

**DID REGULATION FAIR DISCLOSURE DIMINISH
INSTITUTIONAL INVESTORS' ABILITY TO MIMIC
PROFITABLE INSIDER TRADES?**

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Dedication

This dissertation is dedicated to my parents Jue Dai and Jingjuan Sun, for their unconditional love and support.

Abstract

This study investigates whether Regulation Fair Disclosure (hereafter Reg FD) was successful in leveling the playing field between institutional (large) and individual (small) investors in terms of their ability to profit by mimicking insider trading patterns. I identify trades made by large versus small investors and examine their relative ability to distinguish profitable insider trades from unprofitable trades. I argue that, prior to Reg FD, large institutional investors had superior access to management which enabled them to obtain material information before it was publicly announced. Such managerial access could have helped large investors to identify and mimic information-driven insider trades that were more likely to be profitable. Consistent with my expectation, I find that, in the pre-Reg FD period, large investors exhibit higher abnormal trading volume around insider trades that are ex post profitable; in contrast, small investors do not exhibit such a pattern. My main finding is that, after the passage of Reg FD, the abnormal trading volume around profitable insider trades observed for large investors disappears. The analysis of directional trading behavior of investors suggests that Reg FD was successful in mitigating large investors' ability to mimic profitable insider *sales*. On the other hand, in relation to insider *purchases*, I find that large investors' mimicking ability persists after the passage of Reg FD. While their superior mimicking ability post Reg FD may be due to their own expertise in information collection and processing, superior information access cannot be ruled out as an explanation. Overall, my findings suggest that the restrictions on private information disclosure instituted by Reg FD were largely effective in blocking management's selective communication channel and reducing the information advantage enjoyed by large investors.

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1. Introduction

On August 15, 2000, the Securities and Exchange Commission (SEC) adopted Regulation Fair Disclosure (hereafter Reg FD) to address concerns regarding the selective disclosure of information by publicly traded companies and other issuers. Reg FD provides that, when an issuer discloses material nonpublic information to certain individuals or entities, generally, securities market professionals such as stock analysts or major shareholders, who may well trade on the information, the issuer must make public disclosure of that information. Thus, by promoting full and fair disclosure, Reg FD attempts to level the informational playing field.

Although institutional investors were a major target of Reg FD on account of their superior access to corporate management, not many studies have examined the effect of Reg FD on their trading behavior. This paper examines whether Reg FD was successful in mitigating the information advantage that (large) institutional investors are known to have over (small) individual investors. I begin with the premise that, due to their preferential managerial access, institutional investors observe trades made by corporate insiders and are able to differentiate insider trades that are based on the insider's private information from insider trades made for other reasons (e.g., insider's liquidity needs). I investigate whether the implementation of Reg FD affected the relative ability of institutional investors vis-à-vis individual investors to identify and mimic information-driven insider trades that are ex post profitable.

There is some anecdotal evidence that institutional investors' access to private

managerial information was not eliminated by Reg FD. Based on a survey report of the National Investor Relations Institute (NIRI), 79% of the 577 NIRI member respondents indicate that they continue to hold one-on-one meetings with institutional investors to the same or even greater extent after the passage of Reg FD. Thus, despite the disclosure restrictions of Reg FD, institutional investors may still seek access to management in the hope of gleaning nonpublic information. On the other hand, anecdotal evidence suggests that the SEC acted promptly after the passage of Reg FD in bringing actions against several companies and executives for Reg FD violations (e.g., Siebel Systems, and Raytheon). Consistent with the SEC's vigilant enforcement efforts, if the private communication channel is blocked by Reg FD, I expect to observe a decline in the relative ability of institutional investors to mimic profitable insider trades.

In the United States, information about trading conducted by insiders is public knowledge because insiders are required to file such information with the SEC. Many investors follow insider trades in the hope that mimicking these trades will be profitable. Even though regulations prohibit insiders to trade on material non-public information, some investors believe that insiders nonetheless make profitable trades either due to their private information or better insight into their firm's future prospects. There is ample evidence supporting this view, both anecdotal and academic. Over the period 2010-2013, the SEC has filed 168 insider trading actions against nearly 400 individuals and entities for illicit profits or avoided losses totaling approximately \$600 million, more than in any three-year period in the agency's history. Numerous commercial trading websites advise investors that mimicking insider trading is a low cost yet profitable trading strategy.

Various research studies show that although not all insider trades are profitable, insiders earn substantial positive abnormal returns when they purchase their companies' stocks and avoid losses by selling their stocks several quarters in advance of the public release of bad news (e.g., Ravina and Sapienza 2010). However, insiders may trade for a variety of reasons, such as personal liquidity, diversification, portfolio balancing, private information, and diverse incentives to signal the market. Although outsiders can observe their trading activities, the motivation behind a certain trade is difficult to decipher. Without knowing whether an insider trade is driven by private information, the profitability of following a certain insider trade is largely uncertain. Given these features of insider trading activity, I hypothesize that, post Reg FD, the ability of institutional investors vis-à-vis individual investors to mimic profitable insider trades will decline. I test my hypothesis over two trading windows, the pre-filing window in which the insider trade is not yet publicly disclosed, and the post-filing window when the insider trade is public knowledge although its nature is not.¹

In the pre-Reg FD period, I argue that institutional investors are more likely to have private communication with company insiders and obtain material information that is not publicly disclosed. In the pre-filing window, institutional investors may acquire private managerial information about certain insider trading activities or future events, which may lead them to trade based on the same motivation as insiders, while the general public is not aware of such trading activities or future events. In the post-filing window, even though now the insider trade is public knowledge, institutional investors' access to

¹ The pre-filing window begins 10 days prior to the trade date and ends one day before the date of filing. The post-filing window is a four-day event window following the filing date.

private information can help them better interpret insider trading signals. Therefore, in both the pre- and post-filing windows, institutional investor trades will be more aligned with profitable insider trading activities. In other words, in the pre-Reg FD regime, institutional investors are more likely to be able to distinguish profitable information-driven insider trades from insider trades due to other reasons, e.g., liquidity, which may not necessarily be profitable. In contrast, individual investors are less likely to be able to distinguish profitable insider trades from unprofitable trades, since they do not have access to material insider information. Therefore I expect that their trades will be correlated with both profitable and unprofitable insider trades.

After the passage of Reg FD, since the channel of selective disclosure is blocked, institutional investors should not have access to material nonpublic information. Therefore, I hypothesize that institutional investors' ability to distinguish profitable insider trades from unprofitable ones will diminish. Alternatively, the pattern of institutional trading may not change if their distinguishing ability in the pre-Reg FD period was not due to their access to managerial private information but rather due to their own expertise in information collection, analysis and evaluation. For small investors, since Reg FD is less likely to have changed their information environment, I do not expect the correlation between their trades and insider trades to change.

I use detailed intraday transaction data from the Trades and Quotes (TAQ) database to examine the trading response of different classes of investors and examine how their trades correlate with insider trades that are ex-post profitable. Following prior research (e.g., Lee 1992; Lee and Radhakrishna 2000; Bhattacharya 2001; Bhattacharya

et al. 2007), I rely on the Lee-Ready algorithm (Lee and Ready 1991) to infer trade direction (buy versus sell) and use dollar value of trades to distinguish larger, well-informed, sophisticated investors, which are assumed to be primarily institutional investors, from smaller, less informed, and less sophisticated investors, which are assumed to be primarily individual investors.²

Compared to insider trades motivated by reasons such as liquidity needs or portfolio balancing, I expect that trades motivated by the insiders' private information are likely to be profitable on average. I use ex post profitability to distinguish information-driven insider trades from insider trades driven by other reasons. Specifically, an insider purchase (sale) is classified as information driven if the ex post realized six-month market adjusted return subsequent to the trade date is positive (negative).

My empirical results in general support my predictions. In the pre-Reg FD regime, I find that large investors exhibit higher abnormal trading volume around profitable insider trades in the pre-filing window, suggesting that large investors have access to private information about the firm's future prospects/events that insiders may trade on or information regarding insiders' trading activities. Such a pattern also exists in the post-filing window, indicating that large investors can distinguish profitable versus unprofitable insider trades. In contrast, small investors do not exhibit such trading patterns in either the pre or the post filing windows. More interestingly, I find that the

² This classification approach is widely used in prior studies (e.g., Bhattacharya 2007; Chiyachantana et al. 2004). One drawback of this approach is that large trades may be broken into small ones so that the measures for small investors' trades are contaminated. Since this problem is believed to be more severe after 2006, it is less applicable to my sample period which ends prior to the passage of the Sarbanes-Oxley Act (2002). Moreover, misclassifying institutional investors' trades as those of individual investors will bias against finding differential results between the two groups.

incremental abnormal trading volume around profitable insider trades observed for large investors disappears after the passage of Reg FD in both the pre-filing and the post-filing windows.

Separate investigation of insider purchases and insider sales with directional abnormal net-buy of shares by investors suggests that Reg FD was successful in mitigating institutional investors' ability to mimic profitable insider sales as well as purchases in the pre-filing window. In the case of individual investors, I find that they have no ability to mimic profitable insider sales as well as purchases in the pre-filing window both pre and post Reg FD.

In the post-filing window, I find that, while the ability of institutional investors to mimic profitable insider sales is diminished after Reg FD, they are still able to mimic profitable insider purchases. The diminished ability of institutional investors to mimic profitable insider sales could be due to the greater difficulty of deciphering the motivation behind insider sales relative to insider purchases without access to private information. This is because insiders' liquidity needs could drive insider sales but may not affect insider purchases. In the post-filing window, individual investors also exhibit a limited ability to mimic profitable insider purchases (but not sales) and this ability is unchanged after Reg FD.

My results show that, in relation to profitable insider purchases, both individual and institutional investors exhibit mimicking ability in the post-filing window after Reg FD. Thus, it appears that Reg FD may have successfully leveled the playing field between institutional and individual investors, and that the mimicking success of

institutional investors can be attributed to their own incentives and expertise rather than managerial access.³ However, I find that the mimicking ability in relation to profitable insider purchases is (weakly) greater for institutional investors relative to individual investors in the post-Reg FD period, suggesting that institutional investors may still have a comparative advantage and that Reg FD may not have fully leveled the information playing field.

Overall, my findings suggest that the restrictions on private information disclosure instituted by Reg FD were largely effective in blocking management's selective communication channel, thereby reducing the information advantage enjoyed by large investors and improving fairness in the capital market.

My study contributes to our understanding of the effectiveness of Reg FD. By investigating how institutional investors' trades correlate with profitable insider trades in both pre- and post-Reg FD periods, my study suggests that Reg FD was in general effective in eliminating selective disclosures of material nonpublic information, reducing institutional investors' information advantage, and leveling the playing field between individual investors and institutional investors. In a closely related paper, Ke, Petroni and Yu (2008) also examine the impact of Reg FD on institutional investors' trading behavior. These authors show that, in the pre-Reg FD period, transient institutional investors have abnormal stock sales in the quarter immediately preceding the disclosure of bad news; however, a similar pattern is not observed in the post-Reg FD period,

³ This is consistent with prior evidence, that insider trading profits concentrate on the purchase side (e.g., Aboody and Lev, 2000; Huddart and Ke, 2007; Jagolinzer et al., 2011), so that investors are more likely to apply their own ability and expertise in information collection, analysis, and evaluation to correctly identify profitable insider purchases.

suggesting that Reg FD effectively reduced the selective disclosure of bad earnings news. By investigating trading activities of institutional and individual investors over narrow windows around insider-trade filings, my paper provides evidence on the effectiveness of Reg FD through a different mechanism. While Ke, Petroni and Yu (2008) focus on extreme *negative* earnings news and institutional investors' *sales* behavior, the insider trading setting in my paper allows for the inclusion of any type of corporate event or news - both positive and negative news, and examines both selling and purchasing behavior. While my results on insider sales support their findings, on the insider purchases side, the results are not as clear-cut. My findings indicate that, institutional investors may still have better ability to distinguish and mimic profitable insider purchases relative to individual investors, suggesting that Reg FD may not have eliminated all private communication between institutional investors and corporate management. My paper's findings could potentially be useful to the SEC in supporting its recent revamping efforts toward better enforcement of Reg FD after a four-year long hiatus in Reg FD enforcement actions.⁴

My study also contributes to the institutional investor literature by testing whether institutional investors' advantage comes from their superior ability to process information or their superior (nonpublic) information access. Reg FD offers a natural setting to investigate the relative importance of the two sources of institutional investors' information advantage. My results suggest that institutional investors' superior

⁴ The four-year hiatus followed after the SEC was chastised for being "overly aggressive" by the district court that dismissed a Reg FD action brought by the SEC in 2004 against Siebel Systems, Inc. and two of its executives.

performance pre Reg FD came mainly from their superior information source as opposed to their expertise in information processing.

The remainder of this paper unfolds as follows. I discuss related literature and develop my hypotheses in section 2. Section 3 describes the procedure to estimate abnormal trading measures of institutional investors and individual investors and presents details of the research design. Section 4 presents the sample selection procedure and the empirical results. Section 5 concludes the paper.

2. Literature Review and Hypotheses Development

2.1 Reg FD

The SEC adopted Reg FD in August 2000 in response to concerns that publicly traded companies selectively disclose material nonpublic information to certain market participants, such as institutional investors and security analysts, at the expense of individual investors. Reg FD prohibits a public company, or any person acting on its behalf, to disclose material managerial information to selected parties when it is reasonably foreseeable that these parties will trade the company's securities on the basis of such information. In recent times, the SEC has increased its vigilance and brought several actions against firms and executives, including American Commercial Lines Inc., Presstek Inc., Office Depot, and First Solar for Reg FD violations. In almost all cases, the actions were resolved through settlement with penalties and cease-and-desist orders.

2.2 Prior research on the effects of Reg FD

Many prior studies investigate whether Reg FD promotes a shift towards a richer public information environment by focusing on its effect on market-level outcomes, such as return volatility, trading volume, and bid-ask spread (e.g., Heflin et al. 2003; Bailey et al. 2003). Most studies that test the effects of Reg FD on market participants focus on sell-side analysts (see Francis, Nanda and Wang 2006 for a summary). These papers generally investigate whether Reg FD affects the accuracy and dispersion of analysts' earnings forecasts or the stock market's reaction to analysts' reports (e.g., Heflin et al., 2003; Bailey et al., 2003; Irani and Karamanou, 2003; Gintchel and Markov, 2004). However, research findings in this stream of literature have been largely mixed.⁵ A few studies investigate another key target of Reg FD—institutional investors. Chiyachantana et al. (2004) find that Reg FD is associated with a decrease in the frequency and volume of institutional trading in the 13 trading hours prior to an earnings announcement. Li et al. (2011) investigate the impact of Reg FD on transient institutional investors' abnormal trading behavior around accounting restatements and find that transient institutional investors exhibit abnormal selling of restating firms' stocks one quarter before the restatement is publicly announced in the pre-Reg FD period and there is no such trading pattern in the post-Reg FD period. Similarly, Ke et al. (2008) investigate the effect of Reg FD when there is a break in a string of positive quarterly earnings and find that, with the passage of Reg FD, the abnormal selling pattern of transient institutional investors prior

⁵ For example, Irani and Karamanou (2003) find that analyst following reduced and analyst forecast dispersion increased after Reg FD, suggesting lower information availability. On the other hand, Heflin, Subramanyam, and Zhang (2003) find that Reg FD has not impeded the information flow to financial analysts and may have actually increased voluntary disclosures of forward-looking data related to earnings.

to the break disappears.

