

Does Silence Speak? An Empirical Analysis of Disclosure Choices During Conference Calls

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ABSTRACT

In this paper, we exploit the open nature of conference calls to explore whether managers withhold information from the investing public. Our evidence suggests that managers regularly leave participants on the conference call in the dark by not answering their questions. We find that the best predictors of such an event are firm size, a CEO's stock price-based incentives, company age, firm performance, litigation risk, and whether analysts are actively involved during the call's Q&A section. Finally, we document strong support for the assumption maintained in the literature that investors interpret silence negatively. That is, investors seem to interpret no news as bad news.

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Saying nothing, my aunt Katie, sometimes says the most.

Emily Dickinson (1830–1886)

1. Introduction

In accounting research, the issue of incomplete disclosure is a sensitive one. Early disclosure theories propound that *complete* (i.e., full) disclosure is optimal. The adverse-selection problem inherent in the buying and selling of company shares is said to compel the seller to fully disclose to the buyer (see Grossman and Hart [1980], Grossman [1981], Milgrom [1981]). These models argue that full disclosure occurs through a process known as unraveling. This notion that the behavior of rational buyers can unravel withheld information is a “seminal result that forms the basis for nearly all of the subsequent research” (Verrecchia [2001, p. 141]). Drawing on empirical observations of *incomplete* disclosure, subsequent research posits several theories for why it occurs. For instance, if disclosure comes at a cost (e.g., fixed disclosure cost in Verrecchia [1983], or variable proprietary cost in Wagenhofer [1990]), then incomplete disclosure can occur in equilibrium. Nonetheless, while incomplete-disclosure equilibria can occur when firms face proprietary costs, Wagenhofer [1990] shows that such equilibria arise only sporadically.¹

Nevertheless, the empirical literature on incomplete disclosure is scant (Kothari, Shu, and Wysocki [2009]). The difficulty of measuring incomplete disclosure may, in part, account for this. Prior studies use self-constructed measures like analyst ratings of firms’ disclosures (i.e., Association for Investment Management and Research (AIMR) scores), the frequency of management earnings forecasts (e.g., Nagar, Nanda, and Wysocki [2003]), segment reporting choices (e.g., Harris [1998]), and the magnitude of stock-price responses (Kothari, Shu, and Wysocki [2009]). Such measures, however, are problematic for two reasons. First, they are somewhat indirect. Leuz and Verrecchia [2000], for example, highlight the difficulty of basing inferences on analyst ratings analysis given that AIMR scores only measure an analyst’s perception of the quality of the firm’s disclosure. In the case of management earnings forecasts, a low frequency of such disclosures can be due to lack of demand. More importantly, this measure cannot be used to challenge the alternative explanation that, in fact, *no news* gives rise to lower frequencies of earnings guidance. Second, some of these

¹ Suijs [2005] argues that because proprietary costs are generally considered to be (much) larger than disclosure costs, the latter’s influence on a firm’s disclosure strategy is often negligible. In Wagenhofer [1990], firms always conceal their bad news in a partial-disclosure equilibrium; bad news disclosures only occur in a full-disclosure equilibrium. Suijs [2005] documents partial-disclosure equilibria in which firms voluntarily release bad news when introducing a fixed disclosure cost besides a variable proprietary cost. He also shows that as the proprietary cost itself and/or the likelihood of incurring proprietary cost increases, such equilibria may occur more frequently.

measures make it difficult to isolate the impact of incomplete disclosure because they presume that investors expect such disclosures to occur at a particular time (and that investors would therefore react negatively when these disclosures do not occur). In their review paper, Healy and Palepu [2001] conclude that problems such as endogeneity and measurement error in these studies make it "difficult to interpret their findings" (p. 407).

Given the above, our study exploits the open nature of conference calls to explore whether managers suppress information that is in demand.² Managers' reluctance to spoon-feed information to participants on the conference call in public avoids some of the aforementioned problems because incomplete disclosure in this context is a well-defined event and call participants' demand for information is readily discernible. We therefore address the following three questions: Do managers withhold information from conference call participants? If so, under what conditions do managers withhold information? And, finally, do investors interpret this incomplete disclosure negatively?

