprise management forecast, otherwise zero. *Negative* is a dummy variable having value one if it is a negative surprise management forecast, otherwise zero. *Log(M/B)* is the logarithm of the ratio between market and book price at the beginning year of management earnings forecast event. *Number_days* is number of days between the last institutional holdings change date prior to management earnings forecasts and management earnings forecast date. *FDDum* is a dummy variable having value of one if the management earnings forecast takes place after the Fair Disclosure Implementation, and zero otherwise. *Fiscal* is a dummy variable having value of one if a management forecast is for a fiscal year end within one calendar year, and zero otherwise. *Logsize* is the logarithm of firm size at the beginning of the year of management forecast. *Analyst_dispersion* is the standard deviation of all analysts' EPS estimates before the management forecast.

We present the results in Table 4. The coefficients of positive surprise variables are statistically and economically significant at one percent level, 7.42 and 9.27 for quasi-indexer and dedicated investors, respectively; however it is not statistically significant for transient investors. On the other hand, the coefficient of negative surprise earnings variable is -0.42 and statistically significantly at five percent level. This supports our hypothesis that each type of institutional investors trades differently prior to management earnings forecasts conditional on the forecast surprise. This is consistent with prior study that dedicated investors and quasi-indexer are likely to increase their holdings while observing good

prospects from the firms thanks to their long-term investment attitude; however, transient investors do not really care much about long-term prospect of the firms. In fact, they are likely to unload their shares before negative news. We conjecture that each type of institutional investors has different capability of gathering and processing information in addition to their different investment goals.

Table 4. OLS regression of each type of institutional holdings change to management annual earnings forecasts (1995-2009)

$$\Delta INS_{t-2,t-1} = \alpha + \beta_1 Positive_t + \beta_2 Negative_t + \beta_3 LogMB_t + \beta_4 Number\_days_t + \beta_5 FDDum_t +$$
$$+ \beta_6 Fiscal_t + \beta_7 Last\_quarter_t + \beta_8 LogSize_t + \beta_9 Analyst\_dispersion_t + \varepsilon_t.$$

Variables	Transient		Quasi-indexer		Dedicated	
	Estimation	Std. error	Estimation	Std. error	Estimation	Std. error
Intercept	-14.97	10.92	-19.09[b]	9.11	-33.07[a]	16.04
Positive	1.88	1.57	7.43[a]	3.13	9.21[a]	2.59
Negative	-0.42[b]	0.22	0.80	1.87	0.96	3.28
Log(M/B)	-1.17	0.92	-1.66[b]	0.84	-0.63	1.31
Number_days	-0.08[b]	0.03	-0.12[a]	0.03	-0.07[a]	0.03
FDDum	1.10	4.73	0.20	1.39	6.78	5.56
Fiscal	8.47[a]	2.50	9.01[a]	2.19	7.42[a]	2.52
Last_quarter	3.95	5.14	8.27[c]	4.09	4.41[a]	1.45
Logsize	0.18	0.45	0.05	0.20	0.77	0.68
Analyst_dispersion	0.59	1.33	-0.23	2.00	3.41	8.31
R²	0.07		0.09		0.09	
No. of observations	107,825		31,407		14,954	

Note: [a, b, c] are at 1%, 5%, and 10% significance levels; $\Delta INS_{t-2,t-1}$ is a variable representing changes in institutional holdings during the two quarters prior to surrounding earnings forecast date scaled by number of shares outstanding. *Positive* is a dummy variable having value of one if it is a positive surprise management forecast, zero otherwise. *Negative* is a dummy variable having value of one if it is a negative surprise management forecast, zero otherwise. *Log(M/B)* is the logarithm of the ratio between market and book price at the beginning year of management earnings forecast event. *Number_days* is the number of days between the last institutional holdings change date prior to management earnings forecasts and management earnings forecast date. *FDDum* is a dummy variable having value of one if the management earnings forecast takes place after the Fair Disclosure implementation, and zero otherwise. *Fiscal* is a dummy variable having value of one if a management forecast is for a fiscal year end within one calendar year, and zero otherwise. *Logsize* is the logarithm of firm size at the beginning of the year of management forecast. *Analyst_dispersion* is the standard deviation of all analysts' EPS estimates before the management forecast.

