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Managerial and Investor Responses to Disclosure Regulation: The Case of Reg FD and Conference Calls

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ABSTRACT: This paper investigates the effect of regulation that mandates open access to information on managers' disclosure choices and investors' reactions to disclosures. The recently passed Regulation FD (Reg FD) requires firms to make material disclosures broadly available. Using a sample of firms that previously restricted access to conference calls and a sample of firms that voluntarily allowed unlimited access to their calls in the pre-Reg FD period, we examine the effect of the new rule on managers' decisions regarding the timing, use, and information content of calls, as well as the effect on investors' trading behavior during the call. Our results indicate that Reg FD had a significant negative impact on managers' decisions to continue hosting conference calls and on their decisions regarding the optimal time to hold the call. However, contrary to the concerns of many critics, the magnitudes of these changes are not large. We do not find evidence that Reg FD decreased the amount of information disclosed during the call period, contrary to the concerns of Reg FD opponents. Finally, we find evidence that the new rule increased price volatility for firms that previously restricted access to their calls (relative to firms that previously held open calls) and that the amount of individual investor trading increased following the rule change. Overall, our results suggest that Reg FD impacted trading during the conference call window for firms most affected by the new regulation.

Keywords: *disclosure regulation; Regulation FD; disclosure policy; individual investor trading; price volatility.*

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I. INTRODUCTION

In August 2000, the Securities and Exchange Commission (SEC) passed Regulation FD (hereafter Reg FD), a new disclosure rule that prohibits firms from disclosing material information to select groups of market participants.[1] Reg FD was one of the most controversial rules passed by the SEC, generating nearly 6,000 comment letters and resulting in a rare split-vote decision (SEC 2000). Proponents of the rule argue that the integrity of the capital markets is compromised when certain market participants are privy to information that is not broadly disclosed and that prohibiting selective disclosure will ''level the playing field'' for individual investors (see, e.g., Weber 2000a; Shiller 2000; SEC 2000). On the other hand, critics argue that, by requiring firms to make material disclosures broadly available, Reg FD will result in firms disclosing less high-quality information for fear that competitors will exploit and/or individual investors will misinterpret the information provided (Hassett 2000; Weber 2000b; Opdyke 2000). This study adds to our understanding of the effects of Reg FD on managers' disclosure policies and on investors' reactions to firms' disclosures by examining a common method of selective disclosure that was prohibited by Reg FD: restricted-access conference calls.

Determining the impact of Reg FD on the information environment is important to both academics and regulators. However, because the rule affected all firms at the same time, controlling for other time-period-specific factors is critical to properly identify the effects of the new regulation. We identify a sample of firms for which we do not expect the rule to have a significant impact. We use these firms as a control sample against which to compare the firms most directly affected by Reg FD. Specifically, we examine the effect of the new regulation on two sets of firms: those that restricted access to their calls to only selected analysts and professional investors in the pre-Reg FD period (''closed call'' firms) and those that voluntarily provided unlimited real-time access to conference calls prior to Reg FD (''open call'' firms). Before the new rule, managers were free to determine which investors and analysts would be allowed access to their calls and they could deny the media, individual investors, and competitors access to their calls if they were concerned about potential misuse of the information by these parties. We expect the impact of Reg FD to be more pronounced for firms that previously opted to host closed calls. Given that the new rule did not affect the level of access to calls for open call firms, these firms provide a benchmark sample that helps separate the effect of Reg FD from changes in the economy over the sample period.

We first examine the impact of Reg FD on managers' policies regarding conference calls. Critics argue that forcing firms to make disclosures broadly available will reduce the amount or quality of disclosures (Securities Industry Association [SIA] 2001). One extreme disclosure policy change managers could make to avoid disclosing sensitive information broadly is to forgo hosting conference calls entirely. Alternatively, if stopping calls is too

[1] The rule went into effect on October 23, 2000 and requires that ''when an issuer, or person acting on its behalf, discloses material nonpublic information to certain enumerated persons (in general, securities market professionals and holders of the issuer's securities who may trade on the basis of the information), the issuer must make public disclosure of that same information simultaneously (for intentional disclosures) or promptly (for non-intentional disclosures)'' (SEC 2000).

costly, managers could change the timing of their calls to reduce the impact of unsophisticated investors trading during the call period. Finally, managers could reduce the amount of information disclosed during the call.

Our findings suggest that Reg FD had an impact on firms' conference call policies, but, contrary to the concerns of many critics, the effects are not large. We find the proportion of firms discontinuing the use of conference calls in the post-Reg FD period to be significantly greater for closed call firms relative to open call firms, consistent with some firms electing to reduce their level of disclosure in response to Reg FD. We also find a significantly greater proportion of closed call firms changing their policies regarding the timing of their calls. However, the proportion of firms discontinuing calls and changing policies is small. We do not find a greater decrease in the information content of conference calls (as proxied by absolute value of returns). The latter result contradicts the claims of many critics that the new rule would reduce the quality or quantity of information disclosed. Overall, our results suggest that Reg FD did not have a large impact on the disclosure practices of closed call firms.

We investigate investors' trading responses to Reg FD by examining changes in price volatility and individual investor trading activity during the conference call period (i.e., the 75-minute period during which the call occurs). Prior research suggests that providing broad access to information increases the level of informedness in the market, thereby increasing price volatility (Bushee et al. 2003) (hereafter BMM). Critics also argue that greater price volatility will ensue as a result of information being disseminated to less sophisticated investors without the benefit of interpretation by intermediaries such as financial analysts (SIA 2001). However, other Reg FD studies have failed to find an increase in price volatility around earnings announcements (a period when conference calls are frequently held) as a result of the new regulation (Shane et al. 2001; Bailey et al. 2003). We provide additional evidence on this issue by comparing the effects of the new regulation on firms expected to be significantly impacted to those where no impact is expected.

We compare the difference in price volatility and in small trades between the open and closed call firms before and after Reg FD. Consistent with prior research, we find open call firms experience significantly greater price volatility and number of small trades during call periods than closed call firms in the pre-Reg FD period. However, in the post-Reg FD period, we find no significant difference in price volatility between the two sets of firms. Moreover, closed call firms exhibit a significantly greater increase in price volatility between the pre- and post-Reg FD periods than open call firms. Our findings suggest that broadened access to disclosure increases price volatility, consistent with increased informedness in the market and with concerns put forth by critics of the regulation. We find no significant difference in small trades between the two sets of firms in the post-Reg FD period, but closed call firms exhibit a statistically significant increase in small trades between the pre- and post-Reg FD periods, while open call firms do not. However, the increase in small trades for the closed call group relative to the open call group is not statistically significant at conventional levels. Overall, our results suggest that providing equal access to information allows individuals to capitalize on the information disclosed during the call and trade on the information in real-time.

Our paper is pertinent to the debate surrounding the impact of Reg FD. Studies on Reg FD provide mixed evidence on whether firms have reduced the amount or quality of information provided to the capital markets following the passage of the new rule. Shane et al. (2001) and Bailey et al. (2003) find no increase in stock price volatility; Shane et al. (2001) and Heflin et al. (2003) find no increase in analyst forecast accuracy; and Eleswarapu

et al. (2001) find no increase in bid-ask spreads on earnings announcement days. These studies suggest no deterioration in the information environment. In contrast, Mohanram and Sunder (2001) and Agarwal and Chadha (2002) find increases in analyst forecast errors, consistent with a decline in information quality. Similar to other studies, we find no increase in either price volatility or information content after Reg FD for our full sample of firms. However, when we focus on firms most directly impacted by the new rule—closed call firms—we do find an increase in price volatility associated with Reg FD. We also find evidence that Reg FD has ''leveled the playing field'' by allowing small investors in closed call firms to trade during the call period. Despite the increase in price volatility and small trades, Reg FD had only a small impact on the disclosure policies of closed call firms.

Our study differs from other Reg FD studies in two important respects. First, we condition on one aspect of disclosure policy clearly impacted by the new regulation—the access decision. By dividing our sample between firms more and less affected by the rule change, we partially control for economy-wide changes that may have affected all firms during the period of change.[2] Second, we focus on a specific disclosure event—conference calls—that allows us to examine managers' specific disclosure choices and market reactions to the disclosure event (using intraday trading data). The disadvantage of our approach is that we cannot rule out the possibility that firms have chosen a different mechanism of disclosure after Reg FD (in place of conference calls). Thus, unlike other studies, we cannot draw conclusions regarding changes in the *overall* information environment.[3] However, given the increased use of conference calls over the past decade, as well as the fact that conference calls are frequently cited as a primary selective disclosure mechanism (Levitt 1998), understanding the impact of Reg FD on conference calls is important from both a regulatory and academic perspective.

We contribute to prior work on the impact of providing unlimited, real-time access to disclosure. BMM find that providing such access results in greater price informedness stemming from more small trader involvement during open conference calls. However, these results are potentially confounded by the voluntary nature of open calls in the pre-Reg FD period. We examine the issue using a stronger experimental design, ''control group design with pre-test and post-test,'' which has fewer validity threats than a ''pre-test only'' design (Cook and Campbell 1979). The fact that we find similar increases in volatility and small trades for our closed call sample once these firms are required to host open calls supports our conclusion that the dissemination *mechanism* affects trading behavior and price formation.

The next section develops our predictions. Section III discusses our sample, empirical tests, and results. We provide concluding remarks in the final section.

II. HYPOTHESIS DEVELOPMENT

Changes in Managers' Disclosure Practices in Response to Reg FD

We first investigate changes managers made to their conference call policies in response to the new rule. Traditionally, conference calls were held primarily for the benefit of financial analysts and large investors. However, even prior to Reg FD, many firms voluntarily

[2] This design does not, however, control for any economy-wide changes that may have affected our open and closed call samples differently. We attempt to address this issue through sensitivity tests discussed later in the paper.