A survey by the Association for Investment Management and Research (AIMR [2000]) indicates that, when analyzing a company, investment professionals consider corporate executives to be important sources of information. Oral communications with management, in particular, are deemed essential. To facilitate such meetings, firms conduct conference calls using company Web sites and/or Webcasts over the Internet. It is widely held that companies use these live meetings to bridge the information gap between managers and outside investors (e.g., Tasker [1998a]). While this may be true, in practice managers regularly leave call participants in the dark about important issues.³ To illustrate, consider the recent case of Apple Inc. On the Q3-2008 conference call, Apple executives refused to answer an analyst's question about CEO Steve Jobs's health, replying, "Steve's health is a private matter." Many Wall Street analysts and investors, however, were

² We use the terms *manager* and *firm* interchangeably in the study. All things considered, it is the manager who acts on behalf of the firm. We do, however, recognize that the preferences of a manager and those of a firm are not necessarily congruent. Therefore, we also examine the relation between managers' disclosure activities and their stock price-based incentives.

³ A Boston-based company called Business Intelligence Advisors (BIA) employs a number of former CIA and other national-security operatives to perform behavior analyses of corporate executives to detect when managers are being less than open or outright lying in their communications with shareholders. Its specialists try to gauge whether, during interviews, earnings conference calls, press releases or management discussions in 10-Ks, managers definitively and directly answer questions and forthrightly address issues or tap dance around subjects. Hedge funds constitute BIA's primary customers. Laing [2006] discusses several examples of assessments conducted by BIA analysts. For instance, "JPMorgan Chase CEO Jamie Dimon scores fairly well on the candor front in a recent earnings conference call by forthrightly dealing with his concerns over the bank's credit-card growth and the likely rise in nonperforming commercial loans." Kodak executives, on the other hand, "in their latest earnings conference call, were less than open about the company's back-to-school sales prospects, in-store kiosk results and campaign to boost operating margins." And, as if General Motors didn't have enough problems, "the analysts give its management low marks for openness and credibility."

crying foul, saying that “Apple is Steve Jobs and Steve Jobs is Apple.” Moreover, the incident was widely covered in the press (e.g., “Talk of Chief’s Health Weighs on Apple’s Share Price,” *The New York Times*, July 23, 2008; “Apple’s Culture of Secrecy,” *The New York Times*, July 26, 2008). Although analysts disagree about the role played by the communication concerning Mr. Jobs’s health, Apple’s shares dropped by 2.6% that day despite an all-time high in earnings for Q3-2008. This example demonstrates that being less than candid in one’s communication with the investing public can have serious economic consequences.

Practitioners and regulators agree that managers tend to withhold private information from the market, even in renowned disclosure environments like the United States. A panelist at the 2001 Stern Stewart Executive Roundtable pronounced, “all things equal, the managers of most companies would rather not disclose things if they don’t have to . . . obfuscation serves their interests; it gives them another degree of freedom in producing results that are acceptable to stockholders” (Stewart [2001, p. 37]). In *Special Study: Regulation Fair Disclosure Revisited*, SEC Commissioner Laura S. Unger states that “[t]o explain why less information may be publicly available, many issuers noted that, post-Reg FD [Regulation Fair Disclosure], companies have shifted disclosure oversight from the investor relations department to the legal department. Generally, the legal department adopts the conservative stance of wanting to say nothing for fear of running afoul of Reg FD” (Unger [2001]).

We manually reviewed call transcripts for a large sample of randomly selected earnings-related calls held by publicly listed U.S. firms between January 1 and December 31, 2004 to uncover whether managers withhold requested information. More specifically, we determine whether or not each request for information made during the call is granted. If at least one request is not granted, we mark this call as containing incomplete disclosure. We find that managers withhold information from the public in approximately 6 out of 10 calls, with an average of two unanswered queries per call, a frequency greater than is often assumed. The replies vary from a direct “No, we do not want to provide that information” to more subtle responses that nevertheless indicate that the demand for information will not be met. Moreover, most unanswered questions concern the given company’s financials (especially sales and margins), which comports with sell-side financial analysts’ primary task of producing earnings forecasts for the stocks they follow as part of their investment recommendations (Schipper [1991]).