2.3 Prior research on small versus large investors

Several prior papers examine the differential trading behavior of small and large investors in response to information events. Cready and Mynatt (1991) document an increase in the number of trades around the annual report release date and find that the trading response is driven by small investors, suggesting that small investors rely more on the public information system. Lee (1992) provides evidence that small investors trade for a longer time after an earnings announcement than large investors. Some prior studies also find that small investors use the seasonal random-walk model to form earnings expectations, and are more likely to trade on pro forma information (Bhattacharya 2001; Bhattacharya et al. 2007). Asthana et al. (2004) document that the change to EDGAR filings results in a significant increase in small investor trading volume, but no such increase in large investor trading volume. Miller (2010) finds that more complex financial reporting is associated with a reduction in small investors' trading activities.

2.4 Prior research on insider trading

Insiders can earn excess profits by trading on their perceived stock mispricing or by using their superior knowledge about future cash flow realizations (Piotroski and Roulstone 2005). There is ample evidence that insider trading activities generate abnormal returns (e.g., Givoly and Palmon, 1985; Seyhun 1986, 1998; Rozeff and Zaman 1988). Some studies find that insider trading profits concentrate on the purchase side (e.g., Aboody and Lev, 2000; Huddart and Ke, 2007; Jagolinzer et al., 2011), while other

studies present evidence that insider sales predict negative abnormal returns (e.g., Seyhun 1986, 1998; Ke et al. 2003; Cohen et al. 2012). In spite of the empirical evidence that largely indicates that insider trades are profitable, the question of whether outside investors can profit from following insider trading is still open to discussion. Seyhun (1986) and Rozeff and Zaman (1988) point out that outside investors do not gain by mimicking insider trades due to transaction costs, while Bettis et al. (1997) find that outside investors can still earn excess returns net of transaction costs by focusing on insider trades of large magnitude made by top executives.

2.5 Hypotheses development

I develop two sets of hypotheses to empirically test the impact of Reg FD on the ability of institutional investors versus individual investors to benefit from distinguishing profitable insider trades from unprofitable trades.

2.5.1 Pre-Reg FD period

The first set of hypotheses tests whether institutional investors can identify and mimic profitable insider trades in the pre-Reg FD regime. In other words, before proceeding to the exploration of the mitigating effect of Reg FD on institutional investors' ability to identify and trade more on profitable insider trades, a base-line result that institutional investors actually trade more on profitable insider trades in the pre-Reg FD period needs to be established.

Prior to Reg FD, firm managers were known to selectively disclose material information to preferred groups (analysts, institutional investors, etc.). Private

communication with firm managers can grant institutional investors opportunities to possess information regarding insider trading activity along with the motivation behind those trades. In the period prior to insider trades, while insiders are not likely to disclose their trading intention from fear of eroding their own profits, institutional investors can still access material information regarding future events which could form the basis for the imminent insider trade. In contrast, individual investors did not have private access to managerial information even in the pre-Reg FD period with which to infer imminent insider trades or the firm's future events. Thus, I predict that, in the pre-filing window, institutional investors can identify and mimic profitable insider trades, while individual investors cannot.

Pre-filing window:

H1a: *Ceteris paribus*, in the pre-Reg FD period, trades made by *institutional* investors in the pre-filing window have a higher association with profitable insider trades relative to unprofitable insider trades.

H1b: *Ceteris paribus*, in the pre-Reg FD period, trades made by *individual* investors in the pre-filing window have no differential association between profitable and unprofitable insider trades.

After insiders file information about their trading activities with the SEC, the information becomes publicly available. Due to their managerial access, institutional investors possess an information advantage even in the post-filing window which helps them interpret insider trading signals and distinguish profitable insider trades from unprofitable ones. In contrast, individual investors have no such advantage since they do

not have private access to the management. Although individual investors can observe the insider trade in the post-filing window, they are less likely to have the expertise for information processing to be able to differentiate profitable from unprofitable insider trades and mimic them.

Post-filing window:

H1c: *Ceteris paribus*, in the pre-Reg FD period, trades made by *institutional* investors in the post-filing window have a higher association with profitable insider trades relative to unprofitable insider trades.

H1d: *Ceteris paribus*, in the pre-Reg FD period, trades made by *individual* investors in the post-filing window have no differential association between profitable and unprofitable insider trades.

2.5.2 Post-Reg FD period

With the passage of Reg FD, the SEC prohibits selective disclosure of material information to preferred groups. If Reg FD is effective in curtailing private communication between institutional investors and management, I expect a decrease in institutional investors' information supply and thus a reduction in their information advantage. For both the pre-filing period and the post-filing period, with the private information channel blocked, institutional investors' ability to identify profitable insider trades is likely to be reduced. In contrast, Reg FD has no effect on individual investors, as they do not possess a private communication channel to begin with. Therefore, I derive my second set of hypotheses, stated in the alternative form as follows.

Pre-filing window:

H2a: *Ceteris paribus*, the association of trades made by *institutional* investors in the pre-filing window with profitable relative to unprofitable insider trades reduces in the post-Reg FD period.

H2b: *Ceteris paribus*, the association of trades made by *individual* investors in the pre-filing window with profitable relative to unprofitable insider trades does not change in the post-Reg FD period.

Post-filing window:

H2c: *Ceteris paribus*, the association of trades made by *institutional* investors in the post-filing window with profitable relative to unprofitable insider trades reduces in the post-Reg FD period.

H2d: *Ceteris paribus*, the association of trades made by *individual* investors in the post-filing window with profitable relative to unprofitable insider trades does not change in the post-Reg FD period.

The next section describes the measurement of variables, the research design and sample selection procedures.

3. Research Design

3.1 Classification of trades made by small and large investors

The identity of investors trading stocks is not public information in the U.S. Prior research identifies investor type, namely, large institutions versus small individual investors, based on trade size (Easley and O'Hara 1987; Cready 1988; Hasbrouch 1991;

Chan and Lakonishok 1993; Lee and Radhakrishna 2000; Bhattacharya 2001; Bhattacharya et al. 2007; Miller 2010; Ayers et al. 2011). This is based on the assumption that large institutional investors, backed by more resources, are likely to make larger trades on average, while less wealthy individual investors are likely to make smaller trades. Following this line of research, I use the dollar value of the transaction to distinguish trades made by small investors from those by large investors (e.g., Lee 1992; Lee and Radhakrishna 2000; Bhattacharya 2001; Bhattacharya et al. 2007).⁶

Specifically, I classify trades of \$5,000 or less as trades made by small investors, trades between \$5,000 and \$50,000 as medium-sized trades, and trades over \$50,000 as trades made by large investors. Existing research suggests that institutional investors do not always trade in large orders. They may break large orders into *medium-sized* trades to disguise their private information (Kyle 1985; Cornell and Sirri 1992; Meulbroek 1992; Barclay and Warner 1993). On the other hand, institutional investors are less likely to break a large order into *small* trades since doing so can significantly reduce their trading profits.⁷ In contrast, while less wealthy individual investors may engage in medium-sized transactions, it is unlikely for them to trade in large blocks due to their wealth constraints.

⁶ An alternative way to distinguish between small and large trades is to use the number of shares traded (Cready 1988; Cready and Mynatt 1991). Lee (1992) points out that proxies based on trade size are inherently noisy, as securities can trade in a wide price range. Lee and Radhakrishna (2000) find that dollar-value-based classification is less noisy in identifying trades made by small versus large investors.

⁷ Bhattacharya et al. (2007) offer three reasons why sophisticated institutional investors are unlikely to engage in small trades from fear of hurting their trading profit: (i) engaging in small trades will greatly increase transaction costs; (ii) a series of small orders from one account has the potential to induce a specialist to increase the spread; and (iii) breaking a large order into a series of small orders will require more time, during which other arbitrageurs can enter the market and erode trading profits. While these arguments may be less applicable since 2006, due to a significant reduction in transaction costs achieved by high-speed electronic processing offered by an advanced execution system, they are still valid for my sample period which ends in 2002. Moreover, if institutional investors' trades are misclassified as those of individual investors, it will bias against finding differential results between the two groups of investors.

Thus, inferring investor type is less ambiguous when there are small or large trades than when there are medium-sized trades. To reduce the noise in identifying small and large investors, I follow Bhattacharya (2001) and focus on large and small trades, eliminating the “buffer-zone” medium-sized trades.⁸ For each transaction day, I rely on the Lee-Ready algorithm to infer the direction of trades (buy or sell). I calculate total trading volume, total number of trades, and net-buy for both individual and institutional investor classes.

3.2 Event windows

To test the impact of Reg FD on the information advantage of institutional investors, I focus on two windows around the filing of insider transactions: the pre-filing window and the post-filing window. The pre-filing window (*Pre_File*) starts 10 trading days before the insider transaction date and ends one day prior to the filing date of the transaction.⁹ In this window, information about the insider transaction is not publicly available. The post-filing window (*Post_File*) is a four-day period starting one day after the filing date of the insider transaction and ending four days after the filing date. In this window, the insider trading information becomes public.¹⁰ To capture abnormal trading

⁸ Regrettably, direct data on institutional investors’ trading is not publicly available. Several papers use proprietary datasets which contain trading information as well as investor type (e.g., Taylor 2010, 2011; Kaniel et al. 2012; Cready et al. 2013). Institutional investors are required to report their stock ownership in quarterly 13-F filings but not their trading activities. As a consequence, I rely on high frequency TAQ data to capture trading activities around the filing date of insider trades.

⁹ Using an alternative window, from 5 days prior to the transaction date to one day before the filing date, obtains qualitatively similar results.

¹⁰ I also repeat the analyses using alternative intervals of (i) day 0 to day 2, (ii) day 0 to day 4, and (iii) day 1 to day 2, where day 0 is the filing date. The overall tenor of the results does not change with these alternative windows.

activities in the pre-filing and the post-filing window, I measure normal trading activities using trades in a benchmark non-event window. The benchmark window is a 20-trading-day period ending 10 trading days before the insider transaction date. To ensure that there is no major information event in the benchmark window, I exclude any day in the benchmark period that falls in a [-3, +3] window around an earnings announcement. The timeline of the event and benchmark windows is summarized in Figure 1.

3.3 Abnormal trading volume around insider transactions

I construct two alternative measures of abnormal trading of large and small investors around insider transactions. Since the lengths of the pre-filing, the post-filing, and the benchmark windows are different, I examine the daily averages when measuring abnormal trading activity in each window.

Consistent with prior studies (e.g., Bhattacharya 2001), I use two measures of abnormal trading activity, one based on the number of shares traded and the other based on number of trades. For the measure based on number of shares traded, the normal trading volume is measured by the daily average trading volume of small (large) investors in the benchmark window. The abnormal trading volume of small (large) investors, *AVOL_SML* (*AVOL_LRG*), is computed as a firm's daily average trading volume of small (large) investors in the pre- or the post-filing window minus the normal daily average trading volume of small (large) investors, scaled by the normal daily average trading volume of small (large) investors.¹¹

¹¹ I also use the total number of trades in the benchmark window as an alternative deflator to construct the abnormal trading variables and obtain substantially similar results.

For the measure based on number of trades, the normal number of trades is measured as the daily average number of trades of small (large) investors in the benchmark window. The abnormal number of trades of small (large) investors, $ATRADE_SML$ ($ATRADE_LRG$), is computed as the daily average number of trades made by small (large) investors in the pre- or the post-filing window minus the normal daily average number of trades made by small (large) investors, scaled by the normal daily average number of trades made by small (large) investors.

I use the following models to test whether Reg FD changes the trading response of large and small investors around insider transactions:

$$\begin{aligned}
 ATR_LRG_{Window} = & \alpha_0 + \alpha_1 POSTFD + \alpha_2 PROFIT + \alpha_3 POSTFD * PROFIT + \\
 & \alpha_4 MKTVOL_{Window} + \alpha_5 SIZE + \alpha_6 BM + \alpha_7 PRET + \\
 & \alpha_8 AEARN SURP_{Window} + \alpha_9 TRADESIZE + \alpha_{10} REPORTLAG + \zeta_L \quad (1)
 \end{aligned}$$

$$\begin{aligned}
 ATR_SML_{Window} = & \beta_0 + \beta_1 POSTFD + \beta_2 PROFIT + \beta_3 POSTFD * PROFIT + \\
 & \beta_4 MKTVOL_{Window} + \beta_5 SIZE + \beta_6 BM + \beta_7 PRET + \beta_8 AEARN SURP_{Window} \\
 & + \beta_9 TRADESIZE + \beta_{10} REPORTLAG + \zeta_S \quad (2)
 \end{aligned}$$

The dependent variable, ATR_LRG (ATR_SML), is either the abnormal trading volume, $AVOL_LRG$ ($AVOL_SML$), or the abnormal number of trades, $ATRADE_LRG$ ($ATRADE_SML$) in the pre-filing ($Window = Pre-File$) or the post-filing window ($Window = Post-File$) for large (small) investors. The profitability of an insider transaction is captured by $PROFIT$, an indicator variable equal to one if the 6-month buy-and-hold market-adjusted stock return after an insider purchase (sale) is positive

(negative).¹² If investors can distinguish information-driven insider trades (i.e., profitable insider transactions) in the pre-Reg FD period, the abnormal trading volume or number of trades should be positively associated with *PROFIT*. The variable *POSTFD* is an indicator variable equal to one if the insider trade date is after October 23, 2000 (the date Reg FD became effective), and zero otherwise. The coefficient on the interaction of *PROFIT* and *POSTFD* captures the change in the association between profitable insider trades and abnormal trading of large or small investors after the passage of Reg FD.

H1a predicts the coefficient on *PROFIT* to be positive for large investors in the pre-filing window, since prior to the passage of Reg FD, institutional investors are likely to communicate privately with the management and obtain information on the insider trade or the underlying corporate event triggering the trade before the public filing of the trade. H1c predicts a positive coefficient on *PROFIT* for large investors in the post-filing window, either due to their access to private information or to their expertise in processing public information. H2a and H2c predict a negative coefficient on the interaction of *PROFIT* and *POSTFD* for large investors in the pre- and the post-filing windows, as the private communication channels between large investors and the management are likely blocked post Reg FD, curtailing the ability of institutional investors to obtain information and mimic profitable insider trades. Since small investors do not have access to private information both before and after Reg FD, I expect the coefficients on *PROFIT* and the interaction of *PROFIT* and *POSTFD* to be insignificant

¹² Following Huddart and Ke (2007), I choose a 6-month window to measure the profitability of insider trades. These authors argue that six months is the shortest possible trading horizon for an insider to make short-swing profits, consistent with the requirements of section 16(b) of the Securities and Exchange Act of 1934. "Short-swing" is defined as a "round-trip" transaction (a purchase and a sale or a sale and a purchase) within six months.

for small investors in both the pre- and the post-filing windows.

I include a number of control variables to capture other factors affecting investors' trading behavior. Following prior research (e.g., Bamber et al. 1997; Bhattacharya 2001; Bhattacharya et al. 2007), I control for the market-wide trading volume (*MKTVOL*), computed as the daily average percentage of outstanding shares traded for all NYSE/AMEX/Nasdaq firms. A firm's information environment varies systematically with size. I therefore include firm size (*SIZE*) in the regression, where size equals the natural logarithm of market value of common equity at the end of the previous fiscal quarter. As in Rozeff and Zaman (1998) and Piotroski and Roulstone (2005), I include the book-to-market ratio (*BM*) and 6-month buy-and-hold market-adjusted returns prior to the trade date (*PRET*) to control for investor sentiment and contrarian beliefs. Absolute value of earnings surprise (*AEARNSURP*) is included to control for investors' trading activities in response to an earnings announcement. The value of this variable is set to zero if there is no earnings announcement during the pre- and post-filing windows. Large insider trades can be more informative and trigger greater investor response. To ensure that my results are not driven by large insider trades, I include insider trade size (*TRADESIZE*) as a control variable, measured as the sum of shares traded as reported on each filing date scaled by the number of shares outstanding on the same day (Brochet 2010).¹³ To control for varying lags in the filing of insider trades, I also include reporting lag (*REPORTLAG*) as an independent variable, measured as the natural logarithm of one plus the number of trading days between the transaction date and the filing date. Appendix A summarizes the definitions of all variables. All continuous

¹³ Insiders can report several transactions on the same Form 4 filing or file several Form 4s on the same day.

variables are winsorized at the top and bottom one-percent to mitigate the influence of outliers. Standard errors are clustered by firm. I include year fixed effects in the regressions to control for temporal changes in investors' trading activities.