[3] Our study also differs from other studies examining the effect of Reg FD on price volatility (e.g., Shane et al. 2001; Bailey et al. 2003) in that we examine volatility in a 75-minute window around conference calls rather than three-day windows around earnings announcements, we use a more restricted sample (only firms hosting conference calls), and we use different measures of volatility.

provided open access to their calls. Prior research suggests that managers considered the costs and benefits of providing broad access to disclosures when deciding whether to open their calls to all parties (BMM). For closed call firms, the new rule changes the parties provided access to the call. If the costs of providing broad access to disclosure are high, then these firms will have incentives to change their call policies to minimize these costs. On the other hand, since Reg FD does not change the parties participating in the call for open call firms, we do not expect these firms to significantly change their policies.

We examine two changes managers could make to their conference call policies to minimize the cost of providing broad access to disclosures. First, a manager could discontinue calls if proprietary costs are high or if reducing disclosures would avoid excess volatility or mispricing resulting from ill-informed trading. However, given the popularity of conference calls, we expect that firms stop conducting calls only when these costs are particularly high (or the benefits of hosting calls are low).[4] Because of their prior decision to restrict access based on such cost concerns, we hypothesize that closed call firms are more likely to stop calls:

H1: Closed call firms are more likely than open call firms to stop hosting conference calls post-Reg FD.

Second, managers could change the time of day their calls are held. If managers are primarily concerned with unsophisticated investors misinterpreting the information disclosed during the call, then they have incentives to change when to host their calls (either during or after trading hours), depending on which time is most effective at reducing costs of misinterpretation. Hosting calls after trading hours discourages investors from trading immediately on the information and allows time for financial analysts to interpret and report on the information.[5] Conversely, nonprofessional investors are less likely to react to calls held during trading hours if the calls conflict with their work schedules and/or they have less time to digest the information. For example, information disclosed during after-hour calls may be subject to greater ''Internet chat room'' activity that increases the chance of misinterpretation. Although the direction is not clear, we predict that managers of closed conference call firms are more likely to modify their call timing post-Reg FD:

H2: Closed call firms are more likely than open call firms to change their policy on the timing of their calls post-Reg FD.

In addition to changing their call policies, managers could also change the amount or type of information disclosed during the call. Critics argue that managers, concerned about competitors gaining access to proprietary information or unsophisticated investors misinterpreting information during a call, will eliminate information from their calls (SIA 2001).[6]

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[4] Alternatively, firms that previously chose not to host conference calls might elect to start hosting calls if Reg FD reduced their ability to disseminate information through other mechanisms. In Section III, we provide descriptive data on the trend in conference call use over time, including the trend in initiating calls.

[5] Similar arguments are made to explain why firms tend to disclose bad news after trading hours (Patell and Wolfson 1982; Francis et al. 1992).

[6] It is possible that firms increase the information disclosed during conference calls post-Reg FD because managers shift information previously disclosed in private venues into the call. Because we examine only one disclosure event, the information disclosed during this event will affect, and be affected by, the information disclosed in other events. However, unless the amount of information shifted into the call differs between open and closed call firms, the effect of this shifting should not bias our results (although it will potentially depress the effect of any direct reduction in information for both groups of firms).

We expect this reduction of information content to be greater for closed than for open call firms:

> **H3:** Closed call firms are more likely than open call firms to reduce the amount/quality of information disclosed during the call post-Reg FD.

Because it is not often possible to obtain transcripts of conference calls, we use the absolute returns during the call period to proxy for the information content of the call. We recognize that this proxy is an inexact measure of changes in information quality, so our results should be interpreted cautiously.

Changes in Investors' Trading Behavior during Conference Calls in Response to Reg FD

We next investigate changes in investors' trading behavior during the call period in response to Reg FD. Allowing a larger and more diverse group of investors immediate access to new information should increase the overall level of informedness during the call, resulting in greater stock price volatility (Holthausen and Verrecchia 1990). BMM find results consistent with this argument for open call firms prior to Reg FD. However, because firms are not randomly assigned to open and closed call groups, self-selection is an issue. For example, if firms determine the disclosure mechanism based on the type of news being disclosed, then differences in news disclosed during calls may impact the volatility experienced during calls (Skinner 2003). The introduction of Reg FD, a mandatory disclosure change that impacts the call access decision for only one of two groups, allows for a stronger experimental design (''control group design with pre-test and post-test'') that has fewer validity threats than a ''pre-test only'' design (Cook and Campbell 1979, 103). Thus, the introduction of Reg FD provides an opportunity to examine the effects of broad information dissemination on informedness without the endogeneity problems associated with a voluntary disclosure choice.

Critics argue that Reg FD will result in greater price volatility because information is being disseminated without the benefit of analysis and interpretation by intermediaries such as financial analysts. A Securities Industry Association (2001) study of the costs and benefits of Reg FD states:

> The transformation to a paradigm of immediate and broad dissemination of data has severed the traditional relationship between information and accompanying analysis, inundating the public with raw data—with little or no differentiation as to what is significant and what is not. This contributes both to the reduction in the quality of information available to the public and to market volatility ...

Studies of the effects of Reg FD do not find an increase in price volatility during the three days surrounding earnings announcements (Shane et al. 2001; Bailey et al. 2003). We do not examine price volatility around earnings announcements, but we do examine it during calls held in association with earnings announcements. By examining the relative change in price volatility across firms that are more and less impacted by the rule change, we decrease the influence of other factors that affect general price volatility, increasing our ability to detect any effects of the rule change. By examining the impact on a specific disclosure event, we can more precisely measure the change in volatility associated with the disclosure. Our approach does not allow us to draw conclusions regarding changes in the *overall* level of volatility, and we do not attempt to do so. Nevertheless, the prior quote suggests that critics were concerned with market volatility that could occur because of the

''immediate and broad dissemination of data'' without the benefit of analysis—a situation characteristic of open calls.[7]

Because Reg FD does not change call access for open call firms, we do not expect the rule to affect price volatility for such firms. However, price volatility during the call window for closed call firms will increase if open access increases the level of informedness:

H4: Price volatility increases post-Reg FD for closed call firms relative to open call firms.[8]

We also investigate the effect of Reg FD on individual investor trading activity during the conference call period. BMM find that when firms voluntarily provide open access to calls prior to Reg FD, individual investors exploit their access and trade in real-time. Thus, Reg FD should have little effect on individual investor trading for open call firms.

Proponents of Reg FD argue that requiring firms to make material disclosures broadly available will ''level the playing field'' among investors.[9] If closed call firms restricted access to their calls prior to Reg FD because the costs of open access were high, then trading by individuals during the call period should increase post-Reg FD as individual investors trade on the information disclosed in the call. However, critics suggest there is little demand by individual investors for access to conference calls. One recent investor survey found that only 4 percent of respondents participate in calls (SIA 2001). Thus, closed call firms may have restricted access to their calls in the pre-Reg FD period because there was little demand for open access. If so, mandating open access to calls would not necessarily result in increased trading by individual investors. However, we believe the cost argument is more likely so we predict:

H5: Trading by individual investors increases post-Reg FD for closed call firms relative to open call firms.

III. EMPIRICAL TESTS

Data

Data on conference calls are obtained from two sources: Bestcalls.com (hereafter Bestcalls) and Thomson Financial's First Call database (hereafter First Call). The conference call list from Bestcalls is used to identify firms hosting open calls prior to Reg FD. Firms included in the conference call list provided by First Call but not included in the list provided by Bestcalls are considered pre-Reg FD closed call firms.

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[7] In addition, increased volatility during the call period is a concern to managers because the company is under intense scrutiny during the call period (Vinzant 2001), and any excess volatility can increase the perception of the firm's risk (Froot et al. 1992).

[8] Whereas H3 addresses managers' decisions about the information provided to investors, it also addresses the effect of providing information to a larger group of investors. We recognize, however, that prior studies have used price volatility as a measure of information content (e.g., Beaver 1968) and, although it is possible for prices to exhibit volatility without exhibiting a large price movement, empirically the two measures are highly correlated. To provide evidence that the variables measure separate constructs, we control for price volatility (absolute returns) in untabulated sensitivity tests of information content (price volatility).

[9] Consistent with this notion, Sunder (2002) finds significantly higher information asymmetry for firms that restrict access to their calls in the pre-Reg FD period. In addition, Zitzewitz (2002) shows a decrease in the information content of forecasts made on single forecast days (relative to multi-forecast days), suggesting that less information is being disclosed privately. This result is consistent with Heflin et al. (2003) that firms make more voluntary disclosures in the post-Reg FD period and with Rees and Adut (2002) that whisper forecasts are relatively less informative after passage of the rule (assuming whisper forecasts are selective disclosures).

For our main tests, the pre-Reg FD sample period is March 1999 (the start of the Bestcalls database) to June 2000. We end our pre-Reg FD sample period prior to the actual passage of the rule to avoid possible anticipation effects. We include conference calls conducted in the post-Reg FD period (October 23, 2000 to October 30, 2001) using data provided by First Call. Although Reg FD does not explicitly prohibit closed calls, it does require that no material information be released during such calls. Because it is unlikely that managers could argue that no material information is released during a conference call, we treat all calls as open in the post-FD period. To the extent we include in our analysis calls that remained closed in the post-FD period, our ability to find significant changes for closed call firms is weakened.

For the majority of our tests, we limit our sample to conference calls that are held in conjunction with earnings announcements.[10] We classify calls as being related to earnings announcements if they fall within a nine-day window (–3 to +5) around the earnings announcement date (Bowen et al. 2002). Our tests of information content, price volatility, and small trades are conducted at the call level. Our tests of changes in the use and timing of calls are conducted at the firm level because, as discussed later, evidence suggests that the use and timing of calls is a policy choice, rather than an opportunistic, quarterly decision.