Next, to shed light on managerial intent, we explore under what conditions managers of firms in the Standard & Poor’s (S&P) 1500 index (i.e., S&P 500, S&P 400 MidCap, and S&P 600 SmallCap) withhold information. We focus our analysis on S&P 1500 firms because Merton’s [1987] awareness model holds that for disclosures to be effective a firm must command some degree of visibility. Given that firms in the S&P 1500 index have a large shareholder base (i.e., a large number of investors are aware

of the firm's existence), investors are expected to trade in real-time on information released (or withheld) during a call (Peng [2005]). As a consequence, the managers of these firms are strongly incentivized to align themselves with investors' disclosure preferences.

Based on prior studies on *ex ante* disclosure, we hypothesize that when disclosure costs are high, companies avoid publicly disclosing their private information. Measures of disclosure costs net of benefits that have explanatory power include (among others) company size, firm performance, and litigation risk. In support of the claim that analysts play an important role in uncovering (vs. simply repackaging) information about the firm, we find that when analysts are actively involved during a call (i.e., by asking an unusually large number of questions) managers are more likely to not answer these questions. We also study how stock price-based compensation might operate as an incentive mechanism for eliciting disclosure. Given that, in light of the current contingencies, stock prices impound the relevant information in managerial disclosures, Nagar, Nanda, and Wysocki [2003] predict that incentives based on stock price will encourage managers to disclose both good and bad news. We support this prediction by documenting a positive association between a corporate executive's stock price-based incentives (as measured by both a CEO's stock-based compensation and share ownership) and how forthcoming firms are when it comes to disclosing information.

Assuming that analysts participate in calls to hunt for information that is relevant not only to them but likewise to the market, we dedicate the final section of the study to investigating how incomplete disclosure impacts investor trading during the time frame of the call. Several theories link incomplete disclosure with a firm's market valuation (e.g., Verrecchia [2001]). One economic consequence commonly associated with a firm's disclosure choice is how severe the adverse selection problem, which is inherent in the buying and selling of firm shares, becomes. Less disclosure should exacerbate adverse selection, thereby increasing how much parties to a transaction involved in the buying or selling of firm shares need to price-protect themselves (Dye [1985], Diamond and Verrecchia [1991]). This principle, known as *unraveling*, assumes that investors interpret withheld information as unfavorable news about the stock's value or quality. Consequently, no matter how inopportune this may be from the outset, investors will tend to discount the stock until it is in the firm's interest to reveal the information.

To test our hypothesis that exercising discretion in disclosing information affects a firm's market price, we partition our sample into two groups: those calls that contain incomplete disclosure and those that do not. Evidence from intra-day stock returns suggests that with regard to a stock's value investors interpret calls marked for incomplete disclosure unfavorably. A participant in the AIMR [2000] corporate disclosure survey supports this finding, stating "Publicly traded companies have been feeling pressure to be increasingly proactive with a more informed shareholder base. Blind

acceptance is no longer acceptable, and the market will punish companies that assume it is." Finally, our finding remains robust across alternative return windows.

Our study contributes to the literature in two ways. First, the transparency of a call enables us to observe the disclosure choices corporate executives make *in direct response* to requests for information. Prior voluntary disclosure studies (e.g., Nagar, Nanda, and Wysocki [2003], Berger and Hahn [2007]) employ metrics in which the observed disclosure is the outcome of a *behind-closed-doors* decision process, that is, in a "managers only" environment where managers face a presentiment of, rather than a direct demand for, a certain kind of information. In a related paper, Verrecchia and Weber [2006] examine the decision of small firms (i.e., those firms with a market value of equity between \$50 and \$100 million) to redact material contract or agreement information from their SEC filings. Our paper complements their study by investigating under what conditions managers of large S&P 1500 firms decide to reduce their voluntary disclosure of private information beyond the (presumably proprietary) contract information shared in public meetings. Furthermore, our study contributes to the developing literature that investigates the content of corporate disclosures, such as news releases (e.g., Davis, Piger, and Sedor [2008], Tetlock, Saar-Tsechansky, and Macskassy [2008], Rogers, Van Buskirk, and Zechman [2009]) and conference calls (e.g., Mayew and Venkatachalam [2008], Li et al. [2009]). Tasker [1998b] conducted one of the earliest studies of the content of conference calls, recording and transcribing the content of 12 conference calls held by small- and medium-sized technology firms and analyzing the types of questions analysts on the call asked.