Prior research finds that insider purchases and sales are inherently different, for example, in terms of profitability and information content (e.g., Ravina and Sapienza 2010; Jagolinzer et al. 2011). Following the extant literature (e.g., Rozeff and Zaman 1988; Lakonishok and Lee 2001; Jagolinzer 2009; Brochet 2010; Jagolinzer et al. 2011), I therefore partition the sample of insider trades by the direction of trading (buy versus sell) and estimate the regression model separately for each subsample. This approach allows me to examine whether my inferences are robust to both types of trades.

3.4 Abnormal net-buying

While it is informative to use measures of abnormal trading volume and number of trades to capture the magnitude of institutional and individual investors' trading around insider transactions, it is also important to test whether these investors trade in the same direction as the insider trade (i.e., sale or purchase). Thus, I also examine abnormal net-buying activities to capture the directional response of small versus large investors. The abnormal net-buy measures are also calculated based on both the number of shares traded and the number of trades. Consistent with Ayers et al. (2011), the abnormal net-buy volume of small (large) investors, *ANETVOL_SML* (*ANETVOL_LRG*), is calculated as a firm's average daily buy volume minus sell volume of small (large) investors in the pre- or post-filing window minus the firm-specific normal daily average net-buy volume of small (large) investors, scaled by the normal net-buy volume of these investors. The

normal net-buy volume is measured as the daily average buy volume minus sell volume of small (large) investors in the benchmark window. The abnormal net-buy measure based on the number of trades, $ANETTRADE_SML$ ($ANETTRADE_LRG$), is computed similarly using the number of buy transactions minus the number of sell transactions in place of the net-buy volume.

I estimate equations (3) and (4) to test whether Reg FD changes the directional trading response of large versus small investors around insider transactions. The regressions are estimated separately for insider purchases and insider sales.

$$\begin{aligned}
 ANB_LRG_{Window} = & \gamma_0 + \gamma_1 POSTFD + \gamma_2 PROFIT + \gamma_3 POSTFD * PROFIT + \\
 & \gamma_4 MKTVOL_{Window} + \gamma_5 SIZE + \gamma_6 BM + \gamma_7 PRET + \gamma_8 EARN SURP_{Window} + \\
 & \gamma_9 TRADESIZE + \gamma_{10} REPORTLAG + \varepsilon_L
 \end{aligned} \tag{3}$$

$$\begin{aligned}
 ANB_SML_{Window} = & \theta_0 + \theta_1 POSTFD + \theta_2 PROFIT + \theta_3 POSTFD * PROFIT + \\
 & \theta_4 MKTVOL_{Window} + \theta_5 SIZE + \theta_6 BM + \theta_7 PRET + \theta_8 EARN SURP_{Window} \\
 & + \theta_9 TRADESIZE + \theta_{10} REPORTLAG + \varepsilon_S
 \end{aligned} \tag{4}$$

The dependent variable, ANB_LRG (ANB_SML), is either the abnormal net-buy in terms of shares, $ANETVOL_LRG$ ($ANETVOL_SML$), or the abnormal net-buy in terms of the number of trades, $ANETTRADE_LRG$ ($ANETTRADE_SML$), in the pre-filing ($Window = Pre-File$) or the post-filing window ($Window = Post-File$) for large (small) investors. The explanatory variables are the same as in equations (1) and (2). The coefficient on $PROFIT$ captures the association between profitable insider trades and abnormal buying of large or small investors before Reg FD, while the coefficient on the interaction of $PROFIT$ and $POSTFD$ captures the change in this association post Reg FD.

If institutional investors have access to non-public information prior to Reg FD that helps them identify profitable insider trades, they will buy more (sell more) in response to profitable insider purchases (sales). Thus, for institutional investors prior to Reg FD, H1a and H1c predict the coefficient on *PROFIT* to be positive for insider purchases and negative for insider sales in the pre- and post-filing windows. If Reg FD successfully inhibits management from selectively disclosing non-public information to institutional investors, the ability of institutional investors to identify and mimic profitable insider trades is likely moderated post Reg FD. H2a and H2c predict the coefficient on the interaction of *PROFIT* and *POSTFD* to be negative for insider purchases and positive for insider sales. Since small investors do not have access to private information both before and after Reg FD, I expect the coefficients on *PROFIT* and the interaction of *PROFIT* and *POSTFD* to be insignificant for small investors in both the pre- and the post-filing windows.

To contrast trading patterns of institutional investors directly with those of individual investors, I estimate the above regressions simultaneously for institutional and individual investors as seemingly unrelated regressions to facilitate a comparison of parameter estimates across investor groups. For both the test of abnormal trading volume and the test of abnormal buying, I compare the ability of institutional investors to mimic profitable insider trades to that of individual investors in the pre- and post-filing windows.

4. Empirical Results

4.1 Sample selection

My sample includes insider trades occurring over the period 1996 to 2002. Specifically, my sample period ends on August 29, 2002, when the filing regulations relating to insider trades imposed by the Sarbanes-Oxley Act (SOX) became effective. This sample truncation avoids the confounding effects of SOX, since prior research has shown that the more timely filing requirements of SOX affected the informativeness of insider trades (Brochet 2010).

I obtain intraday transaction data from the Trades and Quotes (TAQ) database. TAQ covers trades and quotes of all securities listed on the NYSE, AMEX, NASDAQ, and regional exchanges from 1993 onward. For each trade, TAQ provides the time of the transaction to the nearest second, price, volume and a trade condition code. Following the prior literature, I include trades occurring between 9:30 a.m. and 4:15 p.m. Eastern Standard Time (EST) in my analyses. Opening trades are excluded since they can be the sum of multiple orders. The NYSE and AMEX close at 4:00 p.m. EST. An extra 15 minutes is allowed to pick up trades originating on the regional exchanges and trades reported late.

Insider trading data is drawn from the Thomson Reuters insider trading database. I begin by extracting all insider trading transactions and keep only reliable records with a cleanse code of “R” (“data verified through the cleansing process”) or “H” (“cleansed with a very high level of confidence”). I include only open-market insider transactions in my analyses. Since the insider trading database contains a negligible number of open-

market insider observations prior to 1996, my sample period begins in the year 1996.¹⁴ I require a minimum transaction price of \$2 per share and apply other standard data cleansing procedures used in the literature (e.g., Frankel and Li, 2004). Ravina and Sapienza (2010) find that trades made by top executives are more informative than those of other insiders. To increase the power of the test, I focus on insider trades of top executives (CEO, Chairman, CFO, COO, and President). Transactions an insider made on the same day and filed on the same date are aggregated. Insider trades that are filed late are excluded from the analysis.¹⁵ To ensure that the measurement of normal trading activity is not confounded by insider trading, I require no insider trading activity during the benchmark window. After eliminating observations with missing CRSP or Compustat data, my final sample includes 14,322 insider trades (5,009 firms).

4.2 Descriptive statistics

Table 1 reports the descriptive statistics for all dependent and explanatory variables. Of a total of 14,322 observations from 1996 to 2002, 3,803 observations (26.55%) are from the post-Reg FD period. Over half (52.25%) of the insider trades are profitable. For both the pre- and the post-filing window, the abnormal trading volume of institutional investors is significantly greater than that of individual investors. The mean (median) market-adjusted six-month buy-and-hold return prior to the insider transaction date is 3.22% (-3.76%). The mean and median reporting lags are 21 days. For about 51%

¹⁴ As shown in subsequent sections, my results are robust to using 1998-2002 as the sample period.

¹⁵ Prior to the Sarbanes-Oxley Act, section 16(a) of the Securities and Exchange Act of 1934 required that open-market trades by corporate insiders be reported to the SEC within 10 days after the end of the month in which they took place. This deadline was later changed to 2 days of the transaction date after 2002.

of insider trades, there is an earnings announcement in the pre-filing window; for only 5% of insider trades, there is an earnings announcement in the post-filing window. Consistent with Brochet (2010), the average insider trading size reported on Form 4 is 0.12% of total shares outstanding.

4.3 Pre-filing window

Tables 2-3 report the results of estimating equations (1)-(2) for the pre-filing window based on investors' abnormal trading volume. Table 4 reports the results of estimating equations (3)-(4) for the pre-filing window based on investors' abnormal net buying activity. In the pre-filing window, insider trading activities have not yet been filed with the SEC and therefore the information is not publicly available.

4.3.1 Tests of abnormal trading volume

Table 2 presents the estimation results of regressions (1) and (2), pooling all insider transactions. In column (1), I estimate equation (1) to examine the abnormal trading volume of institutional investors in the pre-filing window. The coefficient estimate on *PROFIT*, α_2 , is significantly positive at the 1% level, consistent with H1a. The positive α_2 suggests that, in the pre-Reg FD period, trades of institutional investors have a higher association with profitable insider trades relative to unprofitable insider trades. This result is consistent with institutional investors having access to private information that helps them identify profitable insider trades or corporate events leading to the imminent insider trades, even before the public filing of such trades. The coefficient estimate on *POSTFD*PROFIT*, α_3 , is significantly negative at the 5% level,

indicating that the ability of institutional investors to trade on profitable insider transactions not yet publicly disclosed is diminished post Reg FD, consistent with H2a. The F-test ($p=0.6054$) cannot reject the null that the sum of the coefficient estimates on *PROFIT* and *POSTFD*PROFIT*, ($\alpha_2 + \alpha_3$), is zero, suggesting that the ability of institutional investors to mimic profitable insider trades becomes insignificant in the post-Reg FD period.

Column (2) reports the estimation results of equation (2) examining the abnormal trading volume of individual investors in the pre-filing window. The coefficient estimate on *PROFIT*, β_2 , is insignificantly different from zero, consistent with H1b that individual investors do not have access to private information in the pre-filing window and therefore do not respond to the undisclosed event. The coefficient estimate on *POSTFD*PROFIT*, β_3 , is insignificantly different from zero in column (2), indicating no change in the ability of individual investors to mimic profitable insider trades in the post-Reg FD period, consistent with H2b. The F-test ($p=0.7544$) cannot reject the null that the sum of the coefficient estimates on *PROFIT* and *POSTFD*PROFIT*, ($\beta_2 + \beta_3$), is zero for individual investors. Thus, these results suggest that individual investors do not have access to private information about insider trades in the pre- as well as the post-Reg FD periods.

To evaluate whether Reg FD has successfully leveled the playing field between institutional and individual investors in the pre-filing window, I estimate equations (1) and (2) simultaneously using seemingly unrelated regression estimation. I compare the ability of institutional investors to identify profitable insider trades to that of individual investors both pre- and post-Reg FD. The coefficient α_2 (β_2) captures the ability of

institutional (individual) investors to identify profitable insider trades in the pre-filing window pre-Reg FD, while $\alpha_2 + \alpha_3$ ($\beta_2 + \beta_3$) captures their ability in the post-Reg FD period. For the pre-Reg FD period, the null that α_2 equals β_2 is rejected at the 1% level, suggesting that institutional investors possess private information and are therefore more capable of trading on profitable insider trades before its public filing. In contrast, for the post-Reg FD period, I cannot reject the null that $(\alpha_2 + \alpha_3)$ is equal to $(\beta_2 + \beta_3)$, indicating that Reg FD eliminated the information advantage of institutional investors in the pre-filing window. In columns (3) and (4), I conduct the same tests using the abnormal number of trades instead of the abnormal number of shares to capture investors' trading behavior and obtain the same inferences as in columns (1) and (2).

The coefficient estimates on the control variables are generally in line with expectations and consistent with previous studies (e.g., Bhattacharya 2001; Brochet 2010). Both institutional and individual investors' abnormal trading activities are positively associated with market-wide trading volume (*MKTVOL*). Insider trades in small firms and large-sized insider trades trigger greater abnormal trading response from investors. As expected, longer reporting lags are associated with a lower abnormal trading response.

Table 3 reports the regression results of equations (1) and (2) estimated separately for insider purchases (panel A) and insider sales (panel B) in the pre-filing window. Both panels yield the same inferences as the results of the pooled sample in Table 2. For institutional investors, in the pre-filing window, the coefficient estimate on *PROFIT* is significantly positive, while the coefficient estimate on *POSTFD*PROFIT* is

significantly negative (column 1) for both insider purchases and sales. F-tests fail to reject the null that the sum of the two coefficient estimates is zero in both panels, suggesting that Reg FD diminishes the ability of institutional investors to obtain private information and trade on profitable insider transactions. In contrast, for individual investors, regardless of the direction of insider trades, the coefficient estimates on *PROFIT* and *POSTFD*PROFIT* are always insignificantly different from zero (column 2). The results of the seemingly unrelated regression analysis indicate that institutional investors have an information advantage over individual investors in the pre-Reg FD period, as their abnormal trading volume and number of trades are significantly more positively correlated with profitable insider transactions. For the post-Reg FD period, on the other hand, I cannot reject the null that institutional and individual investors are equally uninformed about the imminent insider trades or their profitability and therefore do not exhibit abnormal trading response to profitable insider trades. These results indicate that the general inferences from Table 2 apply to both insider purchases and insider sales.

4.3.2 Tests of abnormal net-buying activity

Table 4 reports the results of estimating equations (3) and (4) for the pre-filing period. Instead of using non-directional abnormal trading measures, I examine whether the direction of abnormal trading (i.e., net buying) by institutional and individual investors is correlated with that of profitable insider purchases and sales. Informed investors react differently to profitable insider purchases and sales, buying more in response to profitable insider purchases while selling more in response to profitable

insider sales. To capture this effect, equations (3) and (4) are estimated separately for insider purchases and sales. Panel A (B) reports the regression results for the insider purchase (sale) sample. I report the results of equation (3) for institutional investors in columns (1) and (3), with share-based abnormal net-buy being the dependent variable in column (1) and trade-based abnormal net-buy being the dependent variable in column (3). For the insider purchase (sale) sample, the coefficient estimate on *PROFIT* in columns (1) and (3) is significantly positive (negative), indicating that institutional purchases (sales) have a higher association with profitable insider purchases (sales) relative to unprofitable insider purchases (sales). These results are consistent with H1a and provide further support for the argument that the abnormal trading activities of institutional investors are based on their access to private managerial information. Consistent with H2a, the coefficient estimate on *POSTFD*PROFIT* is significantly negative for insider purchases and significantly positive for insider sales, suggesting a diminishing effect of Reg FD on institutional investors' ability to mimic profitable insider transactions. The F-test of the sum of the coefficient estimates on *PROFIT* and *POSTFD*PROFIT* suggests that institutional investors lack the ability to trade in the same direction as profitable insider transactions in the post-Reg FD period. In contrast, the coefficient estimates on *PROFIT* and *POSTFD*PROFIT* for individual investors are insignificant for insider purchases and sales (consistent with H1b and H2b). Results of a seemingly unrelated regression analysis indicate that, while institutional investors exhibit a stronger ability to mimic profitable insider trades than individual investors before Reg FD, their superior ability disappears post Reg FD.