Changes in Conference Call Practices

Trends in Conference Call Use

We begin our examination of the effect of Reg FD on firms' conference call policies by providing descriptive statistics on the trend in conference call use over time. The Bestcalls database has an insufficient time-series to examine long-term trends, so we use the First Call database for this purpose.

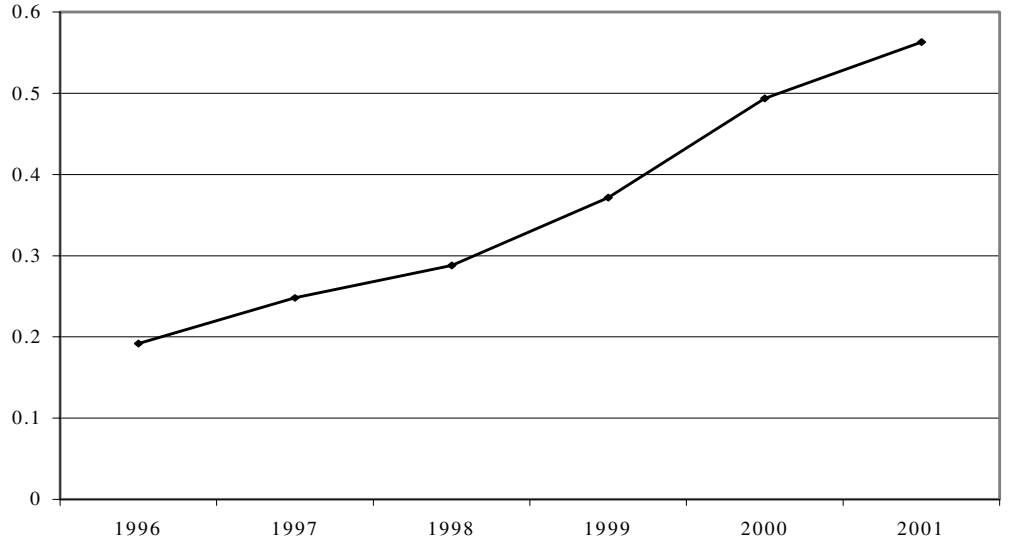
We first calculate the percentage of firms hosting calls over the period 1996–2001 based on firms listed on both CRSP and Compustat. We classify firm-years from November to October to coincide with the adoption of Reg FD (e.g., 1996 represents the period November 1995 to October 1996) so that 2001 represents the post-Reg FD period. We match these firms to those hosting calls during the same year as reported on First Call. We divide the conference call users by the total number of firms listed on CRSP/Compustat in that year. Figure 1, Panel A depicts the trend in conference call use over this period. Not surprisingly, the proportion of firms hosting calls has increased, consistent with anecdotal and survey evidence of the growing popularity of conference calls as a disclosure mechanism (National Investor Relations Institute [NIRI] 2002; Skinner 2003). The growth between the years 2000 and 2001 is somewhat less than that in earlier years, possibly because Reg FD reduced (increased) incentives to start (stop) hosting calls. An alternative explanation is that call use reached a natural saturation point, where fewer firms found the practice beneficial. The first explanation would impact both the rate of initiation of new calls as well as the rate of discontinuation of existing conference call users; the second would likely only affect the rate of initiation.

Panels B and C of Figure 1 depict the trend in conference call adoption and discontinuation. The proportion of firms initiating calls is determined by computing the number of firms not hosting calls in the prior year that (1) continue to be listed on CRSP/Compustat in the current year and (2) appear on First Call in that year. The proportion of firms

[10] An exception is our analysis of firms that have stopped conducting conference calls. For this analysis, we classify firms as discontinuing the use of conference calls only if they have not conducted *any* calls in the post-Reg FD period.

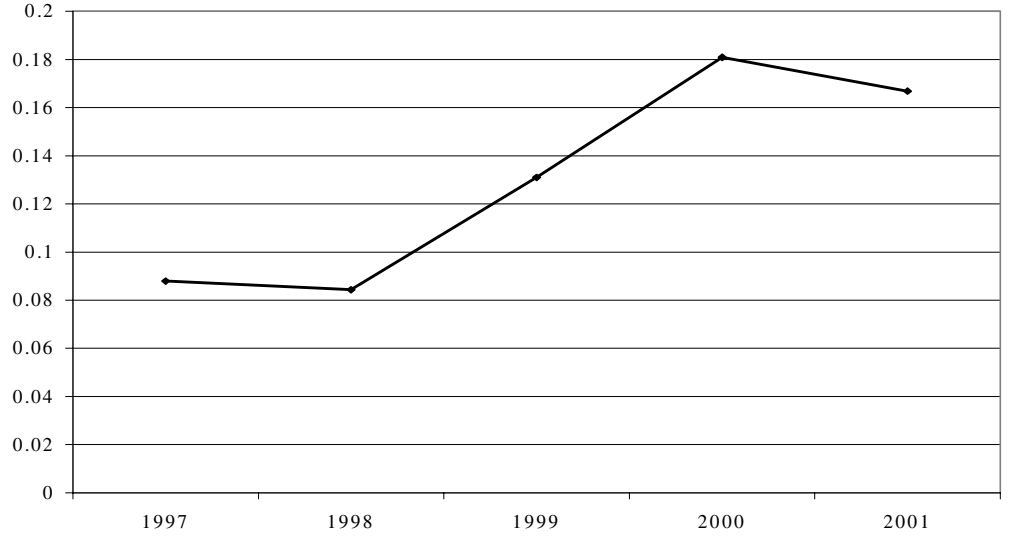
FIGURE 1
Trends in Conference Call Use over Time

Panel A: Proportion of Firms Hosting Conference Calls By Year



This figure plots the proportion of firms hosting conference calls in a given year. We gather firms listed on CRSP and Compustat with year-ends falling in the year indicated and determine if the firm is listed on the First Call database during the same period. Firms listed on First Call are considered conference call users. We divide this number by the total number of firms listed on CRSP/Compustat. For all figures, years are defined as November-October to coincide with the adoption of Reg FD. Thus, 2001 is the first year following the adoption of Reg FD.

Panel B: Proportion of Firms Initiating Conference Calls By Year

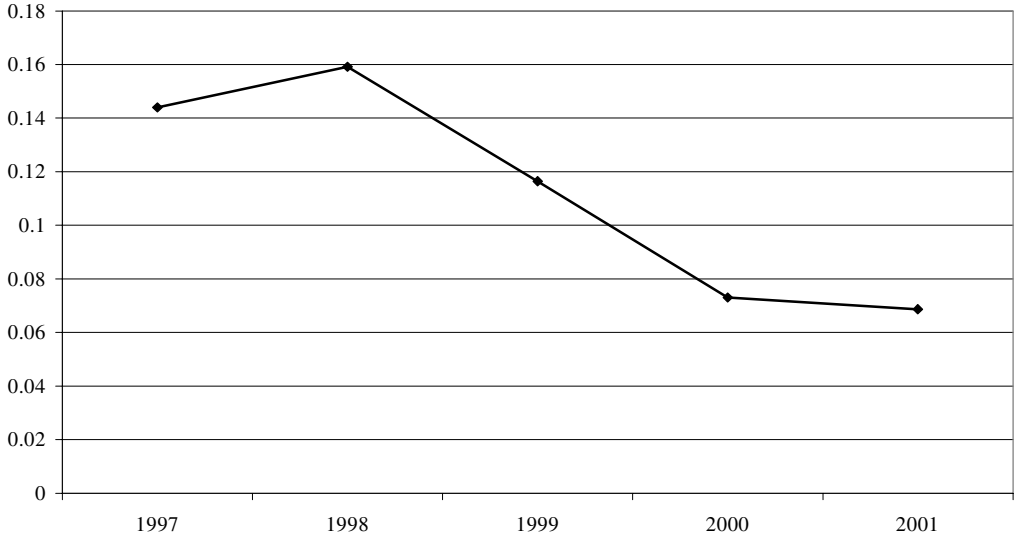


This figure plots the proportion of firms initiating conference calls in a given year. As in Panel A, we classify firms as either hosting or not hosting conference calls in a particular year. We then determine the number of firms classified as not hosting conference calls in the prior year that appear on CRSP and Compustat in the year indicated. Of these firms, we determine the number listed on the First Call database in the year indicated. We classify these firms as having initiated conference calls, and divide this number by the total number of firms not hosting calls in the prior year (that appear on CRSP/Compustat in the year indicated).

(*continued on next page*)

FIGURE 1
(continued)

Panel C: Proportion of Firms Discontinuing Conference Call Use By Year



This figure plots the proportion of firms discontinuing conference calls in a given year. We identify firms listed on the First Call database in the prior year that do not appear in the First Call database in the year indicated. Firms delisting in the year indicated are eliminated. The remaining firms are considered to have discontinued conference calls. We divide this number by the number of firms hosting calls in the prior year.

discontinuing calls is determined by computing the number of firms listed on First Call in the prior year that do not appear on First Call in the current year (and that have not delisted).[11] The two figures suggest a slow down in both the rate of initiation and discontinuation of calls in 2001, consistent with Reg FD reducing (increasing) the incentive to start (stop) hosting conference calls. The slow down in the rate of firms discontinuing calls is less consistent with the alternative explanation that conference call use has reached a natural saturation point. However, without expectations about the rates of initiation and

[11] Measurement error exists in both statistics to the extent (1) firms host conference calls sporadically and (2) the First Call database is not comprehensive. We believe the second issue is a possibility. The percentage of firms hosting calls in the period around all four quarterly earnings announcements is approximately 33 percent. We do not believe this is due to firms hosting calls sporadically since any opportunistic use of calls is unlikely to persist in equilibrium (i.e., investors would likely infer bad news from firms failing to host a call that had previously held them). To provide some evidence on this matter, we randomly selected 25 firms that, according to the database, held at least one call in 2001 but did not host calls in all four quarters. We emailed their investor relations department to inquire about their 2001 calls. In 10 out of the 11 responses we received, the database was wrong; the firms did host a call in conjunction with all four quarterly earnings announcements. In the 11th case, the database was correct and the firm held only one call, in conjunction with its annual earnings announcement. As long as these errors are random, they should not impact the general trend over time. In addition, the use of annual periods to classify firms is less likely to result in problems from missing data (i.e., the database is less likely to be missing data for a particular firm for an entire year). Nevertheless, we recognize this limitation and present these data for descriptive purposes only.