Second, previous studies have emphasized the *advantages*, rather than the disadvantages, of the conference call as a disclosure medium. Conference calls are credited with saving time, mitigating selective disclosure problems, providing the opportunity to listen in on others' questions, providing access to more timely information, and not requiring extensive data collection (e.g., Botosan [1997], Frankel, Johnson, and Skinner [1999]). More recent studies, however, recognize that from a company's perspective hosting a conference call also entails a potential *disadvantage* compared with more traditional (i.e., one-way) disclosure channels. The unscripted format of the question-and-answer section of the call enables participants to prompt management to reveal private information by asking any type of questions, including those requesting information that managers do not (yet) want to reveal. To avoid this undesirable event, corporate executives often discretionarily field questions from analysts of their choosing. Indeed, prior research supports the idea that managers grant sell-side analysts, who generally have more favorable views of the firm, more access to private managerial information (e.g., Chen and Matsumoto [2006], Mayew [2008]). Nevertheless, despite this seemingly effective discretionary tool, participants persist in requesting private information during a conference call that management is reluctant or unable to provide at the time.

The remainder of this paper proceeds as follows. Section 2 discusses the disclosure role of earnings-related conference calls and provides a short review of the literature. Section 3 presents the procedure for selecting our sample and developing our proxies. Section 4 presents development of our hypotheses and measurement of our variables. Section 5 reports our findings on the conditions under which corporate executives withhold information from public view. Section 6 reports the results of our investigation into how incomplete disclosure impacts investor trading during the call period. Finally, section 7 concludes.

2. Conference Calls as a Voluntary Disclosure Medium

The use of conference calls as a voluntary disclosure medium has grown enormously over the last decade. In fact, quarterly conference calls after earnings releases are now more or less routine (Bowen, Davis, and Matsumoto [2002]). Earlier research examines those factors that influence a firm's decision to host a conference call (e.g., Tasker [1998a], Frankel, Johnson, and Skinner [1999]), whether calls are informative for investors (Frankel, Johnson, and Skinner [1999]), and how earnings conference calls affect analysts' forecasts (Bowen, Davis, and Matsumoto [2002]), both before and after Regulation Fair Disclosure (Bushee, Matsumoto, and Miller [2004]). Collectively, the evidence suggests that conference calls play an important role in resolving the information asymmetry problem between managers and outside investors.

A conference call consists of two sections: a presentation section and a question-and-answer section. During the presentation section, managers provide their interpretation of the firm's performance during the quarter, as well as any additional voluntary disclosures they wish to make to the call participants. Managers use this section of the call to share information they wish to disclose or further emphasize that they consider the market necessitates. During the question-and-answer section, analysts and other call participants have the opportunity to question management's interpretation of information disclosed thus far and/or elicit additional information that was not discussed during the presentation section or disclosed via other sources (e.g., the quarterly earnings announcement, press releases, or the company's Web site). During this section, participants may request information that management is unwilling (or unable) to release (yet).

3. Sample Selection, the Coding Process, and Content Analysis

3.1 SAMPLE SELECTION

We began our sample selection process by identifying via the Dow Jones "Calendar of Corporate Events" announcements of earnings-related conference calls held by NYSE/NASDAQ firms during trading hours (specifically, those calls beginning after 9:30 A.M. and before 2:30 P.M. EST)