Pre-filing window: Summary of results

Taken together, for the pre-filing window, when there is no public disclosure of insider trading activities, I find evidence consistent with institutional investors having access to nonpublic information pre-Reg FD, which enables them to mimic profitable insider trades. The private communication between institutional investors and management creates an unlevel playing field, leaving individual investors disadvantaged. With the passage of Reg FD, institutional investors' information advantage appears to have diminished, consistent with Reg FD effectively blocking the private communication channel.

4.4 Post-filing window

Tables 5-6 report the results of estimating equations (1)-(2) for the post-filing window based on investors' abnormal trading volume. Table 7 reports the results of estimating equations (3)-(4) for the post-filing window based on investors' abnormal net-buying activity. In the post-filing window, information on insider trading activities is publicly available. Superior ability to identify and mimic profitable insider trades after the public disclosure of insider trades can be either due to having access to private information or having the expertise to process public information. If institutional investors rely at least partly on private information access, Reg FD should affect their ability to identify profitable insider trades in the post-filing window.

4.4.1 Tests of abnormal trading volume

Table 5 presents the estimation results of equations (1) and (2) in the post-filing

window, pooling all insider transactions. Equation (1) is estimated for large investors in columns (1) and (3), with the dependent variable being abnormal trading volume and abnormal number of trades respectively. Consistent with H1c, the coefficient estimate on *PROFIT*, α_2 , is significantly positive in both column (1) and column (3), suggesting that institutional investors can identify profitable insider trades in the post-filing window pre-Reg FD. As predicted by H2c, the coefficient estimate on *POSTFD*PROFIT*, α_3 , is significantly negative in both columns, indicating that the ability of institutional investors to identify and mimic profitable insider trades in the post-filing window is significantly reduced after the passage of Reg FD. In fact, the F-tests cannot reject the null that the sum of the coefficient estimates on *PROFIT* and *POSTFD*PROFIT*, $(\alpha_2 + \alpha_3)$, is zero. As the expertise of institutional investors and the set of public information are likely unchanged around Reg FD, these results suggest that institutional investors acquire private information in the post-filing window that enables them to identify profitable insider trades pre-Reg FD, but this information channel is blocked post-Reg FD.

Equation (2) is estimated for small investors in columns (2) and (4) using the two alternative abnormal trading volume measures. Neither the coefficient estimate on *PROFIT*, β_2 , nor the coefficient estimate on *POSTFD*PROFIT*, β_3 , is significant, consistent with H1d and H2d, respectively. As indicated by the F-test, the sum of the two coefficient estimates is also insignificant. The results indicate that individual investors' trades do not exhibit an ability to distinguish profitable insider trades from unprofitable trades both in the pre- and the post-Reg FD periods.

Using seemingly unrelated regression estimation, I also compare the ability of

institutional investors to identify profitable insider transactions with that of individual investors in the post-filing window both pre- and post-Reg FD. For the pre-Reg FD period, the null that the coefficients on *PROFIT* are the same for institutional and individual investors is rejected at the 1% level, indicating that institutional investors are more capable of identifying and mimicking profitable insider trades than individual investors in the post-filing window. In contrast, for the post-Reg FD period, I cannot reject the null that institutional and individual investors have the same ability to identify and mimic profitable insider trades, i.e., $(\alpha_2 + \alpha_3)$ is equal to $(\beta_2 + \beta_3)$. This finding suggests that Reg FD mitigated the information advantage of institutional investors in the post-filing window. Thus, from the post-Reg FD results, it appears that the superior ability of institutional investors pre-Reg FD largely came from their access to managerial private information.

Table 6 reports the results of equations (1) and (2) estimated separately for insider purchases (Panel A) and sales (Panel B) in the post-filing window. For institutional investors, the coefficient estimates on *PROFIT* are significantly positive in both panels, columns (1) and (3). However, there is mixed evidence regarding whether Reg FD reduced the ability of institutional investors to identify profitable insider trades in the post-filing window. While the coefficient estimates on *POSTFD*PROFIT* are significantly negative in columns (1) and (3) of Panel B for the insider sales sample, the coefficient estimates on *POSTFD*PROFIT* are insignificant in columns (1) and (3) of Panel A for the insider purchases sample. Thus, it appears that Reg FD diminished institutional investors' ability to distinguish profitable from unprofitable insider sales but

did not impact their ability to distinguish profitable insider purchases. In the case of individual investors, I find that while these investors do not have the ability to mimic profitable insider sales, there is evidence of some ability to mimic profitable insider purchases, both in the pre- and the post-Reg FD periods. While both investor groups successfully mimic profitable insider purchases, a seemingly unrelated regression analysis suggests that the mimicking ability of institutional investors is (weakly) greater than that of individual investors after the passage of Reg FD (one-tail p-value = 0.0767). Thus, it appears that Reg FD may not have completely blocked the private information access of institutional investors.

4.4.2 Tests of abnormal net-buying activity

Table 7 reports the estimation results of equations (3) and (4) for the post-filing window, examining whether the direction of abnormal trading (i.e., net buying) is correlated with that of profitable insider transactions. Panel A (B) reports the regression results for the insider purchase (sale) sample. Again, I report the results of equation (3) for institutional investors in columns (1) and (3), with the share-based and the trade-based abnormal net-buy measure as the dependent variable, respectively. For the insider purchase (sale) sample, the coefficient estimates on *PROFIT* in columns (1) and (3) are both significantly positive (negative) at the 1% level, indicating more institutional purchases (sales) in response to profitable insider purchases (sales) in the post-filing window. Similar to the results in Table 6, the coefficient estimates on *POSTFD*PROFIT* in columns (1) and (3) are both significantly negative in the insider sale panel but insignificantly different from zero in the insider purchase panel. While the sum of the

coefficient estimates on *PROFIT* and *POSTFD*PROFIT* is insignificant in the insider sale panel, it is significant at the 5% level in columns (1) and (3) of the insider purchase panel. Thus, while Reg FD diminishes the ability of institutional investors to distinguish profitable from unprofitable insider sales, it does not appear to have an impact on their ability to distinguish profitable insider purchases.

The coefficient estimate on *PROFIT* for individual investors in columns (2) and (4) of the insider purchase panel (Panel A) is also weakly significantly positive, indicating that to some extent individual investors were also able to identify and mimic profitable insider purchases in the pre-Reg FD period. However, their ability to distinguish profitable insider purchases was not as strong as that of institutional investors. Interestingly, the ability of institutional investors to mimic profitable insider purchases is not different from that of individual investors after the passage of Reg FD. Thus, although I do not find a significant decline in institutional investors' ability to distinguish profitable insider purchases in the post-Reg FD period, their overall ability to track profitable insider purchases becomes similar to that of individual investors.

Post-filing window: Summary of results

In summary, for the post-filing window in which the information about insider trading activities is public, I find that institutional investors are able to identify and mimic profitable insider trades pre-Reg FD while individual investors are less capable of doing so. The ability of institutional investors to track profitable insider sales is significantly reduced post-Reg FD, suggesting that access to managerial private information is an important explanation of their superior ability to identify profitable insider sales in the

pre-Reg FD period. On the other hand, the ability of institutional investors to track profitable insider purchases appears to be unaffected by Reg FD. Similar to the results in Table 6, I find that the net-buying behavior of institutional investors in response to profitable insider purchases is (weakly) better than that of individual investors in the post-Reg FD period (one-tail p-value = 0.0453). Thus, it is likely that Reg FD may not have completely eliminated institutional investors' information advantage.

It is also possible that institutional investors' superior ability to identify profitable insider purchases after Reg FD may be due to their expertise in information collection, processing and analysis. The same superior ability may not apply to mimicking insider sales because of the differential information content of insider purchases versus insider sales. A number of studies document that insider purchases are more likely information driven and are more profitable on average, whereas insider sales can be motivated by other considerations unrelated to information, such as diversification and liquidity demand of insiders (e.g., Jagolinzer 2009; Brochet 2010; Jagolinzer et al. 2011). Motivated by the greater profit potential associated with insider purchases, institutional investors may be more willing to invest in research after observing insider purchases rather than sales. It would also be less challenging to isolate profitable insider trades among purchases since motivations behind purchases are less confounded by other non-information-related considerations. Consequently, even absent private information access, the expertise of institutional investors may have enabled them to identify and mimic profitable insider purchases post-Reg FD.

Overall, while it is possible that the superior mimicking ability of institutional

investors in relation to profitable insider purchases in the post Reg-FD period is due to their own incentives and expertise in information processing, the alternative explanation, that Reg FD was not fully successful in blocking selective disclosures, cannot be ruled out.

4.5 Robustness tests

I conduct several sensitivity tests and find my inferences from the results in Sections 4.3 and 4.4 to be robust. First, to address the concern that insiders are more likely to disclose their trading activities to institutional investors after they themselves have already traded, instead of the pre-filing window used earlier, I use an alternative window, the post-trading-pre-filing window (*Trade_File*), which starts the day after the insider transaction date and ends one day prior to the filing date of the transaction. Results are shown in Table 8 to Table 10 and are consistent with the results for the pre-filing window used earlier. I find that institutional investors have a significant ability to mimic profitable insider trades and this ability declines post Reg FD. Individual investors, on the other hand, do not exhibit an ability to mimic profitable insider trades, either pre or post Reg FD. Thus, the results with this alternative pre-filing window are consistent with those reported earlier in all respects.

Second, the post-Reg FD sample is smaller than the pre-Reg FD sample, which leads to a potential concern that the lack of significant results in the post-Reg FD period is driven by the lack of power due to the smaller sample size. To mitigate this concern, I repeat my analyses for the 1998-2002 period using roughly similar sized pre-Reg FD and post-Reg FD samples. I find that my results are substantially the same.

Third, my results are robust to extending the sample period to the post-SOX period. SOX imposes more timely filing requirements on insider trades after August 2002 and thus affects the informativeness of insider trade filings (Brochet, 2010). While my main analyses are based on the sample before SOX to avoid its potential confounding effects, my inferences are unchanged even if the analyses is conducted over a longer period -- 1996-2005.¹⁶

5. Concluding Remarks

The effects of Reg FD have been researched by prior studies, but the results so far are inconclusive as to whether it truly leveled the informational playing field. This paper focuses on institutional investors, a key target of Reg FD and investigates whether Reg FD has been successful in leveling the playing field between institutional and individual investors in terms of their ability to distinguish and profit from information-driven insider trades.

I examine the abnormal trading behavior of institutional and individual investors in the pre-filing window, when information about the insider trade is not publicly disclosed, and in the post-filing window, when such information is publicly available. For the pre-filing window, I find that, prior to Reg FD, institutional investors are capable of distinguishing profitable insider trades from unprofitable trades, as evidenced by the association of their trades with profitable insider trades and in the same direction as

¹⁶ Since the massive magnitude of TAQ data from 2006 onward requires substantial computing power, I end my sample period in 2005 for the purpose of this sensitivity analysis.

profitable insider trades. In contrast, individual investors do not exhibit the same trading pattern in the pre-filing window. Institutional investors' superior ability to distinguish profitable insider trades may either stem from their superior private information access or their superior expertise in information processing. For example, it is possible that, if there are more earnings announcements in the pre-filing window (since insiders are more likely to trade after earnings announcements due to black-out period restrictions), both insiders and institutional investors may trade on the same earnings information leading to the observed higher association. On the other hand, I find that, after the passage of Reg FD, the ability of institutional investors to identify profitable insider trades in the pre-filing window is diminished. This suggests that institutional investors had private access to managerial information about insider trades or the corporate events that triggered the imminent insider trade in the pre-Reg FD period and that they lost that private access after the passage of Reg FD.

For the post-filing window, I also find that institutional investors are able to identify and mimic profitable insider trades in the pre-Reg FD period, while individual investors are less capable of doing so. Similar to the pre-filing window, the institutional investors' advantage can come either from their access to managerial private information or from their expertise in information processing. I find that, the ability of institutional investors to mimic profitable insider sales is largely diminished after Reg FD, suggesting that private communication with management, which is blocked by Reg FD, was an important source of their superior ability to identify profitable insider sales in the pre-Reg FD period. On the other hand, I find that institutional investors' ability to identify and

mimic profitable insider purchases remains unaffected after Reg FD. Interestingly, I find that even individual investors exhibit the ability to mimic profitable insider purchases both in the pre- and post-Reg FD periods. These results together suggest that investors may be able to distinguish profitable insider purchases by applying their own expertise in information collection and processing. However, I find that the ability of institutional investors in mimicking profitable insider purchases is (weakly) better than that of individual investors. Thus, we cannot rule out the possibility that Reg FD may not have successfully blocked private communication between institutional investors and corporate management. These results could be useful to the SEC in supporting its recent revamping efforts toward better enforcement of Reg FD after a four-year long hiatus in Reg FD enforcement actions.

Overall, my findings suggest that Reg FD was largely effective in eliminating selective disclosures of material nonpublic information, reducing institutional investors' information advantage, and leveling the playing field between individual and institutional investors.

Figure 1
Timeline around Insider Trades

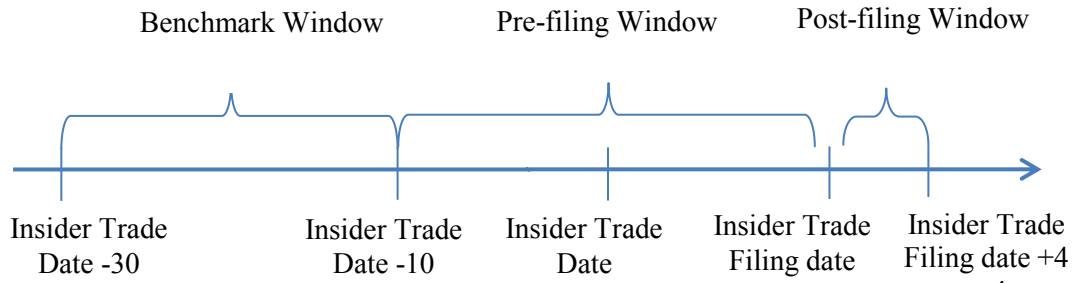


Figure 1: This figure presents a timeline explaining the alternative windows surrounding an insider trade over which outside investors' abnormal trading is measured.

Table 1
Descriptive Statistics

Variable	N	Mean	Std Dev	25th Pctl	Median	75th Pctl
POSTFD	14,322	0.2655	0.4416	0	0	1
PROFIT	14,322	0.5226	0.4995	0	1	1
AVOL_SML _{Pre_File}	14,322	0.3764	1.1839	-0.2071	0.0758	0.5226
AVOL_LRG _{Pre_File}	14,322	0.8438	2.6609	-0.3639	0.0952	0.9268
ATRADE_SML _{Pre_File}	14,322	0.3105	1.0087	-0.2005	0.0710	0.4679
ATRADE_LRG _{Pre_File}	14,322	0.5442	1.7900	-0.3311	0.0662	0.7188
AVOL_SML _{Post_File}	14,322	0.3635	1.4071	-0.3746	-0.0049	0.5789
AVOL_LRG _{Post_File}	14,322	0.6194	3.1247	-0.7605	-0.2527	0.5993
ATRADE_SML _{Post_File}	14,322	0.2882	1.2160	-0.3582	-0.0038	0.5
ATRADE_LRG _{Post_File}	14,322	0.4373	2.2619	-0.6981	-0.1867	0.5630
MKTVOL _{Pre_File}	14,322	0.0056	0.0011	0.0047	0.0052	0.0066
MKTVOL _{Post_File}	14,322	0.0056	0.0012	0.0047	0.0051	0.0067
SIZE	14,322	5.8690	1.5225	4.7568	5.7820	6.8259
BM	14,322	0.5114	0.3932	0.2383	0.4229	0.6795
PRET	14,322	0.0322	0.4829	-0.2577	-0.0376	0.2075
EARNSURP _{Pre_File}	14,322	-0.0006	0.0204	0	0	0.0004
EARNSURP _{Post_File}	14,322	0.0000	0.0013	0	0	0
TRADESIZE	14,322	0.0012	0.0024	0.0001	0.0003	0.0012
REPORTLAG	14,322	21.4114	10.0684	13	21	30

The table reports descriptive statistics relating to the variables of interest for the sample of 14,322 insider trade observations over the period 1996- (August) 2002. The variables are defined in the Appendix.