discontinuation absent Reg FD, it is difficult to rule out this explanation, which highlights the difficulty of assessing the impact of Reg FD from time trend data alone.[12]

The Decision to Discontinue Conference Calls

Of the firms included in the pre-Reg FD sample, we are able to positively identify 1,226 closed call firms and 1,639 open call firms as continuing to exist in the post-Reg FD period (i.e., not acquired or delisted). We then identify firms that are no longer listed on the First Call database in the post-Reg FD period. To ensure these firms have actually stopped hosting calls, we searched Yahoo!Finance, Dow Jones News Retrieval Service, and the company's website for any evidence that the company hosted a call.[13] Of the 1,226 closed call firms, 44 (3.6 percent) discontinued hosting calls in the post-FD period (Table 1, Panel A). We compare the proportions of closed and open call firms discontinuing calls post-Reg FD, under the assumption that open call firms do not discontinue calls as a result of the new regulation (and thus serve as our benchmark). The proportion of closed call firms that discontinued calls in the post-Reg FD period is about double the proportion of open call firms that stopped using calls (1.8 percent), and the difference between the two groups is statistically significant ($\chi^2(1) = 9.35$, $p < 0.0001$).[14] This result is consistent with our first hypothesis. However, the relatively small percentage of firms discontinuing the use of calls indicates the ''stickiness'' of disclosure policies. Once a disclosure policy is adopted, it is costly to change because of negative inferences regarding the underlying information being withheld. Thus, while it appears Reg FD affected the amount of information provided to the capital markets by reducing the number of firms willing to host conference calls, the impact is relatively small.

An alternative explanation for the higher incidence of discontinued calls among closed call firms after Reg FD is that there are more closed call firms for which the costs of hosting a public call are large or the benefits of hosting calls are small. To provide some evidence on this issue, we use a logit model to estimate the probability of discontinuing calls after Reg FD as a function of the pre-Reg FD access decision (open or closed) and potential determinants of firms' decisions to both host calls and host *open* calls. Prior research finds that larger firms with strong recent performance (sales growth, abnormal returns, return-on-assets), low financial statement informativeness (market-to-book ratio), and greater investor interest (analyst following and institutional ownership) are more likely to host calls (Frankel et al. 1999; Tasker 1998). In addition, BMM find that the decision

[12] In fact, it is possible that rates in 2001 are greater than they would have been absent Reg FD (i.e., the slowdown would have been even greater had it not been for Reg FD). The value of our research design is that open call firms serve as a benchmark against which to compare the decisions of firms most affected by the regulation (closed call firms). Its weakness is our inability to compare the rate of initiation, as the open/closed call distinction does not exist for firms that started hosting calls after Reg FD.

[13] We randomly selected ten companies and called their investor relations department. We verified (without exception) that these firms stopped conducting conference calls.

[14] Because of the additional steps taken to ensure that the firms no longer listed on First Call actually discontinued calls, the percentage of firms stopping calls is much smaller than the percentage reported in Figure 1, Panel B for the year 2001 (6.8 percent). If we disregard the additional steps and classify all firms no longer listed on First Call as stopping calls, we still find a significantly higher percentage of closed call firms discontinuing the use of calls (i.e., the additional steps do not change the relative percentages between the two groups). In addition, it is possible that in any given period closed call firms are more likely to discontinue hosting calls. To address this concern, we divide the pre-Reg FD period into two subperiods (3/99–10/99 and 1/99–6/00) and conduct a similar analysis to that reported in the paper. We do not find a significantly higher rate of stopping calls for the closed call group (the percentage is actually higher for the open call group). However, given the limited history of the Bestcalls database, the two subperiods are relatively short windows, which increases the measurement error in classifying firms as having discontinued calls (particularly given the potential for missing data—see footnote 11).

to host *open* calls is related to proxies for the demands of non-professional investors for open access to information (number of shareholders, average share turnover, and analyst and institutional investor following) and, to some extent, proxies for higher complexity of information provided in the call (financial statement informativeness, percent of intangible

TABLE 1
Changes in Conference Call Policy after Reg FD

Panel A: Proportion of Firms Discontinuing the Use of Conference Calls Post-Reg FD

Pre-Reg FD Conference Call Access[a]	Continued Conference Calls Post-Reg FD	Discontinued Conference Calls Post-Reg FD[b]
Closed Calls in Pre-Reg FD period	1,182	44
	96.4%	3.6%
Open Calls in Pre-Reg FD period	1,610	29
	98.2%	1.8%

$\chi^2 = 9.35$, p = .0001

Panel B: Logit Model of the Determinants of Firms Discontinuing Conference Calls Post-Reg FD

Dependent Variable: 1 if Firm Discontinued Calls Post-Reg FD, 0 if Firms Continued Calls Post-Reg FD

Pre-Reg FD Levels of Control Variables[c]		Post- versus Pre-Reg FD Changes in Control Variables[d]	
Intercept	−3.016*	Intercept	−3.442**
D_CLOSED	1.108**	*D_CLOSED*	0.707**
%POS	0.808	Δ*%POS*	0.326
LMV	−0.494**	Δ*LMV*	−0.126
SGR	−0.530	Δ*SGR*	0.843*
RET	0.162	Δ*RET*	0.008
ROA	0.305	Δ*ROA*	−0.688
BP	0.154	Δ*BP*	0.202
LNOWN	−0.120	Δ*LNOWN*	−0.309
NAL	0.003	Δ*NAL*	−0.129**
PIH	−2.082**	Δ*PIH*	−2.407**
MTURN	−1.804	Δ*MTURN*	−2.635
VREV	0.049	Δ*VREV*	−1.033
IRSQ	0.438	Δ*IRSQ*	−0.778
INTAN	−1.122	Δ*INTAN*	0.870
D_HTECH	0.120	*D_HTECH*	−0.156
LNEMP	−0.056	Δ*LNEMP*	0.391
LTIME	0.336	*LTIME*	−0.084

*, ** Significantly different from zero at the 0.05 and 0.01 levels, respectively (two-tailed).

[a] The open (closed) conference call sample is comprised of calls made by firms that provided unlimited (restricted) access to their calls in the pre-Reg FD period, which spans March 1999 to June 2000.

[b] Firms are classified as having discontinued the use of conference calls if: (1) they do not have calls listed in the First Call database, (2) we are able to positively identify them as continuing to exist as an entity in the post-FD period (i.e., not acquired or delisted), and (3) no record of a conference call can be found on either Yahoo!Finance or Dow Jones News Retrieval Service.

(*continued on next page*)

TABLE 1 (continued)

[c] Variables are defined as follows (Compustat numbers are in parentheses):

D_CLOSED = 1 if pre-FD calls were closed, and 0 if they were open;
%POS = the percent of positive seasonal random walk earnings changes (Q#8) over the eight quarters prior to Reg FD;
LMV = the log of market value of equity (#25 × #24);
SGR = the sales growth over the prior year (#12);
RET = the cumulative market-adjusted returns for the year prior to Reg FD (1999) (CRSP);
ROA = return-on-assets (#18/#6);
BP = the book-to-market ratio (#60/(#25 × #24));
LNOWN = log of number of shareholders (#100) at end of fiscal year minus the log of mean number of shareholders in same size decile as firm;
NAL = the largest monthly number of analyst earnings estimates during year as reported on Thomson Financial's I/B/E/S database;
PIH = the shares held by institutions from Spectrum ÷ total shares from CRSP at end of year;
MTURN = the mean monthly trading volume ÷ average shares outstanding during 1999 as reported on CRSP;
VREV = the standard deviation of quarterly revenue over 16 quarters (Q#2);
IRSQ = the R^2 from a regression of market-adjusted returns on annual change in earnings and level of earnings (both deflated by prior price) estimated by two-digit SIC over the fiscal years 1997–1999;
INTAN = intangible assets ÷ total assets (#33/#6);
D_HTECH = 1 for high-tech SIC Codes 2833–36, 3612–13, 3621–29, 3651–52, 3661–69, 3671–2, 3674, 3695, 4812–22, 4832–99, 7370–79, and 0 otherwise;
LNEMP = the log of number of employees (#29) at end of fiscal year minus the log of mean number of employees in same size decile as firm; and
LTIME = the log of the number of months listed on CRSP.

Because the decision to provide open or closed conference calls pertains to calls made primarily in 1999–2000, we use data for 1999 fiscal year-ends from the Compustat dataset and from the calendar year 1999 for CRSP, Spectrum, and Thomson Financial's I/B/E/S database. Size deciles for adjusting *LNOWN* and *LNEMP* are based on total sales.

[d] All variables with the "Δ" prefix are changes between post-FD and pre-FD values of the variables. For the post-FD variables, we use data from the firm's first fiscal year after Reg FD (2000–01) for Compustat variables and from the calendar year 2001 for CRSP, Spectrum, and Thomson Financial's I/B/E/S database. The post-FD *%POS* variable is defined using the first eight quarters subsequent to Reg FD. Because *D_HTECH* and *LTIME* do not change in the post-FD period, we include the level variable as controls in the changes specification (results are similar if these variables are omitted).

assets, and membership in a high-tech industry). We also include proxies for employee demands for information and the length of time listed (BMM). Finally, because initiation of Reg FD roughly corresponds with the downturn in the U.S. economy, we include the proportion of positive earnings surprises over the eight-quarter sample period to proxy for any macroeconomic effects on conference call policies. We estimate the model using both the pre-FD levels of these variables as well as changes in the control variables around Reg FD to ensure that some of the controls did not change disproportionately more for closed call firms than for open call firms (see Table 1, Panel B for definitions of the variables).