between January 1 and December 31, 2004. This process yields 6,370 potential conference calls. We limit our sample to calls held during trading hours because in Section 6 we investigate in real-time the market reaction to information released during conference calls.⁴ We define the event window of our conference call as beginning at the start of the call and ending 90 minutes thereafter.⁵ For that reason, we imposed a second time constraint on our selection criteria and require that calls start by 2:30 P.M. EST at the latest. We then gather transcripts of calls from Voxant FD Wire available through Factiva. Of our 6,370 potential calls, transcripts are not available for 1,454 of them, leaving us with a sample of 4,916 conference-call transcripts. We lost an additional 1,179 observations due to missing Trade and Quote (TAQ) data, I/B/E/S analyst forecast data, Compustat data, CRSP data, Compact D/SEC data, Securities Data Company (SDC) Global New Issues data, and/or Execucomp data. When firms conduct more than one conference call during this period, we randomly selected one of their calls for our sample. Our final sample therefore comprises 1,194 earnings-related conference calls (see table 1 for an overview). For our multivariate analysis, we use a random sample of 681 firms from the S&P 1500 index.⁶

3.2 PROXY DEVELOPMENT

Three research assistants manually coded the conference call transcripts. Each research assistant coded an approximately equal number of transcripts. The coding process took place between November 2006 and June 2007. To indicate the scale of this process, for our sample firms, each call's question-and-answer section consists of an average (median) of 41 (38) questions (or remarks) by participants. The average number of analysts participating in the call is 7 (not reported in a table). One of the authors gave

⁴ For a sample of 36,074 earnings-related conference calls held by NYSE/NASDAQ firms between January 1, 2003 and December 31, 2005, Matsumoto, Pronk, and Roelofsen [2008] report that 39.6% of the firms always host calls *during* trading hours, 35.4% always host calls *after* trading hours, 14.6% switched just once during the three-year period either from *during* to *after* or vice versa, and 10.4% switched more than once. They then compare these four groups of firms across several dimensions (i.e., company size, analyst following, market-to-book, leverage, performance, and length of presentation and discussion). They only find that (1) firms that always host calls during trading hours are larger and have more leverage than firms that always host calls after trading hours, and (2) firms that always host calls after trading hours have higher market-to-book ratios than firms that switch once. Since no one group stands out in terms of firm performance, call length, or analyst following, we believe that studying only conference calls held during trading hours is unlikely to bias our results.

⁵ Our reaction tests assume that investors respond to call activity within a short event window. If investors take longer to impound information, our tests become biased against finding significant price reactions. As a robustness check, we widen the window to 120 minutes from the start of the call. Our inferences remain materially unchanged.

⁶ As explained in the introduction, we focus in our multivariate analysis on S&P 1500 firms because these firms are likely to differ from non-S&P 1500 firms on many dimensions (e.g., Cadman, Klasa, and Matsumaga [2007]). Unreported analysis shows that our findings often differ between the two samples. Detailed results are available from the authors upon request.

TABLE 1
Sample Selection

	Number of Calls	Number of Firms
Earnings conference calls during trading hours ^a	6,370	
<i>Less:</i>		
Transcripts not available on Voxant FD Wire	1,454	
Missing data from TAQ or stock price < \$1.00	165	
Missing analyst forecast data from I/B/E/S	598	
Only one conference call per firm	2,543	
		1,610
<i>Less:</i>		
Missing data from Compustat	264	
Missing data from CRSP	14	
Missing data from Compact D/SEC	5	
Missing data from SDC Global New Issues	6	
Missing data from Execucomp	127	
Final sample	1,194	
<i>Of which:</i>		
Standard & Poor's (S&P) 1500-index firms ^b	681	
Non-S&P 1500 firms	513	
	1,194	

^aAnnouncements of earnings-related conference calls (via Dow Jones "Calendar of Corporate Events") held during trading hours (i.e., beginning after 9:30 A.M. and before 2:30 P.M. EST) by NASDAQ/NYSE firms between January 1, 2004 and December 31, 2004.

^bThe S&P 1500 index includes S&P 500, S&P 400 MidCap, and S&P 600 SmallCap.

the research assistants detailed instructions (including an electronic form for completion, which explained all coding steps in detail) and discussed several examples. During the coding process, the authors provided the research assistants with ongoing support and held several meetings to discuss their progress and relevant issues.