Table 2
Effect of Reg FD on the Trading Response to Insider Trades
in the Pre-filing Window

$$\text{ATR_LRG}_{\text{Pre_File}} = \alpha_0 + \alpha_1 \text{POSTFD} + \alpha_2 \text{PROFIT} + \alpha_3 \text{POSTFD} * \text{PROFIT} + \alpha_4 \text{MKTVOL}_{\text{Pre_File}} + \alpha_5 \text{SIZE} + \alpha_6 \text{BM} + \alpha_7 \text{PRET} + \alpha_8 \text{AEARN SURP}_{\text{Pre_File}} + \alpha_9 \text{TRADE SIZE} + \alpha_{10} \text{REPORTLAG} + \xi_L \quad (1)$$

$$\text{ATR_SML}_{\text{Pre_File}} = \beta_0 + \beta_1 \text{POSTFD} + \beta_2 \text{PROFIT} + \beta_3 \text{POSTFD} * \text{PROFIT} + \beta_4 \text{MKTVOL}_{\text{Pre_File}} + \beta_5 \text{SIZE} + \beta_6 \text{BM} + \beta_7 \text{PRET} + \beta_8 \text{AEARN SURP}_{\text{Pre_File}} + \beta_9 \text{TRADE SIZE} + \beta_{10} \text{REPORTLAG} + \xi_S \quad (2)$$

	AVOL _{Pre_File}		ATRADE _{Pre_File}	
	Large	Small	Large	Small
	Estimate (P-value)	Estimate (P-value)	Estimate (P-value)	Estimate (P-value)
Intercept	0.8712** (0.0347)	0.1143 (0.4779)	-0.3627 (0.1324)	-0.0743 (0.5773)
POSTFD	0.1648 (0.2401)	0.0243 (0.5933)	0.0150 (0.8500)	0.0135 (0.7213)
PROFIT	0.1999*** (0.0001)	-0.0355 (0.1761)	0.1781*** (<.0001)	0.0072 (0.7416)
POSTFD*PROFIT	-0.2469** (0.0199)	0.0264 (0.5027)	-0.2183*** (0.0004)	-0.0063 (0.8496)
MKTVOL _{Pre_File}	195.1318*** (<.0001)	116.2003*** (<.0001)	199.2032*** (<.0001)	113.1966*** (<.0001)
SIZE	-0.2143*** (<.0001)	-0.0586*** (<.0001)	-0.1090*** (<.0001)	-0.0579*** (<.0001)
BM	-0.0113 (0.8856)	-0.1840*** (<.0001)	-0.0919* (0.0725)	-0.1250*** (<.0001)
PRET	-0.0830* (0.0772)	-0.1740*** (<.0001)	0.1221*** (0.0010)	-0.0660*** (0.0013)
AEARN SURP _{Pre_File}	-0.8537 (0.5484)	1.0977* (0.0918)	0.7512 (0.4317)	0.4158 (0.4307)
TRADE SIZE	68.8006*** (<.0001)	11.5072** (0.0322)	72.1270*** (<.0001)	17.7827*** (0.0001)
REPORTLAG	-0.1249*** (0.0082)	-0.0871*** (<.0001)	-0.0455 (0.1344)	-0.0538*** (0.0026)
R ²	2.69%	2.33%	3.59%	2.30%

F-test ^a	$\alpha_2 + \alpha_3$	$\beta_2 + \beta_3$	$\alpha_2 + \alpha_3$	$\beta_2 + \beta_3$
P-value	0.6054	0.7544	0.4299	0.9719
Pre-Reg FD ^b : test if $\alpha_2 = \beta_2$		P-value	P-value	
		0.0001	0.0001	
Post-Reg FD ^c : test if $\alpha_2 + \alpha_3 = \beta_2 + \beta_3$		0.6382	0.4264	

This table reports results of regressions (1) and (2) in columns (1) and (3), and columns (2) and (4), respectively, for the sample of 14,322 insider trade observations. The regressions are estimated with year fixed effects. The dependent variable, $ATR_LRG_{Pre_File}$, equals $AVOL_LRG_{Pre_File}$ in column (1) and $ATRADE_LRG_{Pre_File}$ in column (3). The dependent variable, $ATR_SML_{Pre_File}$, equals $AVOL_SML_{Pre_File}$ in column (2) and $ATRADE_SML_{Pre_File}$ in column (4). Variables are defined in the Appendix. P-values relate to t -statistics corrected for clustering of standard errors by firm and are reported in parentheses below the related coefficient estimates.

^a F-test of the investors' response to profitable relative to unprofitable insider trades in the post-Reg FD period.

^b F-test of the difference between large versus small investors' response to profitable relative to unprofitable insider trades in the Pre-Reg FD period, using seemingly unrelated regression estimation.

^c F-test of the difference between large versus small investors' response to profitable relative to unprofitable insider trades in the Post-Reg FD period, using seemingly unrelated regression estimation.

Table 3
Effect of Reg FD on the Trading Response to Insider Trades in the Pre-filing Window Estimated Separately for Insider Purchases and Insider Sales

$$\text{ATR_LRG}_{\text{Pre_File}} = \alpha_0 + \alpha_1 \text{POSTFD} + \alpha_2 \text{PROFIT} + \alpha_3 \text{POSTFD} * \text{PROFIT} + \alpha_4 \text{MKTVOL}_{\text{Pre_File}} + \alpha_5 \text{SIZE} + \alpha_6 \text{BM} + \alpha_7 \text{PRET} + \alpha_8 \text{AEARN SURP}_{\text{Pre_File}} + \alpha_9 \text{TRADE SIZE} + \alpha_{10} \text{REPORTLAG} + \xi_L \quad (1)$$

$$\text{ATR_SML}_{\text{Pre_File}} = \beta_0 + \beta_1 \text{POSTFD} + \beta_2 \text{PROFIT} + \beta_3 \text{POSTFD} * \text{PROFIT} + \beta_4 \text{MKTVOL}_{\text{Pre_File}} + \beta_5 \text{SIZE} + \beta_6 \text{BM} + \beta_7 \text{PRET} + \beta_8 \text{AEARN SURP}_{\text{Pre_File}} + \beta_9 \text{TRADE SIZE} + \beta_{10} \text{REPORTLAG} + \xi_S \quad (2)$$

Panel A: Insider Purchases

	AVOL _{Pre_File}		ATRADE _{Pre_File}	
	Large	Small	Large	Small
	Estimate (P-value)	Estimate (P-value)	Estimate (P-value)	Estimate (P-value)
Intercept	0.3769 (0.5619)	-0.1344 (0.5654)	-0.5254 (0.1144)	-0.3015* (0.0995)
POSTFD	0.3449 (0.1954)	0.0766 (0.3182)	0.0921 (0.4564)	0.0140 (0.8122)
PROFIT	0.1974** (0.0135)	-0.0037 (0.9293)	0.1330*** (0.0061)	0.0118 (0.7179)
POSTFD*PROFIT	-0.3654* (0.0707)	-0.0257 (0.7190)	-0.2108** (0.0464)	-0.0020 (0.9709)
MKTVOL _{Pre_File}	220.5285*** (0.0012)	116.6926*** (<.0001)	167.2535*** (<.0001)	111.7687*** (<.0001)
SIZE	-0.1530*** (<.0001)	0.0025 (0.8469)	-0.0487*** (0.0007)	-0.0012 (0.9023)
BM	0.0229 (0.8092)	-0.2843*** (<.0001)	0.0766 (0.1758)	-0.1511*** (<.0001)
PRET	-0.0456 (0.5777)	-0.1529*** (0.0007)	0.1010* (0.0560)	-0.0257 (0.4837)
AEARN SURP _{Pre_File}	-2.5946 (0.1289)	0.7181 (0.3869)	-0.4276 (0.6637)	0.2031 (0.7543)
TRADE SIZE	33.1406 (0.2056)	18.2308 (0.1206)	22.4443 (0.1501)	10.9684 (0.2505)
REPORTLAG	-0.1358** (0.0370)	-0.0962*** (0.0020)	-0.0923** (0.0196)	-0.0777*** (0.0013)

R^2	1.26%	2.36%	1.46%	1.95%
F-test ^a	$\alpha_2 + \alpha_3$	$\beta_2 + \beta_3$	$\alpha_2 + \alpha_3$	$\beta_2 + \beta_3$
P-value	0.3624	0.6074	0.405	0.8244
Pre-Reg FD ^b : test if $\alpha_2 = \beta_2$		P-value	P-value	
		0.0077	0.0052	
Post-Reg FD ^c : test if $\alpha_2 + \alpha_3 = \beta_2 + \beta_3$		0.3198	0.2751	

Table 3 (continued)

Panel B: Insider Sales

	AVOL _{Pre_File}		ATRADE _{Pre_File}	
	Large	Small	Large	Small
	Estimate	Estimate	Estimate	Estimate
	(P-value)	(P-value)	(P-value)	(P-value)
Intercept	1.3208*** (0.0065)	-0.1862 (0.3663)	0.1157 (0.7295)	-0.1383 (0.4663)
POSTFD	0.0799 (0.5586)	0.0850 (0.2182)	-0.0959 (0.3950)	0.0593 (0.2567)
PROFIT	0.1749*** (0.0072)	0.0362 (0.2298)	0.1214** (0.0232)	0.0433 (0.1282)
POSTFD*PROFIT	-0.2286** (0.0492)	-0.0553 (0.2164)	-0.1392* (0.0932)	-0.0540 (0.2104)
MKTVOL _{Pre_File}	143.5416*** (0.0052)	98.6434*** ($<.0001$)	235.7119*** ($<.0001$)	108.1024*** ($<.0001$)
SIZE	-0.2647*** ($<.0001$)	-0.0816*** ($<.0001$)	-0.1931*** ($<.0001$)	-0.0967*** ($<.0001$)
BM	-0.0342 (0.8065)	-0.1024* (0.0547)	-0.2248** (0.0252)	-0.1005** (0.0474)
PRET	-0.1322** (0.0308)	-0.1097*** (0.0001)	0.0193 (0.7145)	-0.0661** (0.0116)
AEARNSURP _{Pre_File}	3.5155 (0.1733)	1.0289 (0.3033)	5.3801*** (0.0087)	1.0133 (0.2551)
TRADESIZE	81.0744*** ($<.0001$)	23.1869*** (0.0002)	69.8554*** ($<.0001$)	24.3823*** ($<.0001$)
REPORTLAG	-0.0642 (0.3037)	0.0403* (0.0915)	-0.0455 (0.3158)	0.0354 (0.1244)
R ²	5.16%	3.25%	6.13%	4.35%
F-test ^a	$\alpha_2 + \alpha_3$	$\beta_2 + \beta_3$	$\alpha_2 + \alpha_3$	$\beta_2 + \beta_3$
P-value	0.5728	0.5603	0.7793	0.7386

	P-value	P-value
Pre-Reg FD ^b : test if $\alpha_2 = \beta_2$	0.0310	0.0923
Post-Reg FD ^c : test if $\alpha_2 + \alpha_3 = \beta_2 + \beta_3$	0.7234	0.9199

This table reports results of regression (1) and (2) in columns (1) and (3), and columns (2) and (4), respectively, for the sample of 7,131 insider purchases (in Panel A) and 7,191 insider sales (in Panel B). The regressions are estimated with year fixed effects. The dependent variable, $ATR_LRG_{Pre_File}$, equals $AVOL_LRG_{Pre_File}$ in column (1) and $ATRADE_LRG_{Pre_File}$ in column (3). The dependent variable, $ATR_SML_{Pre_File}$, equals $AVOL_SML_{Pre_File}$ in column (2) and $ATRADE_SML_{Pre_File}$ in column (4). Variables are defined in the Appendix. P-values relate to t -statistics corrected for clustering of standard errors by firm and are reported in parentheses below the related coefficient estimates.

^a F-test of the investors' response to profitable relative to unprofitable insider trades in the post-Reg FD period.

^b F-test of the difference between large versus small investors' response to profitable relative to unprofitable insider trades in the Pre-Reg FD period, using seemingly unrelated regression estimation.

^c F-test of the difference between large versus small investors' response to profitable relative to unprofitable insider trades in the Post-Reg FD period, using seemingly unrelated regression estimation.

Table 4
Effect of Reg FD on the Net-buying Response to Insider Trades in the Pre-filing Window Estimated Separately for Insider Purchases and Insider Sales

$$\text{ANB_LRG}_{\text{Pre_File}} = \gamma_0 + \gamma_1 \text{POSTFD} + \gamma_2 \text{PROFIT} + \gamma_3 \text{POSTFD} * \text{PROFIT} + \gamma_4 \text{MKTVOL}_{\text{Pre_File}} + \gamma_5 \text{SIZE} + \gamma_6 \text{BM} + \gamma_7 \text{PRET} + \gamma_8 \text{EARN SURP}_{\text{Pre_File}} + \gamma_9 \text{TRADESIZ E} + \gamma_{10} \text{REPORTLAG} + \varepsilon_L \quad (3)$$

$$\text{ANB_SML}_{\text{Pre_File}} = \theta_0 + \theta_1 \text{POSTFD} + \theta_2 \text{PROFIT} + \theta_3 \text{POSTFD} * \text{PROFIT} + \theta_4 \text{MKTVOL}_{\text{Pre_File}} + \theta_5 \text{SIZE} + \theta_6 \text{BM} + \theta_7 \text{PRET} + \theta_8 \text{EARN SURP}_{\text{Pre_File}} + \theta_9 \text{TRADESIZ E} + \theta_{10} \text{REPORTLAG} + \varepsilon_S \quad (4)$$

Panel A: Insider Purchases

	ANETVOL _{Pre_File}		ANETTRADE _{Pre_File}	
	Large	Small	Large	Small
	Estimate	Estimate	Estimate	Estimate
	(P-value)	(P-value)	(P-value)	(P-value)
Intercept	-0.2290 (0.3231)	0.0540 (0.3669)	-0.1100 (0.4140)	0.0412 (0.4589)
POSTFD	0.0872 (0.3131)	-0.0257 (0.1707)	0.0308 (0.5371)	-0.0215 (0.2291)
PROFIT	0.0681** (0.0338)	0.0053 (0.6208)	0.0325* (0.0794)	0.0013 (0.8903)
POSTFD*PROFIT	-0.1420** (0.0277)	0.0089 (0.6040)	-0.0734* (0.0650)	0.0146 (0.3380)
MKTVOL _{Pre_File}	-15.3292 (0.5714)	-9.4158 (0.1704)	-0.2695 (0.9851)	-4.6432 (0.4601)
SIZE	0.0310*** (0.0023)	0.0084*** (0.0078)	0.0034 (0.5889)	0.0020 (0.4862)
BM	-0.0384 (0.3503)	-0.0091 (0.3471)	-0.0096 (0.6913)	-0.0085 (0.3321)
PRET	0.0051 (0.8648)	-0.0416*** (<.0001)	-0.0056 (0.7547)	-0.0359*** (<.0001)
EARN SURP _{Pre_File}	-0.3898 (0.5204)	-0.0854 (0.6389)	-0.5069 (0.1891)	-0.0007 (0.9966)
TRADESIZ E	-13.9237 (0.1777)	2.0519 (0.4875)	2.9204 (0.6316)	1.3203 (0.6113)
REPORTLAG	0.0307 (0.1771)	-0.0027 (0.7255)	0.0293** (0.0316)	0.0004 (0.9525)