Panel B of Table 1 provides results of the logit model. The coefficient on the indicator for closed call firms (*D_CLOSED*) is significantly positive in both the levels and changes specifications, consistent with our first hypothesis that Reg FD is associated with a greater incidence of discontinued calls for closed call firms. The levels results also indicate that smaller firms with low institutional ownership are more likely to discontinue calls, consistent with the benefits of conference calls being low for smaller, less followed firms. The changes results suggest that decreases in both analysts and institutional investor following are associated with firms stopping calls, although the causality of this relation cannot be inferred from our analysis.

In summary, we find a significantly greater proportion of closed call firms discontinuing calls after Reg FD. These findings suggest that the costs of providing broad access to disclosures are more likely to outweigh the benefits for closed call firms.

The Timing of Conference Calls

We next investigate whether Reg FD influenced firms' policies regarding the timing of conference calls. Calls held during trading hours are defined as those started between 9:30 AM and 4:00 PM EST. An examination of the timing of individual calls in the pre-FD period suggests that a vast majority of firms (87 percent) have a consistent policy of either always hosting their calls during trading hours or always hosting their calls after trading hours. Thus, we conduct our analysis at the firm level rather than the individual call level because an analysis treating individual calls as independent is not appropriate.

We require firms to have at least two calls in both the pre-Reg FD and post-Reg FD periods in order to identify firms with a consistent policy regarding the timing of their calls. We omit firms that do not appear to have a consistent pre-Reg FD policy regarding the timing of their calls (13 percent of the sample). We determine whether firms with a consistent pre-Reg FD policy continued their policies in the post-Reg FD period. Firms switching away from their pre-Reg FD policy either switch to the opposite policy (always hosting calls during or after trading hours in the post-Reg FD period) or switch to no consistent policy regarding the timing of their calls (exhibit a mix of call times in the post-Reg FD period).

Table 2, Panel A reports the frequency of firms changing policies following passage of the rule for the entire sample. Two facts are apparent from this table. First, a policy of always hosting calls during trading hours is far more common than a policy of always hosting calls after trading hours (751 versus 84). Second, disclosure policies are ''sticky''—approximately 76 percent (85 percent) of firms with a pre-Reg FD policy of hosting their calls during (after) trading hours continue to do so in the post-Reg FD period.[15]

Panel B of Table 2 compares the frequency of open and closed call firms changing policies post Reg-FD. The overall frequencies are shown in columns 2 and 3. The results are not consistent with our second hypothesis that closed call firms are more likely to change their policy regarding when to host their calls as a result of having to provide open access to their calls. However, when we divide the sample into firms with a pre-Reg FD policy of always hosting their calls during trading hours (columns 4 and 5) and after trading hours (columns 6 and 7), we find a statistically significant difference between open and closed call firms in the latter subsample ($\chi^2(1) = 7.37$, $p < 0.01$), suggesting that closed call firms are more likely to shift their policy away from always hosting their calls after hours relative to open call firms (26 percent versus 5 percent).[16]

Our results could reflect disproportionate changes in other firm characteristics for closed call firms that coincide with Reg FD. Given prior findings that firms release earnings after trading hours when reporting bad news (Patell and Wolfson 1982; Francis et al. 1992), it is possible the shift toward after-hours calls for the sample as a whole is due to an increase in negative earnings surprises in the post-Reg FD period, and that the relatively greater

[15] The panel also shows that changes in policy are more common for firms with a pre-Reg FD policy of always hosting their calls during trading hours than for firms with a pre-Reg FD policy of always hosting calls after hours (24 percent versus 14 percent), suggesting a shift toward hosting more calls after hours.

[16] We conducted a similar analysis using the two eight-month subperiods within the pre-Reg FD period to ensure that closed call firms are not inherently more likely to shift their policies. We do not find a statistically significant shift in policy during this period. We also conducted all analyses requiring firms to have three calls in each period and obtained similar results.

TABLE 2
Changes in the Timing of Conference Calls, during or after Trading Hours, before and after Reg FD

Panel A: Comparison of Firms' Policies Regarding the Timing of Conference Calls before and after Reg FD (all firms)

		Pre-Reg FD Policy[a]	
	Total	**Calls Always Held during Trading Hours[b]**	**Calls Always Held after Trading Hours**
No Change in Policy	638 76.4%	567 75.5%	71 84.5%
Shift in Policy	197 23.6%	184 24.5%	13 15.5%
Total	835	751	84
		$\chi^2(1) = 3.41$, $p < .10$	

Panel B: Changes in Firm's Policies Regarding the Timing of Conference Calls—Open versus Closed Firms

			Pre-Reg FD Policy			
	Total		**Calls Always Held during Trading Hours**		**Calls Always Held after Trading Hours**	
	Closed Calls Pre-Reg FD[c]	**Open Calls Pre-Reg FD**	**Closed Calls Pre-Reg FD**	**Open Calls Pre-Reg FD**	**Closed Calls Pre-Reg FD[c]**	**Open Calls Pre-Reg FD**
No Change in Policy	341 76.8%	297 76.0%	310 77.1%	257 73.6%	31 73.8%	40 95.2%
Shift in Policy	103 23.2%	94 24.0%	92 22.9%	92 26.4%	11 26.2%	2 4.8%
Total	444	391	402	349	42	42
	$\chi^2(1) = .08$, $p = .7747$		$\chi^2(1) = 1.22$, $p = .2693$		$\chi^2(1) = 7.37$, $p < .01$	

Panel C: Logit Model of the Determinants of Changes in Firm Policy Regarding the Timing of Conference Calls Post-Reg FD

Dependent Variable: 1 if Firm Switched Call Timing Policy Post-Reg FD, 0 if Firms Continued Policy Post-Reg FD

Pre-Reg FD Levels of Control Variables[d]		**Post- versus Pre-Reg FD Changes in Control Variables**	
Intercept	−4.726**	Intercept	−3.842**
D_CLOSED	2.120*	*D_CLOSED*	1.910*
D_TRDHRS	2.089**	*D_TRDHRS*	1.795*
*D_CLOSED*D_TRDHRS*	−2.200*	*D_CLOSED*D_TRDHRS*	−1.973*
%POS	0.236	Δ*%POS*	−1.530*
LMV	0.062	Δ*LMV*	−0.149
SGR	0.284	Δ*SGR*	−0.181
RET	0.130	Δ*RET*	0.036
ROA	0.246	Δ*ROA*	1.402

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TABLE 2 (continued)

Pre-Reg FD Levels of Control Variables[d]		Post- versus Pre-Reg FD Changes in Control Variables	
BP	−0.711*	Δ*BP*	−0.061
LNOWN	−0.001	Δ*LNOWN*	0.007
NAL	−0.034*	Δ*NAL*	0.014
PIH	−0.110	Δ*PIH*	2.481*
MTURN	2.897**	Δ*MTURN*	3.570**
VREV	−0.091	Δ*VREV*	0.677
IRSQ	−0.398	Δ*IRSQ*	0.344
INTAN	−0.095	Δ*INTAN*	0.188
D_HTECH	−0.230	*D_HTECH*	0.206
LNEMP	0.208	Δ*LNEMP*	0.118
LTIME	0.271*	*LTIME*	0.138

*, ** Significantly different from zero at the 0.05 and 0.01 levels, respectively (two-tailed).

[a] Our pre- (post-) Reg FD sample is based on calls held from March 1999 to June 2000 (October 23, 2000 to October 30, 2001).

[b] Calls made during (after) trading hours are defined as calls starting between 9:30 AM and 4:00 PM EST. All other calls are defined as after trading hours. We require firms to have at least two calls in each period (pre- and post-Reg FD) in order to identify firms with a consistent policy regarding the timing of their calls. Firms that host some calls during trading hours and some calls after hours are classified as having no consistent policy.

[c] The open (closed) conference call sample is comprised of calls made by firms that are classified as having provided unlimited (restricted) access to their calls in the pre-Reg FD period.

[d] *D_CLOSED* = 1 if pre-Reg FD calls were closed, and 0 if they were open; *D_TRDHRS* = 1 if all pre-Reg FD calls were held during trading hours, and 0 if all pre-Reg FD calls were held after trading hours; and *D_CLOSED*D_TRDHRS* = the interaction between these two indicator variables. All levels and changes control variables are defined in Table 1.

shift toward during-hours calls for the closed call sample is the result of a relatively smaller increase in bad news surprises. We include a proxy for the proportion of positive earnings news surprises (Δ*%POS*), along with the entire set of control variables used in the stop-call analysis, in a logit model that estimates the probability that a firm switches its call timing policy after Reg FD.[17] We also include an indicator for whether the firm's pre-Reg FD policy was to always hold calls during trading hours (*D_TRDHRS*), and we interact the indicator with the closed call firm indicator to account for the asymmetric rates of switching exhibited in Panel B between during-hours and after-hours policies and between open and closed call firms.

Panel C of Table 2 presents results of the logit model, estimated with both pre-Reg FD levels and around-Reg FD changes in control variables. The coefficient on *D_CLOSED* is positive and significant in both specifications, while the coefficient on the interaction *D_CLOSED* ∗ *D_TRDHRS* is significantly negative and almost equal in magnitude to the coefficient on *D_CLOSED*. These findings confirm the univariate results, indicating that closed call firms are more likely than open call firms to switch away from always hosting after-hours calls, but not more likely than open call firms to switch away from always

[17] We use an earnings-based surprise measure rather than a measure based on returns during the call window because we cannot measure returns during the call window for firms holding their calls after trading hours (the overnight return would include not only the conference call, but also any analyst and media commentary on the call).

hosting during-hours calls. Thus, differences in earnings news do not appear to explain firms' call time policies.