To gain insight into the nature of those questions that go unanswered during calls, we break them down according to topic. Panel A of table 2 reports descriptive statistics for the following five main information categories: industry level, firm-specific business, accounting, financials, and stock market. Since the underlying distribution of topic-related questions during a call is not known, we are reluctant to draw conclusions about managers' attitude toward such questions in general. Nonetheless, two findings are worth mentioning.

First, the number of unanswered questions relating to accounting issues is fairly small (i.e., 1%). Second, the majority of unanswered questions pertain to firm financials (i.e., 59%; especially requests for sales and margins information) and firm-specific business (i.e., 31%; for example, production and operations, R&D/patents, and mergers/acquisitions). Again, without drawing conclusions based on a general and unobserved demand for both types of information, the fact that most of the questions pertain to these two classes of information (i.e., collectively, they constitute 90% of the questions asked) comports with the primary task of analysts, which is to produce earnings forecasts as part of their investment recommendations on the stocks

T A B L E 2
Breakdown of Unanswered Questions to Topic and Time Horizon

	Number of Unanswered Questions	% of Total
Panel A: Breakdown of unanswered questions to topic^a		
Industry-level	108	6%
Competition	48	
Threat of new entrants	2	
Bargaining power of buyers	24	
Bargaining power of suppliers	8	
Other	26	
Firm-specific business	562	31%
Marketing	20	
Production/operations	210	
Financing	12	
Personnel	16	
Legal issues	37	
IT	6	
R&D/patents	60	
Mergers/acquisitions	96	
Share repurchases	21	
CEO	9	
Other	75	
Accounting	18	1%
Accounting policies	12	
Other	6	
Financials	1,055	59%
Assets	81	
Debt	33	
Equity	21	
Sales	294	
Backlog	35	
Other revenues	43	
Margin	121	
Expenses	117	
Special items	33	
Net income/EPS	71	
Cash flow	28	
Other financials	178	
Stock market^b	33	2%
	1,776	100%
Panel B: Breakdown of unanswered questions to time horizon^a		
Backward looking	39	2%
Forward looking	428	24%
Present	1,309	74%
	1,776	100%

^aThe reported statistics are based on a random sample of earnings-related conference calls held during trading hours (i.e., beginning after 9:30 A.M. and before 2:30 P.M. EST) by 681 S&P 1500 firms and 513 non-S&P 1500 firms between January 1, 2004 and December 31, 2004 (see table 1).

^bStock price, returns, trading volume, etcetera.

they follow (Schipper [1991]). After all, to project future income, analysts need to have information on current sales, margins, investments, growth, and the like.

To illustrate the average participant's interest in firm-specific financials, we offer the following excerpt from the earnings release conference call of Milacron Inc., a 120-year-old U.S. supplier of plastics-processing technologies and industrial fluids, held on February 11, 2004. For months, investors were uncertain of Milacron's future, as the firm faced a March 15, 2004 deadline to refinance \$115 million in senior notes ("Behind the Milicron Deal," *The Cincinnati Inquirer*, March 19, 2004). During the call, participants unremittingly pestered management about this subject. For example,

Eli Lustgarten (from J.V. Hanhour, analyst):

One question, no one wants to talk about the refinancing on a problem but you have money coming due within four weeks I guess.

Ron Brown (Chief Executive Officer of Milacron Inc.):

Yeah.

Eli Lustgarten:

Is there anything you can tell us about the ability to implement to meet that deadline or, I mean, it sounds like, you know, the time we've been hearing this now that you've been talking now for months and now we're within weeks of having to pay off the note coming due.

Ron Brown:

Yeah, the—all I can tell you with respect to the short term facilities, Eli, we are in discussions with the banks on both the accounts receivable facility and the revolver. And I cannot really discuss anything with respect to the refinancing—

Eli Lustgarten:

And I mean that's the one that, you know, you know, we are sitting here now as I said four weeks away effectively waiting to find out something. Is there any timetable that we should look for or anything we can do, this is no longer, you've got plenty of leisurely time. This has to be decided now, or you default on the bonds and that causes all sorts of problems.

After repeated inquiries into the refinancing process, the question came up again near the end of the call:

Mitch Lester (from Lester Brothers, analyst):

While I understand your reluctance to share what the refinancing and reorganization program may look like for the company, what I don't understand what is your reluctance in setting out a time frame when all stakeholders will see kind of a clear program?