4.3. Each type of institutional investors changes its holdings prior to different management earnings forecasts.
We run the OLS regression on institutional holdings change during the management annual earnings forecasts for each type of institutional investors: dedicated, quasi-indexer, and transient.

$$\Delta INS_{t-1,t} = \alpha + \beta_1 Positive_t + \beta_2 Negative_t + \beta_3 LogMB_t + \beta_4 Number\_days_t + \beta_5 FDDum_t +$$
$$+ \beta_6 Fiscal_t + \beta_7 Last\_quarter_t + \beta_8 LogSize_t + \beta_9 Analyst\_dispersion_t + \varepsilon_t.$$

(2)

$\Delta INS_{t-1,t}$ is a variable representing changes in institutional holdings during the two quarters surrounding earnings forecast date scaled by number of shares outstanding.

Table 5 presents the OLS regression results of each type of institutional holdings changes. We can interpret the coefficient of positive surprise management earnings forecast is 7.02 for dedicated institutional investors. This is the only statistically significant result for all three types of institutional investors. This supports our hypothesis that long-term investors are likely to increase their holdings in potentially good performing firms. And the coefficients of negative surprise earnings forecast are not statistically significant for any groups of inves-

tors. We conjecture that investors do not want increase their shares in firms which are likely to underperform no matter they are short-term or long-term investors.

4.4. Each type of institutional investors trades differently prior to after the implementation of Reg FD when we control for management annual earnings forecasts.
The coefficient of *FDDum* in both Table 4 and Table 5 are not statistically significant for any category of institutional investors. We do not find any evidence to support the hypothesis that institutional investors trade differently before and after the implementation of Reg FD. This may result from the less frequent observation, quarterly data, from Thomson Reuters 13-F.

Table 5. OLS regression of each type of institutional holdings change to management annual earnings forecasts (1995-2009)

$$\Delta INS_{t-1,t} = \alpha + \beta_1 Positive_t + \beta_2 Negative_t + \beta_3 LogMB_t + \beta_4 Number\_days_t + \beta_5 FDDum_t +$$
$$+ \beta_6 Fiscal_t + \beta_7 Last\_quarter_t + \beta_8 LogSize_t + \beta_9 Analyst\_dispersion_t + \varepsilon_t.$$

Variables	Transient		Quasi-indexer		Dedicated	
	Estimation	Std. error	Estimation	Std. error	Estimation	Std. error
Intercept	-9.06a	3.83	-12.12	8.87	-21.11a	5.55
Positive	3.39	2.89	4.22c	2.26	7.02a	3.12
Negative	-0.73	0.52	1.21	2.01	0.36	2.11
Log(M/B)	-2.25	1.32	-1.97b	0.96	-0.75	2.08
Number_days	-0.09a	0.02	-0.18a	0.06	-0.22a	0.08
FDDum	2.21	5.82	0.46	1.14	5.87	3.29
Fiscal	6.44a	2.32	7.11a	3.21	4.44a	1.72
Last_quarter	4.23	5.88	8.89a	2.24	6.22	8.15
Logsize	0.22	0.34	0.05	0.26	0.87	1.24
Analyst_dispersion	0.13	0.83	-0.45	2.45	0.88	2.55
R^2	0.08		0.08		0.10	
No. of observations	99,721		31,512		15,503	