The significant positive coefficient on *D_TRDHRS* indicates that the general shift away from during-hours calls after Reg FD (observed in Panel A of Table 2) is not completely explained by levels or changes in control variables. However, the significantly negative coefficient on Δ*%POS* suggests that the decrease in frequency of positive earnings surprises after Reg FD accounts for some portion of the switch in call timing observed in Panel A. High share turnover firms (*MTURN*) are more likely to switch call policies.

Overall, we find evidence that Reg FD has influenced the timing of conference calls. A relatively greater proportion of closed call firms have shifted away from a policy of hosting calls after trading hours. However, the number of firms switching is small.

Information Content of Conference Calls

We next examine the effect of Reg FD on the information provided during conference calls. Similar to Heflin et al. (2003), we use the absolute value of returns (*ARET*) as a proxy for information content. We conduct our analysis at the individual call level, using only earnings-announcement-related calls conducted during trading hours. Following Frankel et al. (1999), we identify the scheduled start of the call and define the call period as beginning 15 minutes prior to its scheduled start and ending 75 minutes later. We measure *ARET* using the first and last trade during the call period reported on the Trade and Quote (TAQ) database. We then compute this variable during a control period, approximately the same 75-minute period on the previous trading day, and subtract this amount from the value computed during the call window to obtain abnormal returns (Δ*ARET*) during the call period.[18] Figure 2 provides a timeline depicting the measurement periods.

We first test for a change in information content for the sample as a whole by running the following regression:

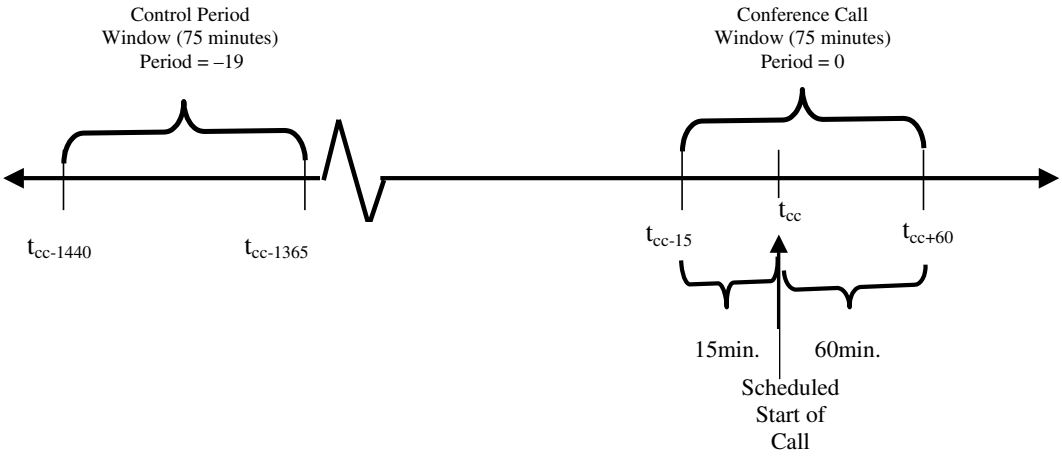
$$\Delta ARET = \alpha + \beta_1 POST + \varepsilon. \tag{1}$$

POST is an indicator variable equal to 1 if the call was held in the post-Reg FD period, so β_1 represents the average difference in absolute abnormal returns (relative to a control period) in the post-Reg FD period for the sample as a whole. The results, presented in Table 3, Panel A, do not indicate a statistically significant change in the information content of conference calls following the rule change. However, because Reg FD affected all firms simultaneously, an insignificant coefficient on β_1 may indicate a general trend in the informativeness of calls that masks any effect of the new regulation. Examining the relative change in information content across open and closed call firms provides a more powerful test of the effect of Reg FD:

$$\begin{aligned}\Delta ARET = {} & \beta_1 OPEN + \beta_2 OPEN * POST + \beta_3 CLOSED \\ & + \beta_4 CLOSED * POST + \varepsilon.\end{aligned} \tag{2}$$

[18] These tests use only conference calls started between 9:45 AM and 3:00 PM EST so that the entire 75-minute period used to measure the variables is during trading hours (see Figure 1). We do not use either of the two 75-minute periods immediately preceding the call period as the control because these periods are not available for calls early in the trading day and because the release of the earnings announcement often happens in these periods. In addition, BMM do not find significant differences in their results from using these alternative periods as benchmarks.

FIGURE 2
Timeline Depiction of Measurement Periods[a]



[a] The conference call period is defined based on the period used in Frankel et al. (1999) and Bushee et al. (2003).

OPEN (*CLOSED*) is an indicator variable equal to 1 if the call is held by an open (closed) call firm during the pre-Reg FD period. In Equation (2), β_1 (β_3) represents the average difference in absolute abnormal returns ($\Delta ARET$) for open (closed) call firms in the pre-Reg FD period and β_2 (β_4) represents the change in $\Delta ARET$ after the passage of Reg FD for open (closed) call firms. If closed call firms decrease the amount of information provided in their calls after Reg FD, then we expect β_4 in Equation (2) to be negative. If the decrease is greater for the closed call sample relative to the open call sample, then it provides greater assurance that the change is not driven by changes across time in the variables of interest.

The results of these tests are presented in Table 3, Panel B. Columns 2–5 present the coefficients and p-values for Equation (2). Column 6 is a test of the difference in information content between open and closed firms in the pre-Reg FD period ($\beta_1 \neq \beta_3$). Column 7 tests for a difference between the two groups in the post-Reg FD period ($\beta_1 + \beta_2 \neq \beta_3 + \beta_4$), and column 8 tests whether closed call firms had a greater reduction in information content between the periods ($\beta_4 < \beta_2$). Contrary to our third hypothesis, we find a positive but insignificant change in the information content of conference calls for the closed call group post-Reg FD and the change for the closed call group is not statistically more negative than the change for the open call group. The results are inconsistent with concerns that firms forced to provide open access to their calls decreased the amount of information provided during the call because of proprietary costs and/or fear of misinterpretation by unsophisticated investors.

We conduct several sensitivity tests to determine the robustness of this result. First, because we use trade data, it is possible that our tests are affected by differential amounts of bid-ask bounce between open and closed call firms (Mucklow 1994). We repeat our analysis using the mid-point of the opening and closing bid and ask quotes in the period

TABLE 3
Comparison of Information Content during Conference Calls for Open and Closed Calls, before and after Reg FD

Panel A: Unconditional Changes in Information Content before and after Reg FD

Regression Model:[a]

$$\Delta ARET = \alpha + \beta_1 POST + \varepsilon$$

Dependent Variable	α	*POST* β_1 Coefficient (p-value)[b]
$\Delta ARET$	.0063 (.0001)	.0002 (.6944)

Panel B: Comparison of Relative Change, before and after Reg FD, in Information Content between Open and Closed Call Firms

Regression Model:[a]

$$\Delta ARET = \beta_1 OPEN + \beta_2 OPEN * POST + \beta_3 CLOSED + \beta_4 CLOSED * POST + \varepsilon$$

Dependent Variable	*OPEN* β_1 Coefficient (p-value)[b]	*OPEN*POST* β_2 Coefficient (p-value)	*CLOSED* β_3 Coefficient (p-value)	*CLOSED* POST* β_4 Coefficient (p-value)	Pre-Reg FD Info Content: F-Test: $\beta_1 = \beta_3$ (p-value)	Post-Reg FD Info Content: F-Test: $\beta_1 + \beta_2 = \beta_3 + \beta_4$ (p-value)	FD Change in Info Content: F-Test: $\beta_4 < \beta_2$ (p-value)
$\Delta ARET$	.0072 (.0001)	−.0007 (.4136)	.0056 (.0001)	.0009 (.2537)	3.43 (.0642)	0.00 (.9774)	1.90 (.9158)

[a] This analysis is conducted at the call level (n = 5,386). $\Delta ARET$ is the difference between the absolute return reported on TAQ during the 75-minute conference call period and the absolute return during the control period one day earlier (see Figure 2); *POST* = 1 if the conference call is held in the post-Reg FD period (defined as dates after October 23, 2000), and 0 otherwise; *OPEN* (*CLOSED*) = 1 if the conference call is held by a firm that held unlimited (restricted) access to their calls in the pre-Reg FD period (March 1999 to June 2000), and 0 otherwise.

[b] p-values are two-tailed, except the FD change in information content F-test (column 8), where a directional hypothesis is predicted and a one-tailed p-value is reported.

and find similar results.[19] Second, we include various measures of ''surprise'' in the regression to ensure our results are not affected by the news in the earnings announcement, including the change in earnings deflated by price, a dummy variable for the sign of the earnings change, the change in sales deflated by price, a dummy variable for the sign of the sales change, and the signed return during the call window. Our conclusions do not change as a result of these analyses. Finally, we include a measure of price volatility (*CVPRC*, described below) to determine if changes in price volatility drive our results. Similar to the results reported, the change for the closed call group is not statistically more negative than the change for the open call group. Overall, our results are not consistent with concerns raised by critics of Reg FD that firms have decreased the information content of calls post-Reg FD.

Effects on Trading Behavior during the Call Period

Our last set of tests examines whether Reg FD affects the way investors trade during the conference call period. We examine the effect of Reg FD on price volatility and on the trading activity of individual investors during the call period. Similar to our analyses of information content, we conduct these analyses at the individual call level, using only earnings-announcement-related calls conducted during trading hours. We use TAQ data to measure variables during the call period.

We use two measures of price variability: (1) the difference between the highest and lowest price during the call period, scaled by the low price (*HI_LO*) (similar to Wiggins 1991; Frankel et al. 1999) and (2) the coefficient of variation, i.e., the standard deviation of price scaled by the mean price during the call window (*CVPRC*) (BMM).[20] Again, we measure each variable during a control period and subtract this amount from the value computed during the call window to get the abnormal call period measures (Δ*HI_LO* and Δ*CVPRC*, respectively).