R^2	0.568%	1.18%	0.256%	1.02%
F-test ^a	$\gamma_2 + \gamma_3$	$\theta_2 + \theta_3$	$\gamma_2 + \gamma_3$	$\theta_2 + \theta_3$
P-value	0.2086	0.4258	0.2471	0.3198
Pre-Reg FD ^b : test if $\gamma_2 = \theta_2$		P-value	P-value	
		0.0612	0.1145	
Post-Reg FD ^c : test if $\gamma_2 + \gamma_3 = \theta_2 + \theta_3$		0.1834	0.2215	

Table 4 (continued)

Panel B: Insider Sales

	ANETVOL _{Pre_File}		ANETTRADE _{Pre_File}	
	Large	Small	Large	Small
	Estimate (P-value)	Estimate (P-value)	Estimate (P-value)	Estimate (P-value)
Intercept	-0.0428 (0.7928)	-0.0924 (0.1247)	-0.1759* (0.0896)	-0.1004* (0.0846)
POSTFD	-0.0420 (0.4174)	0.0057 (0.7601)	-0.0329 (0.3065)	0.0115 (0.5276)
PROFIT	-0.0509** (0.0208)	0.0008 (0.9280)	-0.0308** (0.0342)	0.0072 (0.4199)
POSTFD*PROFIT	0.0705* (0.0629)	-0.0018 (0.8942)	0.0426* (0.0828)	-0.0085 (0.5305)
MKTVOL _{Pre_File}	-12.1820 (0.4698)	10.9456* (0.0850)	11.6524 (0.2842)	15.8750** (0.0121)
SIZE	0.0294*** (0.0002)	-0.0009 (0.7618)	0.0149*** (0.0051)	-0.0059 (0.0372)
BM	0.0475 (0.2816)	0.0022 (0.8823)	0.0397 (0.1994)	0.0045 (0.7600)
PRET	0.0017 (0.9288)	-0.0022 (0.7576)	-0.0171 (0.1597)	-0.0032 (0.6561)
EARN SURP _{Pre_File}	0.8570 (0.2268)	0.1208 (0.5586)	0.5226 (0.2893)	0.1705 (0.4346)
TRADE SIZE	7.5175 (0.1166)	3.3118** (0.0291)	3.5980 (0.2223)	3.5527** (0.0189)
REPORTLAG	-0.0330 (0.1047)	0.0054 (0.4988)	-0.0070 (0.6063)	0.0052 (0.5153)
R ²	0.552%	0.348%	0.536%	0.627%
F-test ^a	$\gamma_2 + \gamma_3$	$\theta_2 + \theta_3$	$\gamma_2 + \gamma_3$	$\theta_2 + \theta_3$
P-value	0.5323	0.9232	0.5539	0.8979

	P-value	P-value
Pre-Reg FD ^b : test if $\gamma_2 = \theta_2$	0.0320	0.0239
Post-Reg FD ^c : test if $\gamma_2 + \gamma_3 = \theta_2 + \theta_3$	0.5927	0.6053

This table reports results of regression (3) and (4) in columns (1) and (3), and columns (2) and (4), respectively, for the sample of 7,131 insider purchases (in Panel A) and 7,191 insider sales (in Panel B). The regressions are estimated with year fixed effects. The dependent variable, $ANB_LRG_{Pre_File}$, equals $ANETVOL_LRG_{Pre_File}$ in column (1) and $ANETTRADE_LRG_{Pre_File}$ in column (3). The dependent variable, $ANB_SML_{Pre_File}$, equals $ANETVOL_SML_{Pre_File}$ in column (2) and $ANETTRADE_SML_{Pre_File}$ in column (4). Variables are defined in the Appendix. P-values relate to t -statistics corrected for clustering of standard errors by firm and are reported in parentheses below the related coefficient estimates.

^a F-test of the investors' response to profitable relative to unprofitable insider trades in the post-Reg FD period.

^b F-test of the difference between large versus small investors' response to profitable relative to unprofitable insider trades in the Pre-Reg FD period, using seemingly unrelated regression estimation.

^c F-test of the difference between large versus small investors' response to profitable relative to unprofitable insider trades in the Post-Reg FD period, using seemingly unrelated regression estimation.

Table 5
Effect of Reg FD on the Trading Response to Insider Trades
in the Post-filing Window

$$\text{ATR_LRG}_{\text{Post_File}} = \alpha_0 + \alpha_1 \text{POSTFD} + \alpha_2 \text{PROFIT} + \alpha_3 \text{POSTFD} * \text{PROFIT} + \alpha_4 \text{MKTVOL}_{\text{Post_File}} + \alpha_5 \text{SIZE} + \alpha_6 \text{BM} + \alpha_7 \text{PRET} + \alpha_8 \text{AEARN SURP}_{\text{Post_File}} + \alpha_9 \text{TRADESIZ E} + \alpha_{10} \text{REPORTLAG} + \xi_L \quad (1)$$

$$\text{ATR_SML}_{\text{Post_File}} = \beta_0 + \beta_1 \text{POSTFD} + \beta_2 \text{PROFIT} + \beta_3 \text{POSTFD} * \text{PROFIT} + \beta_4 \text{MKTVOL}_{\text{Post_File}} + \beta_5 \text{SIZE} + \beta_6 \text{BM} + \beta_7 \text{PRET} + \beta_8 \text{AEARN SURP}_{\text{Post_File}} + \beta_9 \text{TRADESIZ E} + \beta_{10} \text{REPORTLAG} + \xi_S \quad (2)$$

	AVOL _{Post_File}		ATRADE _{Post_File}	
	Large	Small	Large	Small
	Estimate	Estimate	Estimate	Estimate
	(P-value)	(P-value)	(P-value)	(P-value)
Intercept	-0.3231 (0.3404)	-0.5034*** (0.0015)	-0.8802*** (0.0001)	-0.6329*** (<.0001)
POSTFD	0.2707* (0.0867)	0.2334*** (0.0007)	0.0522 (0.6438)	0.1962*** (0.0007)
PROFIT	0.2151*** (0.0004)	-0.0354 (0.2426)	0.2000*** (<.0001)	0.0251 (0.3321)
POSTFD *PROFIT	-0.2077* (0.0852)	0.0170 (0.7374)	-0.1904** (0.0243)	-0.0444 (0.3219)
MKTVOL _{Post_File}	150.4536*** (<.0001)	144.6641*** (<.0001)	175.7782*** (<.0001)	129.4511*** (<.0001)
SIZE	-0.1031*** (<.0001)	-0.0353*** (<.0001)	-0.0662*** (<.0001)	-0.0359*** (<.0001)
BM	0.1017 (0.2633)	-0.2009*** (<.0001)	0.0543 (0.4056)	-0.1064*** (0.0002)
PRET	0.0496 (0.3850)	-0.1276*** (<.0001)	0.2119*** (<.0001)	0.0001 (0.9973)
AEARN SURP _{Post_File}	22.5462 (0.3145)	53.2008*** (<.0001)	21.1818 (0.2324)	46.8349*** (<.0001)
TRADESIZ E	21.5335* (0.0868)	11.8300** (0.0465)	33.9767*** (0.0012)	14.2456*** (0.0069)
REPORTLAG	-0.0522 (0.2939)	-0.0505** (0.0377)	-0.0006 (0.9845)	-0.0138 (0.4853)
R ²	0.836%	1.85%	1.62%	1.63%

F-test ^a	$\alpha_2 + \alpha_3$	$\beta_2 + \beta_3$	$\alpha_2 + \alpha_3$	$\beta_2 + \beta_3$
P-value	0.9434	0.6555	0.894	0.6022
Pre-Reg FD ^b : test if $\alpha_2 = \beta_2$		P-value	P-value	
		0.0001	0.0001	
Post-Reg FD ^c : test if $\alpha_2 + \alpha_3 = \beta_2 + \beta_3$		0.7864	0.6762	

This table reports results of regressions (1) and (2) in columns (1) and (3), and columns (2) and (4), respectively, for the sample of 14,313 insider trade observations. The regressions are estimated with year fixed effects. The dependent variable, $ATR_LRG_{Post_File}$, equals $AVOL_LRG_{Post_File}$ in column (1) and $ATRADE_LRG_{Post_File}$ in column (3). The dependent variable, $ATR_SML_{Post_File}$, equals $AVOL_SML_{Post_File}$ in column (2) and $ATRADE_SML_{Post_File}$ in column (4). Variables are defined in the Appendix. P-values relate to *t*-statistics corrected for clustering of standard errors by firm and are reported in parentheses below the related coefficient estimates.

^a F-test of the investors' response to profitable relative to unprofitable insider trades in the post-Reg FD period.

^b F-test of the difference between large versus small investors' response to profitable relative to unprofitable insider trades in the Pre-Reg FD period, using seemingly unrelated regression estimation.

^c F-test of the difference between large versus small investors' response to profitable relative to unprofitable insider trades in the Post-Reg FD period, using seemingly unrelated regression estimation.

Table 6
Effect of Reg FD on the Trading Response to Insider Trades in the Post-filing Window Estimated Separately for Insider Purchases and Insider Sales

$$\begin{aligned} \text{ATR_LRG}_{\text{Post_File}} = & \alpha_0 + \alpha_1\text{POSTFD} + \alpha_2\text{PROFIT} + \alpha_3\text{POSTFD*PROFIT} + \alpha_4\text{MKTVOL}_{\text{Post_File}} \\ & + \alpha_5\text{SIZE} + \alpha_6\text{BM} + \alpha_7\text{PRET} + \alpha_8\text{AEARN SURP}_{\text{Post_File}} + \alpha_9\text{TRADESIZ E} + \\ & \alpha_{10}\text{REPORTLAG} + \xi_L \end{aligned} \quad (1)$$

$$\begin{aligned} \text{ATR_SML}_{\text{Post_File}} = & \beta_0 + \beta_1\text{POSTFD} + \beta_2\text{PROFIT} + \beta_3\text{POSTFD*PROFIT} + \beta_4\text{MKTVOL}_{\text{Post_File}} \\ & + \beta_5\text{SIZE} + \beta_6\text{BM} + \beta_7\text{PRET} + \beta_8\text{AEARN SURP}_{\text{Post_File}} + \beta_9\text{TRADESIZ E} + \\ & \beta_{10}\text{REPORTLAG} + \xi_S \end{aligned} \quad (2)$$

Panel A: Insider Purchases

	AVOL _{Post_File}		ATRADE _{Post_File}	
	Large	Small	Large	Small
	Estimate (P-value)	Estimate (P-value)	Estimate (P-value)	Estimate (P-value)
Intercept	-0.3021 (0.5548)	-0.6462** (0.0015)	-0.8115** (0.0132)	-0.7092*** (<.0001)
POSTFD	0.1050 (0.6438)	0.1483 (0.1123)	-0.1127 (0.4679)	0.0345 (0.6092)
PROFIT	0.3555*** (0.0004)	0.0379 (0.3741)	0.2648*** (0.0005)	0.0783** (0.0258)
POSTFD *PROFIT	-0.1013 (0.5581)	-0.0213 (0.7906)	-0.0352 (0.7739)	0.0103 (0.8660)
MKTVOL _{Post_File}	109.2756 (0.0610)	157.1694*** (<.0001)	135.6751*** (0.0007)	136.5978*** (<.0001)
SIZE	-0.0837*** (0.0006)	0.0090 (0.4726)	-0.0547*** (0.0028)	0.0014 (0.8908)
BM	0.1663 (0.1449)	-0.2735*** (<.0001)	0.1515* (0.0618)	-0.1280*** (<.0001)
PRET	0.0854 (0.3315)	-0.1183*** (0.0085)	0.2279*** (0.0023)	0.0264 (0.4758)
AEARN SURP _{Post_File}	17.2895 (0.5686)	45.8470*** (0.0042)	3.1242 (0.8820)	45.5083*** (0.0013)
TRADESIZ E	-39.1387** (0.0265)	38.1544*** (0.0059)	-20.9795 (0.1377)	18.5021** (0.0404)
REPORTLAG	-0.0537 (0.4244)	-0.0939*** (0.0029)	-0.0100 (0.8166)	-0.0644*** (0.0091)

R^2	0.688%	2.82%	1.50%	2.31%
F-test ^a	$\alpha_2 + \alpha_3$	$\beta_2 + \beta_3$	$\alpha_2 + \alpha_3$	$\beta_2 + \beta_3$
P-value	0.0688	0.8091	0.0181	0.0770
Pre-Reg FD ^b : test if $\alpha_2 = \beta_2$		P-value	P-value	
		0.0004	0.0024	
Post-Reg FD ^c : test if $\alpha_2 + \alpha_3 = \beta_2 + \beta_3$		0.1534	0.2201	

Table 6 (continued)

Panel B: Insider Sales

	AVOL _{Post_File}		ATRADE _{Post_File}	
	Large	Small	Large	Small
	Estimate (P-value)	Estimate (P-value)	Estimate (P-value)	Estimate (P-value)
Intercept	-0.7612* (0.0739)	-1.0703*** (<.0001)	-0.7964** (0.0150)	-0.8914*** (<.0001)
POSTFD	0.3972** (0.0475)	0.4686*** (<.0001)	0.0792 (0.6135)	0.3658*** (<.0001)
PROFIT	0.1786*** (0.0038)	0.0461 (0.2345)	0.1322** (0.0160)	0.0320 (0.3979)
POSTFD *PROFIT	-0.2897** (0.0433)	-0.0650 (0.3235)	-0.2129* (0.0523)	-0.0711 (0.2620)
MKTVOL _{Post_File}	196.6403*** (<.0001)	123.2254*** (<.0001)	226.3010*** (<.0001)	121.7192*** (<.0001)
SIZE	-0.1075*** (<.0001)	-0.0432*** (0.0005)	-0.0871*** (<.0001)	-0.0607*** (<.0001)
BM	-0.0095 (0.9490)	-0.1386** (0.0244)	-0.0637 (0.5889)	-0.0761 (0.2113)
PRET	0.0168 (0.8224)	-0.0473 (0.2283)	0.1305** (0.0324)	0.0021 (0.9555)
AEARNSURP _{Post_File}	33.3974 (0.3019)	54.6276*** (0.0061)	49.7011* (0.0979)	46.7594** (0.0125)
TRADESIZE	48.1807*** (0.0019)	15.5447** (0.0220)	47.0033*** (0.0004)	15.8107** (0.0158)
REPORTLAG	0.0155 (0.8106)	0.1107*** (0.0006)	-0.0291 (0.5680)	0.1017*** (0.0009)
R ²	1.73%	2.16%	2.48%	2.31%
F-test ^a	$\alpha_2 + \alpha_3$	$\beta_2 + \beta_3$	$\alpha_2 + \alpha_3$	$\beta_2 + \beta_3$
P-value	0.3904	0.7347	0.4012	0.4590

	P-value	P-value
Pre-Reg FD ^b : test if $\alpha_2 = \beta_2$	0.0738	0.0868
Post-Reg FD ^c : test if $\alpha_2 + \alpha_3 = \beta_2 + \beta_3$	0.4077	0.6359

This table reports results of regression (1) and (2) in columns (1) and (3), and columns (2) and (4), respectively, for the sample of 7,126 insider purchases (in Panel A) and 7,187 insider sales (in Panel B). The regressions are estimated with year fixed effects. The dependent variable, $ATR_LRG_{Post_File}$, equals $AVOL_LRG_{Post_File}$ in column (1) and $ATRADE_LRG_{Post_File}$ in column (3). The dependent variable, $ATR_SML_{Post_File}$, equals $AVOL_SML_{Post_File}$ in column (2) and $ATRADE_SML_{Post_File}$ in column (4). Variables are defined in the Appendix. P-values relate to t -statistics corrected for clustering of standard errors by firm and are reported in parentheses below the related coefficient estimates.