Note: [a, b, c] are at 1%, 5%, and 10% significance levels; $\Delta INS_{t-1,t}$ is a variable representing changes in institutional holdings during the two quarters surrounding earnings forecast date scaled by number of shares outstanding. *Positive* is a dummy variable having value one if it is a positive surprise management forecast, zero otherwise. *Negative* is a dummy variable having value of one if it is a negative surprise management forecast, zero otherwise. *Log(M/B)* is the logarithm of the ratio between market and book price at the beginning year of management earnings forecast event. *Number_days* is the number of days between the last institutional holdings change date prior to management earnings forecasts and management earnings forecast date. *FDDum* is a dummy variable having value of one if the management earnings forecast takes place after the Fair Disclosure implementation, and zero otherwise. *Fiscal* is a dummy variable having value of one if a management forecast is for a fiscal year end within one calendar year, and zero otherwise. *Logsize* is the logarithm of firm size at the beginning of the year of management forecast. *Analyst_dispersion* is the standard deviation of all analysts' EPS estimates before the management forecast.

4.5. Market reactions to management annual earnings forecasts in relation with observed changes in institutional holdings. We run the following OLS model of absolute three-day event market reaction to management annual earnings forecasts.

$$CAR_{90,180} = \alpha + \beta_1 Change\_Dedicated_{t-1,t} + \beta_2 Change\_Quasi\_indexer_{t-1,t} + \beta_3 LogMB_t +$$
$$\beta_4 Number\_days_t + \beta_5 FDDum_t + \beta_6 Fiscal_t + \beta_7 Last\_quarter_t + \beta_8 LogSize_t + \tag{3}$$
$$+ \beta_9 Analyst\_dispersion_t + \beta_{10} Negative_t + \beta_{11} Positive_t + \varepsilon_t.$$

$CAR_{90,180}$ is the ninety-day-window (90,180) value-weighted market adjusted cumulative abnormal returns after management earnings forecasts event. *Change_Dedicated* is a variable representing the institutional holdings change for dedicated investors in the two quarters surrounding earnings forecast date scaled by number of shares outstanding. *Change_Quasi-indexer* is a variable representing the institutional holdings change for quasi-indexer investors in the two quarters surrounding earnings forecast date scaled by number of shares outstanding.

Table 6 presents the OLS regression of market reactions to changes in institutional holdings. The coefficient of *Change_Dedicated* is 0.02 and statistically significant at one percent level. This supports our hypothesis that market responds favorably to firms which have increasing institutional shares held by dedicated investors. We conjecture that long-term investors help firm's stock performance, probably thanks to the signal to the market about their commitment to those firms. This is consistent with prior study, Bushee (2000) transient investors result in more price impacts on these firms. And management is more likely to do their best to attract long-term investors and market appreciates it.

Table 6. Linear regression of market reactions to management earnings forecasts (1995-2009)

$$CAR_{90,180} = \alpha + \beta_1 Change\_Dedicated_{t-1,t} + \beta_2 Change\_Quasi\_indexer_{t-1,t} + \beta_3 LogMB_t +$$
$$\beta_4 Number\_days_t + \beta_5 FDDum_t + \beta_6 Fiscal_t + \beta_7 Last\_quarter_t + \beta_8 LogSize_t +$$
$$+ \beta_9 Analyst\_dispersion_t + \beta_{10} Negative_t + \beta_{11} Positive_t + \varepsilon_t.$$

Variables	Predicted sign	Estimation	Std. error	p-value
Intercept		13.14a	0.32	0.00
Change_Dedicated	+	0.02a	0.00	0.00

Table 6 (cont.). Linear regression of market reactions to management earnings forecasts (1995-2009)

Variables	Predicted sign	Estimation	Std. error	p-value
Change_Quasi-indexer	+	0.01	0.01	0.18
Log(M/B)	+	0.22[a]	0.01	0.00
Number_days	?	-0.01[a]	0.00	0.00
FDDum	-	-0.09[a]	0.04	0.00
Fiscal	?	0.10	0.22	0.47
Last_quarter	?	-0.08	0.07	0.22
Logsize	-	-0.07[a]	0.01	0.00
Analyst_dispersion	?	1.05[a]	0.29	0.00
Negative	+	0.04	0.03	0.16
Positive	+	0.06	0.05	0.14
FDDum*Change_Dedicated	?	-0.01[a]	0.00	0.00
FDDum*Change_Quasi-indexer	?	-0.01	0.01	0.12
R^2	0.12			
No. of observations	154,186			