We use the percentage of small trades (*SMTRADE*), defined as the number of small trades divided by the total number of trades during the call period, as a proxy for individual investor trading activity. Following prior research (Lee 1992; Lee and Radhakrishna 2000), we define a ''small'' trade using a dollar-value based proxy. We obtain the firm's opening price at the beginning of the trading period and determine the largest number of round lot shares less than or equal to $10,000. Trades during the call period that are less than or equal to this lot size are considered small trades. Because a difference in the proportion of small trades during the conference call and control periods could be due to either a change in the number of small trades or a change in the number of total trades, we compute a percentage change in small trades between the two periods. Δ*SMTRADE* is defined as the number of small trades during the call window less the number during the control window, divided by the number during the call window.

We first examine the change for the sample as a whole by regressing each variable on a dummy variable indicating calls held post-Reg FD (*POST*), similar to our information content tests. The results of this analysis are presented in Table 4, Panel A. Consistent with the findings of Bailey et al. (2003) and Shane et al. (2001), we find no evidence of an increase in price volatility in the post-Reg FD period for the sample as a whole; β_1 is insignificantly different from zero for both Δ*HI_LO* and Δ*CVPRC*. However, we do find a

[19] We report the results using trade data to be consistent with prior literature (e.g., Frankel et al. 1999; BMM) and because our tests of small trades require the use of trade data.

[20] To minimize the effect of outliers, we winsorize the top and bottom 1 percent of observations.

TABLE 4
Comparison of Trading Patterns during Conference Calls for Open and Closed Calls, before and after Reg FD

Panel A: Unconditional Changes in Trading Patterns before and after Reg FD

Regression Models:[a]

$$\Delta HI\_LO = \alpha + \beta_1 POST + \varepsilon$$
$$\Delta CVPRC = \alpha + \beta_1 POST + \varepsilon$$
$$\Delta SMTRADE = \alpha + \beta_1 POST + \varepsilon$$

Dependent Variable	α	*POST* β_1 Coefficient (p-value)[b]
ΔHI_LO	0.0127 (0.0001)	−0.0001 (0.8715)
$\Delta CVPRC$	0.0028 (0.0001)	0.0002 (0.3475)
$\Delta SMTRADE$	0.0513 (0.0034)	0.0510 (0.0280)

(*continued on next page*)

TABLE 4 (continued)

Panel B: Comparison of Relative Change, before and after Reg FD, in Trading Patterns between Open and Closed Call Firms

Regression Models:[a]

$$\Delta HI\_LO = \beta_1 OPEN + \beta_2 OPEN * POST + \beta_3 CLOSED + \beta_4 CLOSED * POST + \varepsilon$$

$$\Delta CVPRC = \beta_1 OPEN + \beta_2 OPEN * POST + \beta_3 CLOSED + \beta_4 CLOSED * POST + \varepsilon$$

$$\Delta SMTRADE = \beta_1 OPEN + \beta_2 OPEN * POST + \beta_3 CLOSED + \beta_4 CLOSED * POST + \varepsilon$$

Dependent Variable	*OPEN* β_1 Coefficient (p-value)[b]	*OPEN*POST* β_2 Coefficient (p-value)	*CLOSED* β_3 Coefficient (p-value)	*CLOSED*POST* β_4 Coefficient (p-value)	Pre-Reg FD Trading Patterns: F-Test: $\beta_1 > \beta_3$ (p-value)	Post-Reg FD Trading Patterns: F-Test: $\beta_1 + \beta_2 = \beta_3 + \beta_4$ (p-value)	FD Change in Trading Patterns: F-Test: $\beta_4 > \beta_2$ (p-value)
ΔHI_LO	0.0153	−0.0026	0.0108	0.0017	11.10	.01	5.93
	(0.0001)	(0.0434)	(0.0001)	(0.1595)	(0.0009)	(.9075)	(.0075)
$\Delta CVPRC$	0.0033	−0.0003	0.0024	0.0007	6.70	.20	5.04
	(0.0001)	(0.2836)	(0.0001)	(0.0326)	(0.0097)	(.6553)	(.0248)
$\Delta SMTRADE$	0.1007	0.0174	0.0132	0.0728	6.16	1.10	1.40
	(0.0001)	(0.6087)	(0.5698)	(0.0229)	(0.0131)	(.2952)	(.1182)

[a] This analysis is conducted at the call level (n = 5,386). $\Delta SMTRADE$ = the number of small trades during the 75-minute conference call period minus the number of small trades during the control period one day earlier (see Figure 2), divided by the number of small trades in the call period. Trades are classified as small if the largest round-lot size is less than or equal to $10,000, computed using the price at the beginning of the trading period; ΔHI_LO = the high price less the low price divided by the low price during the 75-minute conference call period minus the same measure in the control period one day earlier; $\Delta CVPRC$ = the standard deviation of price divided by the mean price during the 75-minute call period minus the same measure in the control period one day earlier. All data are obtained from TAQ; *OPEN* (*CLOSED*) = 1 if the conference call is held by a firm that held unlimited (restricted) access to their calls in the pre-Reg FD period (March 1999 to June 2000), and 0 otherwise; and *POST* = 1 if the conference call is held in post-Reg FD (defined as dates after October 23, 2000), and 0 otherwise.

[b] p-values are two-tailed, except for the Pre-Reg FD trading patterns test (column 6) and the FD change in trading pattern F-test (column 8), where directional hypotheses are predicted and one-tailed p-values are reported.

significantly positive coefficient on β_1 for $\Delta SMTRADE$, suggesting an overall increase in the extent of individual investor trading following the rule change.

We next examine the relative change in price volatility and small trades between open and closed call firms by running the following regressions:

$$\Delta HI\_LO = \beta_1 OPEN + \beta_2 OPEN * POST + \beta_3 CLOSED + \beta_4 CLOSED * POST + \varepsilon; \quad (3)$$

$$\Delta CVPRC = \beta_1 OPEN + \beta_2 OPEN * POST + \beta_3 CLOSED + \beta_4 CLOSED * POST + \varepsilon; \quad (4)$$

$$\Delta SMTRADE = \beta_1 OPEN + \beta_2 OPEN * POST + \beta_3 CLOSED + \beta_4 CLOSED * POST + \varepsilon. \quad (5)$$

If the increased access to information mandated by Reg FD increased price volatility during conference calls that were previously closed (but are now open due to the new rule), then β_4 in Equations (3) and (4) should be positive. Similarly, if individual investors increased their trading activity, then β_4 in Equation (5) should be positive. Moreover, if the increases were greater for the closed call than for the open call sample (i.e., $\beta_4 > \beta_2$), the change is likely to be driven by Reg FD rather than by economy-wide changes over time.

The results of this analysis are presented in Panel B of Table 4. As with our information content tests, we provide F-tests comparing the open and closed groups in the pre-Reg FD period ($\beta_1 > \beta_3$), in the post-FD period ($\beta_1 + \beta_2 \neq \beta_3 + \beta_4$), and the relative change between the two groups ($\beta_4 > \beta_2$).[21] Consistent with prior work, the change in price volatility is significantly greater for open relative to closed call firms in the pre-Reg FD period. The difference between the two groups, however, does not persist in the post-Reg FD period when all firms are required to host open calls. More importantly, the change in price volatility during conference calls after the passage of Reg FD is significantly more positive for closed call firms than for open call firms, consistent with our fourth hypothesis.

We conduct a number of sensitivity tests to determine the robustness of our results. First, we repeat these tests using quote data and including controls for the news in the earnings announcement (similar to our information content tests), and obtain similar results. Second, we include *ARET* in the *HI_LO* and *CVPRC* regressions to determine if changes in information content affect our results. We continue to find a significantly greater *relative* increase in price volatility for the closed call group than the open call group but a significantly greater *level* of volatility in the post-Reg FD period for the closed call group relative to the open call group (F-test in column 7 is significant). Third, we find similar results after limiting our definition of earnings-announcement-related conference calls to those held on the day of the earnings announcement. Fourth, to control for potential differences in prior economic performance between the two groups, we include returns over the prior fiscal quarter as an additional control variable. The results are similar (with slightly greater significance in the *CVPRC* regression). Finally, we conduct our tests using price volatility over the entire trading day of the conference call and find a similar, albeit weaker, increase in relative volatility for closed call firms in the post-FD period.

[21] Given results in prior research, we expect the open call firms to have significantly greater price volatility and smaller trades in the pre-Reg FD period and therefore, provide one-sided p-values for this test as well as for our main test of the relative change between the two groups (column 8).

This increased price volatility validates (using a stronger experimental design) the conclusions of prior research, suggesting that broad information dissemination increases the level of informedness in the market. It is also consistent with concerns raised by the SIA and other critics of Reg FD that providing information to unsophisticated investors without the benefit of additional analysis increase price volatility. The fact that other studies do not find an increase in price volatility around earnings announcement may be due to a general, economy-wide decline in volatility, which makes detecting an effect on the entire sample of firms difficult (our finding that $\beta_2 < 0$ is consistent with this explanation). However, our study also differs from these prior studies in that (1) we measure volatility in a relatively narrow window around an earnings announcement (the period during the call), (2) our sample includes only firms that conduct conference calls, and (3) we use different measures of volatility, so other interpretations of why we obtain different results are plausible.

Our results for $\Delta SMTRADE$ are consistent with prior findings that the number of small trades is significantly greater for open calls than for closed calls in the pre-Reg FD period, indicating that individual investors exploit their access to information when such access is provided. However, in the post-Reg FD period, open call firms do not exhibit a significantly greater number of small trades than closed call firms. This shift is due to a significant increase in the number of small trades in the post-Reg FD period for the closed call sample ($\beta_4 > 0$ and significant at $p = .03$), without a similar increase for the open call sample (β_2 insignificantly different from zero). However, an F-test of the difference between β_2 and β_4 is not statistically significant at conventional levels ($p = .12$), although the direction of the effect is as expected.[22] It appears that Reg FD, by mandating open access to conference calls, provides individual investors the opportunity to trade during these calls and that these investors have, to some degree, taken advantage of this access. This finding is consistent with our fifth hypothesis and contradicts arguments by the SIA that individual investors do not take advantage of the access to information mandated by Reg FD.