^a F-test of the investors' response to profitable relative to unprofitable insider trades in the post-Reg FD period.

^b F-test of the difference between large versus small investors' response to profitable relative to unprofitable insider trades in the Pre-Reg FD period, using seemingly unrelated regression estimation.

^c F-test of the difference between large versus small investors' response to profitable relative to unprofitable insider trades in the Post-Reg FD period, using seemingly unrelated regression estimation.

Table 7
Effect of Reg FD on the Net-buying Response to Insider Trades in the Post-filing Window Estimated Separately for Insider Purchases and Insider Sales

$$\text{ANB_LRG}_{\text{Post_File}} = \gamma_0 + \gamma_1 \text{POSTFD} + \gamma_2 \text{PROFIT} + \gamma_3 \text{POSTFD} * \text{PROFIT} + \gamma_4 \text{MKTVOL}_{\text{Post_File}} + \gamma_5 \text{SIZE} + \gamma_6 \text{BM} + \gamma_7 \text{PRET} + \gamma_8 \text{EARN SURP}_{\text{Post_File}} + \gamma_9 \text{TRADE SIZE} + \gamma_{10} \text{REPORTLAG} + \varepsilon_L \quad (3)$$

$$\text{ANB_SML}_{\text{Post_File}} = \theta_0 + \theta_1 \text{POSTFD} + \theta_2 \text{PROFIT} + \theta_3 \text{POSTFD} * \text{PROFIT} + \theta_4 \text{MKTVOL}_{\text{Post_File}} + \theta_5 \text{SIZE} + \theta_6 \text{BM} + \theta_7 \text{PRET} + \theta_8 \text{EARN SURP}_{\text{Post_File}} + \theta_9 \text{TRADE SIZE} + \theta_{10} \text{REPORTLAG} + \varepsilon_S \quad (4)$$

Panel A: Insider Purchases

	ANETVOL _{Post_File}		ANETTRADE _{Post_File}	
	Large	Small	Large	Small
	Estimate (P-value)	Estimate (P-value)	Estimate (P-value)	Estimate (P-value)
Intercept	-0.0464 (0.8218)	0.2751*** (0.0003)	0.2606 (0.0738)	0.2765*** (<.0001)
POSTFD	-0.1843 (0.1025)	-0.0364 (0.2609)	-0.1597 (0.0348)	-0.0214 (0.4632)
PROFIT	0.1181*** (0.0010)	0.0310* (0.0542)	0.0757*** (0.0039)	0.0247* (0.0827)
POSTFD *PROFIT	0.0558 (0.5155)	0.0190 (0.4897)	0.0287 (0.6091)	0.0069 (0.7707)
MKTVOL _{Post_File}	5.9062 (0.7945)	-22.7217*** (0.0058)	-11.9337 (0.4747)	-22.0188*** (0.0035)
SIZE	-0.0025 (0.8173)	0.0048 (0.2874)	-0.0153* (0.0537)	-0.0034 (0.4094)
BM	0.0817* (0.0802)	-0.0323** (0.0346)	0.0297 (0.3783)	-0.0354*** (0.0082)
PRET	0.0177 (0.5958)	-0.0483*** (0.0006)	-0.0154 (0.5618)	-0.0426*** (0.0008)
EARN SURP _{Post_File}	-16.5442 (0.1411)	1.9351 (0.7128)	-13.5766 (0.1300)	1.5902 (0.7611)
TRADE SIZE	17.4106** (0.0417)	1.9491 (0.6657)	3.4547 (0.6367)	1.6179 (0.6458)
REPORTLAG	-0.0123 (0.6741)	-0.0229** (0.0337)	-0.0106 (0.5739)	-0.0189** (0.0396)

R^2	0.574%	0.599%	0.358%	0.562%
F-test ^a	$\gamma_2 + \gamma_3$	$\theta_2 + \theta_3$	$\gamma_2 + \gamma_3$	$\theta_2 + \theta_3$
P-value	0.0270	0.0259	0.0358	0.0936
Pre-Reg FD ^b : test if $\gamma_2 = \theta_2$		P-value	P-value	
		0.0276	0.0770	
Post-Reg FD ^c : test if $\gamma_2 + \gamma_3 = \theta_2 + \theta_3$		0.0906	0.1758	

Table 7 (continued)

Panel B: Insider Sales

	ANETVOL _{Post_File}		ANETTRADE _{Post_File}	
	Large	Small	Large	Small
	Estimate	Estimate	Estimate	Estimate
	(P-value)	(P-value)	(P-value)	(P-value)
Intercept	-0.0338 (0.8429)	-0.0361 (0.5849)	-0.0195 (0.8775)	-0.0328 (0.6126)
POSTFD	-0.0473 (0.5322)	0.0243 (0.3627)	0.0132 (0.8120)	0.0249 (0.3326)
PROFIT	-0.0778*** (0.0098)	-0.0148 (0.2584)	-0.0637*** (0.0042)	-0.0166 (0.1998)
POSTFD *PROFIT	0.1099** (0.0296)	-0.0069 (0.7380)	0.0774** (0.0375)	-0.0026 (0.8986)
MKTVOL _{Post_File}	-17.6989 (0.2971)	-14.6582** (0.0253)	-13.7586 (0.2876)	-14.0315** (0.0292)
SIZE	0.0243** (0.0102)	0.0140*** (0.0004)	0.0161** (0.0317)	0.0132*** (0.0006)
BM	0.0419 (0.4436)	-0.0124 (0.5269)	0.0309 (0.4773)	-0.0106 (0.5880)
PRET	-0.0245 (0.3229)	-0.0150 (0.1176)	-0.0219 (0.2276)	-0.0087 (0.3491)
EARN SURP _{Post_File}	-11.3412 (0.3613)	2.4968 (0.6243)	-3.4264 (0.7385)	3.5154 (0.4765)
TRADE SIZE	11.4552** (0.0346)	-1.3342 (0.4932)	3.8467 (0.3591)	-1.2583 (0.5200)
REPORTLAG	-0.0319 (0.2015)	0.0092 (0.4122)	-0.0145 (0.4364)	0.0057 (0.5951)
R ²	0.425%	0.809%	0.475%	0.784%
F-test ^a	$\gamma_2 + \gamma_3$	$\theta_2 + \theta_3$	$\gamma_2 + \gamma_3$	$\theta_2 + \theta_3$
P-value	0.4750	0.2560	0.6767	0.3012

	P-value	P-value
Pre-Reg FD ^b : test if $\gamma_2 = \theta_2$	0.0536	0.0601
Post-Reg FD ^c : test if $\gamma_2 + \gamma_3 = \theta_2 + \theta_3$	0.3145	0.3887

This table reports results of regression (3) and (4) in columns (1) and (3), and columns (2) and (4), respectively, for the sample of insider purchases (in Panel A) and insider sales (in Panel B). The regressions are estimated with year fixed effects. The dependent variable, $ANB_LRG_{Post_File}$, equals $ANETVOL_LRG_{Post_File}$ in column (1) and $ANETTRADE_LRG_{Post_File}$ in column (3). The dependent variable, $ANB_SML_{Post_File}$, equals $ANETVOL_SML_{Post_File}$ in column (2) and $ANETTRADE_SML_{Post_File}$ in column (4). Variables are defined in the Appendix. P-values relate to t -statistics corrected for clustering of standard errors by firm and are reported in parentheses below the related coefficient estimates.

^a F-test of the investors' response to profitable relative to unprofitable insider trades in the post-Reg FD period.

^b F-test of the difference between large versus small investors' response to profitable relative to unprofitable insider trades in the Pre-Reg FD period, using seemingly unrelated regression estimation.

^c F-test of the difference between large versus small investors' response to profitable relative to unprofitable insider trades in the Post-Reg FD period, using seemingly unrelated regression estimation.

Table 8
Effect of Reg FD on the Trading Response to Insider Trades
in the Post-trading-Pre-filing Window

$$\begin{aligned} \text{ATR_LRG}_{\text{Trade_File}} = & \alpha_0 + \alpha_1 \text{POSTFD} + \alpha_2 \text{PROFIT} + \alpha_3 \text{POSTFD} * \text{PROFIT} + \\ & \alpha_4 \text{MKTVOL}_{\text{Trade_File}} + \alpha_5 \text{SIZE} + \alpha_6 \text{BM} + \alpha_7 \text{PRET} + \\ & \alpha_8 \text{AEARNSURP}_{\text{Trade_File}} + \alpha_9 \text{TRADESIZE} + \alpha_{10} \text{REPORTLAG} + \xi_L \quad (1) \\ \text{ATR_SML}_{\text{Trade_File}} = & \beta_0 + \beta_1 \text{POSTFD} + \beta_2 \text{PROFIT} + \beta_3 \text{POSTFD} * \text{PROFIT} + \beta_4 \text{MKTVOL}_{\text{Pre_File}} \\ & + \beta_5 \text{SIZE} + \beta_6 \text{BM} + \beta_7 \text{PRET} + \beta_8 \text{AEARNSURP}_{\text{Trade_File}} + \beta_9 \text{TRADESIZE} \\ & + \beta_{10} \text{REPORTLAG} + \xi_S \quad (2) \end{aligned}$$

	AVOL_{Trade_File}		ATRADE_{Trade_File}	
	Large	Small	Large	Small
	Estimate	Estimate	Estimate	Estimate
	(P-value)	(P-value)	(P-value)	(P-value)
Intercept	-0.7581** (0.0262)	-0.5771*** (0.0003)	-1.1539*** (<.0001)	-0.6179*** (<.0001)
POSTFD	0.3173** (0.0243)	0.2243*** (0.0001)	0.0319 (0.7287)	0.1861*** (0.0001)
PROFIT	0.1831*** (0.0001)	-0.0346 (0.2071)	0.1607*** (<.0001)	0.0089 (0.6868)
POSTFD*PROFIT	-0.2819*** (0.0042)	-0.0176 (0.6957)	-0.2580*** (0.0002)	-0.0534 (0.1665)
MKTVOL _{Trade_File}	228.4334*** (<.0001)	167.6466*** (<.0001)	238.4169*** (<.0001)	150.6572*** (<.0001)
SIZE	-0.1352*** (<.0001)	-0.0464*** (<.0001)	-0.0802*** (<.0001)	-0.0500*** (<.0001)
BM	0.0442 (0.5539)	-0.1602*** (<.0001)	-0.0233 (0.6794)	-0.0960*** (0.0002)
PRET	-0.0532 (0.2463)	-0.1740*** (<.0001)	0.1179*** (0.0033)	-0.0535** (0.0166)
AEARNSURP _{Trade_File}	-4.7892 (0.4686)	6.9246** (0.0462)	-1.9777 (0.6925)	4.9188* (0.0841)
TRADESIZE	44.5761*** (0.0001)	11.4345** (0.0459)	59.9796*** (<.0001)	17.5959*** (0.0003)
REPORTLAG	0.0152 (0.7564)	-0.0594** (<.0202)	0.0307 (0.3859)	-0.0265 (0.1927)
R ²	2.12%	2.89%	2.76%	2.02%

F-test ^a	$\alpha_2 + \alpha_3$	$\beta_2 + \beta_3$	$\alpha_2 + \alpha_3$	$\beta_2 + \beta_3$
P-value	0.2523	0.1816	0.1824	0.1581

		P-value	P-value
Pre-Reg FD ^b : test if $\alpha_2 = \beta_2$		0.0001	0.0001
Post-Reg FD ^c : test if $\alpha_2 + \alpha_3 = \beta_2 + \beta_3$		0.5558	0.3659

This table reports results of regressions (1) and (2) in columns (1) and (3), and columns (2) and (4), respectively, for the sample of 14,192 insider trade observations. The regressions are estimated with year fixed effects. The dependent variable, $ATR_LRG_{Trade_File}$, equals $AVOL_LRG_{Trade_File}$ in column (1) and $ATRADE_LRG_{Trade_File}$ in column (3). The dependent variable, $ATR_SML_{Trade_File}$, equals $AVOL_SML_{Trade_File}$ in column (2) and $ATRADE_SML_{Trade_File}$ in column (4). Variables are defined in the Appendix. P-values relate to *t*-statistics corrected for clustering of standard errors by firm and are reported in parentheses below the related coefficient estimates.

^a F-test of the investors' response to profitable relative to unprofitable insider trades in the post-Reg FD period.

^b F-test of the difference between large versus small investors' response to profitable relative to unprofitable insider trades in the Pre-Reg FD period, using seemingly unrelated regression estimation.

^c F-test of the difference between large versus small investors' response to profitable relative to unprofitable insider trades in the Post-Reg FD period, using seemingly unrelated regression estimation.