Note: [a, b, c] are at 1%, 5%, and 10% significance levels; $CAR_{90,180}$ is the ninety-day-window (90,180) value-weighted market adjusted cumulative abnormal returns after management earnings forecasts event. *Change_Dedicated* is a variable representing the institutional holdings change for dedicated investors in the two quarters surrounding earnings forecast date scaled by number of shares outstanding. *Change_Quasi-indexer* is a variable representing the institutional holdings change for quasi-indexer investors in the two quarters surrounding earnings forecast date scaled by number of shares outstanding. *Log(M/B)* is the logarithm of the ratio between market and book price at the beginning year of management earnings forecast event. *Loss* is a dummy variable having value of one if actual earning is negative, and zero otherwise. *Number_days* is the number of days between the last institutional holdings change date prior to management earnings forecasts and management earnings forecast date. *FDDum* is a dummy variable having value of one if the management earnings forecast takes place after the Fair Disclosure implementation, and zero otherwise. *Fiscal* is a dummy variable having value of one if a management forecast is for a fiscal year end within one calendar year, and zero otherwise. *Logsize* is the logarithm of firm size at the beginning of the year of management forecast. *Analyst_dispersion* is the standard deviation of all analysts' EPS estimates before the management forecast. *Negative* is a dummy variable having value of one if it is a negative surprise management forecast, zero otherwise. *Positive* is a dummy variable having value one if it is a positive surprise management forecast, zero otherwise. *FDDum*Change_Dedicated* is the interaction variable between *FDDum* and *Change_Dedicated*. *FDDum*Change_Quasi-indexer* is the interaction variable between *FDDum* and *Change_Quasi-indexer*.

4.6. Robustness check. The results are qualitatively consistent when we run different samples:

♦ Drop neutral surprises.
♦ Select only sample with the period of one year or less between earnings forecast and actual earnings.
♦ Winsorized sample at one percent cut-off point.

Conclusion

This paper investigates whether each type of institutional investors trade differently during the event of management annual earnings forecasts. Our findings contribute to the literature of institutional trading behavior during corporate finance event such as management earnings forecasts. We find that transient investors are likely to unload their shares in the quarter prior to negative surprise management earnings forecasts while it is not true for quasi-indexer and dedicated institutional investors. In addition, we find evidence to support our hypothesis that quasi-indexer and dedicated investors trade differently from transient investors. The former are more likely to increase their holdings after observing a positive surprise earnings forecast. This is consistent with their long-term horizon investment and dedication to firm's good long-term prospect. We conjecture that each type of institutional investors behave differently to management earnings forecasts because each

has different mechanism of gathering, analyzing and processing information.

In addition, we also document that market favors firms which have increasing shares held by dedicated institutional investors during the period of management annual earnings forecasts. We conjecture that these long-term investors are able to select good firms; however, we do not find evidence institutional investors trade differently prior to and after the implementation of Reg FD after we control management annual earnings forecasts. We suggest that more frequent data is likely to clarify it.

This paper's findings leave unanswered issues for potential future research. First, how often institutional investors really change their holdings during the management earnings forecast event. Due to the quarterly observation of 13-F data, we cannot analyze more precisely this issue. We believe that data with real trading transactions by these institutional investors definitely helps answer this issue much more precisely. For example, it should be much clearer if we can see how short-term institutional investors really implement each trade during the period prior to earnings forecasts. Secondly, market reactions to changes in institutional holdings may be further studied if we know how each type of institutional investors rebalance their holdings during the

period of earnings forecasts. We conjecture that short-term institutional investor's direction of trade in relation to the direction of trade made by long-term investors will probably result in different market reactions. However, these unanswered questions are reserved for the future when we have more frequent institutional holdings changes instead of quarterly observations we obtain from 13-F.

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