Overall, the results suggest that Reg FD has had an impact on trading during the conference call window for firms most impacted by the new regulation. We provide evidence that closed call firms experience a relatively greater increase in price volatility than open call firms during the conference call period and limited evidence that smaller investors capitalized on their opportunity to trade immediately on information disclosed during the calls.[23]

IV. CONCLUSIONS

The passage of Regulation FD prompted an extensive debate over the necessity and the possible ramifications of the rule—a debate that did not end with its passage. We examine the effect of Reg FD on one of the more popular mechanisms managers use to communicate with the capital markets: conference calls. Given Reg FD's restriction against disclosing material information to select groups, the rule requires firms that host conference calls to make their calls available to all market participants. We examine both managers'

[22] If we do not limit our tests to earnings announcement related calls only, the difference between the two coefficients is statistically significant at conventional levels ($p < .05$).

[23] For all of the market reaction tests, we also examined whether the results differ between the early and later portions of the post-Reg FD period as it is possible that the impact of Reg FD was not felt immediately. The results are similar when we use only the first six-month period following Reg FD as our post period as well as when we use only the later six-month period. Moreover, the change in the price volatility and small trade variables between the first and second post-periods are not statistically different between the open and closed call samples.

and investors' responses to the new rule by investigating whether the increased access to information imposed by Reg FD affects the use, timing, and information content of conference calls, as well as the trading behavior during the call period.

We divide our sample of conference calls based on whether the firm restricted access to their calls in the pre-Reg FD period. Because Reg FD does not affect the parties allowed access to the call for firms that previously hosted open calls, we do not expect Reg FD to have a significant impact on calls made by these firms and we use these firms as a control sample against which to compare the calls of firms that previously restricted access to their calls. This natural experiment helps control for time-period-specific effects that might affect the results.

Our findings suggest that Reg FD had some impact on firms' disclosure policies regarding the use and timing of conference calls but that, contrary to the concerns of many critics, the effects are not large. Contrary to the concerns of many critics of the rule that requiring firms to make material disclosures broadly available will reduce the total amount of information provided by firms, we do not find a significantly greater decrease in the information content of conference calls post-Reg FD for the closed call group relative to the open call group.

Our examination of the effect of Reg FD on trading activity suggests that Reg FD has impacted investor trading during the call period. We find a significantly greater increase in price volatility for closed call firms relative to open call firms, supporting the idea that broad dissemination of information increases the level of informedness in the market. Our results are consistent with arguments made by critics of the rule that increased access to information will increase price volatility, possibly as a result of unsophisticated investors trading on information without the benefit of professional analysis. However, our study examines a relatively narrow window around one particular disclosure event (albeit a highly visible and important one), and critics of Reg FD were likely concerned with general volatility in the market over longer windows.

We find a statistically significant increase in small trades during the call window for previously closed call firms and no significant change for previously open call firms. However, the increase for the closed call group is not statistically greater than the increase for the open call group. Thus, our results provide some support for the notion that providing equal access to information allows smaller investors to capitalize on the information in the same way as larger investors.

Our results differ from other studies that do not find significant increases in price volatility at the earnings announcement. It is possible that economy-wide changes in volatility over the period mask any increased volatility resulting from the new rule, highlighting the importance of identifying and conditioning on the aspect(s) of firms' disclosure policies most impacted by a new piece of regulation. However, our study also differs from prior studies in a number of other aspects as well, making comparisons of results difficult.

We examine a specific disclosure event and use intraday trading data over a narrow window to measure market movements and trading activity. While our approach allows us to more precisely measure changes in disclosure policies, information content, and trading behavior, it also limits our ability to draw conclusions regarding overall changes in the information environment. For example, it is possible firms have substituted other forms of communication for conference calls, which need not result in a more level playing field across investors. Nevertheless, given the relative popularity of conference calls as a disclosure mechanism, understanding the effects of Reg FD on these calls is important to our understanding of the impact of mandatory disclosure rules on manager's disclosure choices.

REFERENCES

Agarwal, A., and S. Chadha. 2002. Who is afraid of Reg FD? The behavior and performance of sell-side analysts following the SEC's fair disclosure rules. Working paper, The University of Alabama.

Bailey, W., H. Li, C. Mao, and R. Zhong. 2003. Regulation Fair Disclosure and earnings information: Market, analyst, and corporate responses. *Journal of Finance* 58 (6): 2487–2515.

Beaver, W. 1968. The information content of annual earnings announcements. *Journal of Accounting Research* 6 (Supplement): 67–97.

Bowen, R., A. Davis, and D. Matsumoto. 2002. Do conference calls affect analysts' forecasts? *The Accounting Review* 77 (2): 285–316.

Bushee, B., D. Matsumoto, and G. Miller. 2003. Open versus closed conference calls: The determinants and effects of broadening access to disclosure. *Journal of Accounting and Economics* 34 (1–3): 149–180.

Cook, T. D., and D. T. Campbell. 1979. *Quasi-Experimentation: Design and Analysis Issues for Field Studies*. Boston, MA: Houghton Mifflin Company.

Eleswarapu, V. R., R. Thompson, and K. Venkataraman. 2001. The impact of Regulation Fair Disclosure: Trading costs and information asymmetry. Working paper, Southern Methodist University.

Francis, J., D. Pagach, and J. Stephan. 1992. The stock market response to earnings announcements released during trading versus nontrading periods. *Journal of Accounting Research* 30 (2): 165–184.

Frankel, R., M. Johnson, and D. Skinner. 1999. An empirical examination of conference calls as a voluntary disclosure medium. *Journal of Accounting Research* 37 (1): 133–150.

Froot, K., A. Perold, and J. Stein. 1992. Shareholder trading practices and corporate investment horizons. *Journal of Applied Corporate Finance* (Summer): 42–58.

Hassett, K. A. 2000. Outlaw selective disclosure? No, the more information the better. *Wall Street Journal* (August 10): A18.

Heflin, F., K. R. Subramanyam, and Y. Zhang. 2003. Regulation FD and the financial information environment: Early evidence. *The Accounting Review* 78 (1): 1–37.

Holthausen, R., and R. Verrecchia. 1990. The effect of informedness and consensus on price and volume behavior. *The Accounting Review* 65 (1): 191–208.

Lee, C. 1992. Earnings news and small traders: An intraday analysis. *Journal of Accounting and Economics* 15 (3): 265–302.

———, and B. Radhakrishna. 2000. Inferring investor behavior: Evidence from TORQ data. *Journal of Financial Markets* 3 (2): 83–111.

Levitt, A. 1998. A question of integrity: Promoting investor confidence by fighting insider trading. Speech given at the SEC Speaks Conference, February 1998. Available at: http://www.sec.gov/news/speech/speecharchive/1998/spch202.txt.

Mohanram, P. M., and S. V. Sunder. 2001. Has Regulation Fair Disclosure affected financial analysts' ability to forecast earnings? Working paper, New York University.

Mucklow, B. 1994. Market microstructure: An examination of the effects on intraday event studies. *Contemporary Accounting Research* 10 (2): 355–82.

National Investor Relations Institute (NIRI). 2002. *An Analysis of Trends and Technology in the Practice of Investor Relations*. October. Vienna, VA: NIRI.

Opdyke, J. D. 2000. The big chill: Street feels effect of ''fair disclosure'' rule—Regulation is altering the way analysts approach their jobs. *Wall Street Journal* (October 23): C1.

Patell, J., and M. Wolfson. 1982. Good news, bad news, and intraday timing of corporate disclosures. *The Accounting Review* 57 (3): 509–527.

Rees, L., and D. Adut. 2002. The effect of Regulation Fair Disclosure on the information content of whisper forecasts. Working paper, Texas A&M University.

Securities and Exchange Commission (SEC). 2000. *Selective Disclosure and Insider Trading*. Release Nos. 33-7881 and 34-43154. Available at: http://www.sec.gov/rules/final/33-7881.htm.

Securities Industry Association (SIA). 2001. *Costs and Benefits of Regulation Fair Disclosure*. May. New York, NY: SIA.

Shane, P., N. Soderstrom, and S. Yoon. 2001. Earnings and price discovery in the post-Reg FD information environment: A preliminary analysis. Working paper, University of Colorado, Boulder, CO.

Shiller, R. J. 2000. Outlaw selective disclosure? Yes, markets must be fair. *Wall Street Journal* (August 10): A18.

Skinner, D. 2003. Should firms disclose everything to everybody? A discussion of ''Open vs. closed conference calls: The determinants and effects of broadening access to disclosure.'' *Journal of Accounting and Economics* 34: 181–187.

Sunder, S. V. 2002. Investor access to conference call disclosures: Impact of Regulation FD on information asymmetry. Working paper, New York University.

Tasker, S. 1998. Bridging the information gap: Quarterly conference calls as a medium for voluntary disclosure. *Review of Accounting Studies* 3 (1&2): 137–167.

Vinzant, C. 2001. Keeping an ear on Wall St.: Corporate webcasts earn a growing audience of investors. *Washington Post* (June 14): E01.

Weber, J. 2000a. Why should analysts be told more than you? *BusinessWeek* (March 13): 42.

———. 2000b. Full disclosure for all. *BusinessWeek* (September 18): 106–110.

Wiggins, J. 1991. Empirical tests of the bias and efficiency of the extreme-value variance estimator for common stocks. *Journal of Business* 64 (3): 417–432.

Zitzewitz, E. 2002. Regulation Fair Disclosure and the private information of analysts. Working paper, Stanford University.