Table 9
Effect of Reg FD on the Trading Response to Insider Trades in the Post-trading-Pre-filing Window Estimated Separately for Insider Purchases and Insider Sales

$$ATR_LRG_{Trade_File} = \alpha_0 + \alpha_1 POSTFD + \alpha_2 PROFIT + \alpha_3 POSTFD*PROFIT + \alpha_4 MKTVOL_{Trade_File} + \alpha_5 SIZE + \alpha_6 BM + \alpha_7 PRET + \alpha_8 AEARN SURP_{Trade_File} + \alpha_9 TRADESIZE + \alpha_{10} REPORTLAG + \xi_L \quad (1)$$

$$ATR_SML_{Trade_File} = \beta_0 + \beta_1 POSTFD + \beta_2 PROFIT + \beta_3 POSTFD*PROFIT + \beta_4 MKTVOL_{Trade_File} + \beta_5 SIZE + \beta_6 BM + \beta_7 PRET + \beta_8 AEARN SURP_{Trade_File} + \beta_9 TRADESIZE + \beta_{10} REPORTLAG + \xi_S \quad (2)$$

Panel A: Insider Purchases

	AVOL _{Trade_File}		ATRADE _{Trade_File}	
	Large	Small	Large	Small
	Estimate	Estimate	Estimate	Estimate
	(P-value)	(P-value)	(P-value)	(P-value)
Intercept	-1.0939** (0.0374)	-0.7354*** (0.0008)	-1.2950*** (<.0001)	-0.7401*** (<.0001)
POSTFD	0.4160 (0.1010)	0.1810** (0.0366)	0.0723 (0.6136)	0.1246* (0.0583)
PROFIT	0.2135*** (0.0066)	0.0067 (0.8768)	0.1310** (0.0243)	0.0330 (0.3153)
POSTFD*PROFIT	-0.3403** (0.0470)	-0.0932 (0.2207)	-0.2185** (0.0429)	-0.0689 (0.2402)
MKTVOL _{Trade_File}	200.9047*** (<.0001)	170.4050*** (<.0001)	187.8775*** (<.0001)	140.7394*** (<.0001)
SIZE	-0.0676*** (0.0024)	0.0145 (0.3126)	-0.0262* (0.0863)	0.0069 (0.5402)
BM	0.0662 (0.4700)	-0.2572*** (<.0001)	0.1498** (0.0196)	-0.1511*** (0.0001)
PRET	-0.0252 (0.7641)	-0.1589*** (0.0005)	0.1104* (0.0759)	-0.0231 (0.5248)
AEARN SURP _{Trade_File}	-4.4563 (0.6416)	5.0616 (0.2825)	-1.6244 (0.8019)	3.7105 (0.3264)
TRADESIZE	10.3481 (0.6734)	13.0581 (0.2911)	8.8148 (0.5934)	5.1401 (0.5767)
REPORTLAG	-0.0011 (0.9875)	-0.0901** (0.0145)	-0.0136 (0.7731)	-0.0690** (0.0124)

R^2	1.79%	2.21%	1.13%	2.03%
F-test ^a	$\alpha_2 + \alpha_3$	$\beta_2 + \beta_3$	$\alpha_2 + \alpha_3$	$\beta_2 + \beta_3$
P-value	0.4093	0.1616	0.3484	0.4560
Pre-Reg FD ^b : test if $\alpha_2 = \beta_2$		P-value	P-value	
		0.0058	0.0555	
Post-Reg FD ^c : test if $\alpha_2 + \alpha_3 = \beta_2 + \beta_3$		0.7748	0.5935	

Table 9 (continued)

Panel B: Insider Sales

	AVOL _{Trade_File}		ATRADE _{Trade_File}	
	Large	Small	Large	Small
	Estimate	Estimate	Estimate	Estimate
	(P-value)	(P-value)	(P-value)	(P-value)
Intercept	-0.4906 (0.2439)	-0.9871*** (<.0001)	-0.7485** (0.0350)	-0.7868*** (0.0002)
POSTFD	0.2579 (0.1057)	0.4006*** (<.0001)	-0.0797 (0.5343)	0.2921*** (<.0001)
PROFIT	0.1412** (0.0149)	0.0355 (0.2622)	0.1152** (0.0289)	0.0307 (0.2933)
POSTFD*PROFIT	-0.2552** (0.0299)	-0.0572 (0.3072)	-0.1828* (0.0587)	-0.0534 (0.3134)
MKTVOL _{Trade_File}	247.4692*** (<.0001)	150.4188*** (<.0001)	304.8808*** (<.0001)	157.0576*** (<.0001)
SIZE	-0.1943*** (<.0001)	-0.0704*** (<.0001)	-0.1580*** (<.0001)	-0.0911*** (<.0001)
BM	0.0241 (0.8560)	-0.0855 (0.1281)	-0.1948* (0.0694)	-0.0767 (0.1526)
PRET	-0.0871 (0.1168)	-0.1022*** (0.0012)	0.0304 (0.5751)	-0.0465 (0.1155)
AEARNSURP _{Trade_File}	-5.1676 (0.4815)	6.2403 (0.1832)	1.5190 (0.8457)	5.8749 (0.1575)
TRADESIZE	54.9837*** (<.0001)	24.2385*** (0.0003)	60.2258*** (<.0001)	25.1935*** (<.0001)
REPORTLAG	0.0586 (0.3887)	0.0769** (0.0106)	0.0232 (0.6684)	0.0702** (0.0122)
R ²	3.96%	3.59%	5.77%	4.26%
F-test ^a	$\alpha_2 + \alpha_3$	$\beta_2 + \beta_3$	$\alpha_2 + \alpha_3$	$\beta_2 + \beta_3$
P-value	0.2666	0.6445	0.4034	0.6119

	P-value	P-value
Pre-Reg FD ^b : test if $\alpha_2 = \beta_2$	0.0877	0.0910
Post-Reg FD ^c : test if $\alpha_2 + \alpha_3 = \beta_2 + \beta_3$	0.3226	0.5507

This table reports results of regression (1) and (2) in columns (1) and (3), and columns (2) and (4), respectively, for the sample of 7,019 insider purchases (in Panel A) and 7,173 insider sales (in Panel B). The regressions are estimated with year fixed effects. The dependent variable, $ATR_LRG_{Trade_File}$, equals $AVOL_LRG_{Trade_File}$ in column (1) and $ATRADE_LRG_{Trade_File}$ in column (3). The dependent variable, $ATR_SML_{Trade_File}$, equals $AVOL_SML_{Trade_File}$ in column (2) and $ATRADE_SML_{Trade_File}$ in column (4). Variables are defined in the Appendix. P-values relate to t -statistics corrected for clustering of standard errors by firm and are reported in parentheses below the related coefficient estimates.

^a F-test of the investors' response to profitable relative to unprofitable insider trades in the post-Reg FD period.

^b F-test of the difference between large versus small investors' response to profitable relative to unprofitable insider trades in the Pre-Reg FD period, using seemingly unrelated regression estimation.

^c F-test of the difference between large versus small investors' response to profitable relative to unprofitable insider trades in the Post-Reg FD period, using seemingly unrelated regression estimation.

Table 10
Effect of Reg FD on the Net-buying Response to Insider Trades
in the Post-trading-Pre-filing Window
Estimated Separately for Insider Purchases and Insider Sales

$$\begin{aligned} \text{ANB_LRG}_{\text{Trade_File}} = & \gamma_0 + \gamma_1 \text{POSTFD} + \gamma_2 \text{PROFIT} + \gamma_3 \text{POSTFD} * \text{PROFIT} + \\ & \gamma_4 \text{MKTVOL}_{\text{Trade_File}} + \gamma_5 \text{SIZE} + \gamma_6 \text{BM} + \gamma_7 \text{PRET} + \gamma_8 \text{EARN SURP}_{\text{Trade_File}} \\ & + \gamma_9 \text{TRADE SIZE} + \gamma_{10} \text{REPORTLAG} + \varepsilon_L \end{aligned} \quad (3)$$

$$\begin{aligned} \text{ANB_SML}_{\text{Trade_File}} = & \theta_0 + \theta_1 \text{POSTFD} + \theta_2 \text{PROFIT} + \theta_3 \text{POSTFD} * \text{PROFIT} + \\ & \theta_4 \text{MKTVOL}_{\text{Trade_File}} + \theta_5 \text{SIZE} + \theta_6 \text{BM} + \theta_7 \text{PRET} + \theta_8 \text{EARN SURP}_{\text{Trade_File}} \\ & + \theta_9 \text{TRADE SIZE} + \theta_{10} \text{REPORTLAG} + \varepsilon_S \end{aligned} \quad (4)$$

Panel A: Insider Purchases

	ANETVOL _{Trade_File}		ANETTRADE _{Trade_File}	
	Large	Small	Large	Small
	Estimate (P-value)	Estimate (P-value)	Estimate (P-value)	Estimate (P-value)
Intercept	-0.0145 (0.9465)	0.2066*** (0.0086)	-0.0937 (0.5301)	0.2247*** (0.0011)
POSTFD	0.0096 (0.9189)	-0.0631** (0.0266)	0.0205 (0.7454)	-0.0717*** (0.0058)
PROFIT	0.0761** (0.0206)	0.0074 (0.5712)	0.0664** (0.0266)	0.0054 (0.7287)
POSTFD*PROFIT	-0.1290* (0.0573)	0.0220 (0.3503)	-0.0721* (0.0753)	0.0136 (0.4173)
MKTVOL _{Trade_File}	-9.0768 (0.6917)	-3.7750 (0.6421)	4.7759 (0.7595)	-2.7390 (0.7056)
SIZE	0.0090 (0.3718)	0.0020 (0.6199)	0.0018 (0.8061)	-0.0040 (0.2763)
BM	-0.0282 (0.5029)	-0.0216* (0.0797)	0.0202 (0.4993)	-0.0240** (0.0385)
PRET	-0.0151 (0.6334)	-0.0415*** (0.0007)	-0.0230 (0.3318)	-0.0319*** (0.0043)
EARN SURP _{Trade_File}	3.4900 (0.3292)	-0.8398 (0.4648)	0.5931 (0.8173)	-0.5567 (0.5825)
TRADE SIZE	10.9814 (0.2297)	-4.4466 (0.2388)	7.0789 (0.3414)	-3.8638 (0.2579)
REPORTLAG	0.0028 (0.9174)	-0.0301** (0.0107)	0.0159 (0.4019)	-0.0246** (0.0140)

R^2	0.518%	1.23%	0.189%	1.36%
F-test ^a	$\gamma_2 + \gamma_3$	$\theta_2 + \theta_3$	$\gamma_2 + \gamma_3$	$\theta_2 + \theta_3$
P-value	0.3754	0.1871	0.7819	0.3685
Pre-Reg FD ^b : test if $\gamma_2 = \theta_2$		P-value	P-value	
		0.0507	0.0677	
Post-Reg FD ^c : test if $\gamma_2 + \gamma_3 = \theta_2 + \theta_3$		0.2156	0.3656	

Table 10 (continued)

Panel B: Insider Sales

	ANETVOL _{Trade_File}		ANETTRADE _{Trade_File}	
	Large	Small	Large	Small
	Estimate (P-value)	Estimate (P-value)	Estimate (P-value)	Estimate (P-value)
Intercept	-0.3768** (0.0204)	-0.1852*** (0.0080)	-0.2768** (0.0144)	-0.2372*** (0.0003)
POSTFD	-0.0531 (0.3063)	-0.0170 (0.4657)	-0.0521 (0.1676)	-0.0106 (0.6197)
PROFIT	-0.0669*** (0.0043)	-0.0149 (0.1725)	-0.0390** (0.0210)	-0.0063 (0.5420)
POSTFD*PROFIT	0.0834** (0.0474)	0.0000 (0.9979)	0.0557* (0.0628)	-0.0093 (0.5468)
MKTVOL _{Trade_File}	8.9602 (0.5867)	13.2385* (0.0518)	30.7565*** (0.0080)	20.1504*** (0.0022)
SIZE	0.0369*** ($<.0001$)	0.0079** (0.0160)	0.0177*** (0.0040)	0.0053* (0.0919)
BM	0.0861* (0.0601)	0.0171 (0.3076)	0.0612* (0.0728)	0.0168 (0.3128)
PRET	-0.0172 (0.3760)	0.0059 (0.4564)	-0.0308** (0.0304)	-0.0005 (0.9522)
EARN SURP _{Trade_File}	0.2810 (0.9136)	-0.7315 (0.6098)	1.8348 (0.4151)	-0.3410 (0.7989)
TRADE SIZE	6.1824 (0.1715)	2.1244 (0.2380)	0.5710 (0.8604)	1.7722 (0.3015)
REPORTLAG	0.0039 (0.8783)	0.0134 (0.2123)	-0.0194 (0.2586)	0.0168* (0.0970)
R ²	0.963%	0.228%	1.024%	0.774%
F-test ^a	$\gamma_2 + \gamma_3$	$\theta_2 + \theta_3$	$\gamma_2 + \gamma_3$	$\theta_2 + \theta_3$
P-value	0.6381	0.2305	0.5025	0.1916

Pre-Reg FD ^b : test if $\gamma_2 = \theta_2$	P-value 0.0446	P-value 0.0890
Post-Reg FD ^c : test if $\gamma_2 + \gamma_3 = \theta_2 + \theta_3$	0.4250	0.2661

This table reports results of regression (3) and (4) in columns (1) and (3), and columns (2) and (4), respectively, for the sample of 7,019 insider purchases (in Panel A) and 7,173 insider sales (in Panel B). The regressions are estimated with year fixed effects. The dependent variable, $ANB_LRG_{Trade_File}$, equals $ANETVOL_LRG_{Trade_File}$ in column (1) and $ANETTRADE_LRG_{Trade_File}$ in column (3). The dependent variable, $ANB_SML_{Trade_File}$, equals $ANETVOL_SML_{Trade_File}$ in column (2) and $ANETTRADE_SML_{Trade_File}$ in column (4). Variables are defined in the Appendix. P-values relate to t -statistics corrected for clustering of standard errors by firm and are reported in parentheses below the related coefficient estimates.

^a F-test of the investors' response to profitable relative to unprofitable insider trades in the post-Reg FD period.

^b F-test of the difference between large versus small investors' response to profitable relative to unprofitable insider trades in the Pre-Reg FD period, using seemingly unrelated regression estimation.

^c F-test of the difference between large versus small investors' response to profitable relative to unprofitable insider trades in the Post-Reg FD period, using seemingly unrelated regression estimation.

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Appendix: Variable Definitions

AVOL_SML_{Window} (AVOL_LRG_{Window}) = Small (Large) investors' average daily abnormal trading volume (i.e., number of shares traded) over the window of interest (i.e., **Pre_File** or **Post_File**), calculated by subtracting the average daily trading volume of small (large) investors of a firm during the benchmark window from the average daily trading volume of small (large) investors during the window of interest, scaled by the average daily trading volume of small (large) investors during the benchmark window.

ATRADE_SML_{Window} (ATRADE_LRG_{Window}) = Small (Large) investors' average daily abnormal number of trades over the window of interest (i.e., **Pre_File** or **Post_File**), calculated by subtracting the average daily number of trades made by small (large) investors of a firm during the benchmark window from the average daily number trades made by small (large) investors during the window of interest, scaled by the average daily number of trades made by small (large) investors during the benchmark window.

ANETVOL_SML_{Window} (ANETVOL_LRG_{Window}) = Small (Large) investors' average daily abnormal net-buy (i.e., buy less sell) in terms of number of shares (i.e., volume) over the window of interest (i.e., **Pre_File** or **Post_File**), calculated by subtracting small (large) investors' average daily net-buy volume during the benchmark window from small (large) investors' average daily net-buy volume during the window of interest, scaled by the average daily trading volume of small (large) investors during the benchmark window.

ANETTRADE_SML_{Window} (ANETTRADE_LRG_{Window}) = Small (Large) investors' average daily abnormal net-buy in terms of number of trades (i.e., buy less sell) over the window of interest (i.e., **Pre_File** or **Post_File**), calculated by subtracting small (large) investors' average daily number of net-buy trades during the benchmark window from small (large) investors' average daily number of net-buy trades during the window of interest, scaled by the average daily number of trades made by small (large) investors during the benchmark window.

Pre_File = Pre-filing window, which begins 10 trading days prior to the insider trade date and ends one day prior to the SEC filing date.

Post_File = Post filing window from day +1 to day +4, where day 0 is the insider-trade filing date.

Benchmark: Benchmark window, including 20 trading days, ending 10 trading days prior to the insider trade date. Days that fall in a [-3, +3] window around an earnings announcement are excluded.

PROFIT = An indicator variable that equals one if the 6-month buy-and-hold market-adjusted stock return after the insider transaction date is positive for insider purchases and negative for insider sales, zero otherwise.

POSTFD = An indicator variable that equals one if an insider transaction date is after October 23, 2000, and zero otherwise.

SIZE = Firm size, measured as the natural logarithm of market value of equity (in millions), where market value of equity is the product of the stock price and the number of common shares outstanding at the end of the prior fiscal quarter.

BM = Book to market ratio, measured as the book value of equity divided by the market value of equity at the end of the prior quarter.

PRET = Buy-and-hold 6-month market-adjusted stock return before the insider transaction date.

EARNSURP = Earnings surprise, measured as the difference between the quarterly EPS and the EPS of the same quarter of the previous year, deflated by the closing share price at the end of the prior quarter.

AEARNSURP = Absolute value of EARNSURP.

MKTVOL_{window} = The average daily percentage of all NYSE/AMEX/NASDAQ firms' outstanding shares traded over respective windows.

TRADESIZE = Number of shares purchased/sold by the top five executives (CEO, Chairman, CFO, COO, and Vice President) as reported in Form 4, divided by common shares outstanding.

REPORTLAG = The natural logarithm of one plus the number of trading days between the insider transaction date and the SEC filing date.