Despite this strong pressure to disclose, management stuck to its guns and withheld information on the refinancing process.⁷

Next, we disaggregate the unanswered questions along a time horizon, that is, whether the questions are backward looking, forward looking, or related to present issues. Panel B of table 2 reports the descriptive statistics. Participants appear most interested in present issues, as the largest number of unanswered requests on this type (1,309 out of 1,776; 74%) attests. To illustrate, consider the following excerpt taken from Insmed Inc.'s earnings conference call held on February 11, 2004. Insmed Inc. is a research-driven biopharmaceutical company:

Sean Wu (from Rodman & Renshaw, analyst):

Can you provide an update on how many patients you have enrolled for the Phase III trial? Also do you expect to see preliminary results for trial in the middle of the year?

Geoffrey Allan (Chief Executive Officer of Insmed Inc.):

Sean, as we said, we would prefer not to comment on the day-to-day execution of this trial. It is our plan, as we stated, to file the NDA by the end of this year. That clearly requires us to complete the trial, analyze the data, and compile the NDA. Prior to compiling the NDA, we would like to meet with the FDA and ensure that we have a package that is admissible. We are simply wanting at this point to be very careful about how we release data so that we don't compromise any interaction that we have with the FDA prior to the NDA submission. So I appreciate that that is not really giving you the answer to the question that you're asking, but I just hope that—if you can recognize that filing this NDA is very important to us.

Furthermore, it seems that either call participants have little or no interest in past business or managers are less reserved when it comes to making backward-looking disclosures; only 2% of the unanswered questions pertain to historical events.

In the remainder of our paper, we study the conditions under which managers withhold information from public view (section 5) and whether investors interpret withheld information as reflecting unfavorably on a firm's prospects (Section 6).

4. Hypotheses Development and Variable Measurement

Prior studies indicate that several firm attributes affect the demand for, and thus the equilibrium level of, corporate disclosure. We start with a classification model based on four commonly cited disclosure determinants

⁷ Around the time of the call, Milacron's share price declined by 2.8%. On March 11, 2004 (four days before the deadline), management finally reached a refinancing deal. The news of the refinancing sent the shares up 45% on the first trading day after the financing deal was announced.

and append to this baseline model control variables believed to be associated with both our dependent variable and the explanatory variables.

Most studies primarily focus on examining the proprietary cost of disclosure. Berger and Hahn [2007] argue, however, that much of the prior evidence that is consistent with the proprietary-cost motive to withhold information is also consistent with an alternative agency cost hypothesis, which posits that disclosures are withheld because of conflicts of interest between managers and shareholders. Unlike the setting in Berger and Hahn [2007], our empirical setting does not yield opposite predictions for proprietary versus agency-cost motives to withhold information. Therefore, in this study, we make no attempt to disentangle these motives. We now turn to a discussion of our explanatory variables.

4.1 EXPLANATORY VARIABLES

4.1.1. Disclosure Agency Problem. Managers acquire private information through their close proximity to firm activities. Conference call participants (including buy- and sell-side analysts, as well as institutional and individual investors) demand information to which managers are privy for several reasons, such as assessing the expected returns and uncertainty of a firm's future prospects and monitoring the manager. Despite this demand, unless they are provided with appropriate incentives, managers are often reluctant to publicly disseminate private information. After all, incomplete disclosure makes it harder for outsiders to discipline managers or (re)assess their competence. As a consequence, to reduce their chances of being replaced, managers entrench themselves (Shleifer and Vishny [1989]). This behavior is especially true of managers during conference calls, where they (in particular, the CEO and the CFO; Li et al. [2009]) step into the lime-light and expose themselves to analysts' keen attention, especially to softer information (e.g., how management "feels" about achieving targets; Mayew and Venkatachalam [2008]).

Nagar, Nanda, and Wysocki [2003] argue that stock price-based incentives in the form of stock-based compensation and share ownership mitigate this disclosure agency problem. They posit that "[s]tock prices impound the relevant information in managerial disclosures in light of the current contingencies. As a result, stock price-based incentives elicit both good news and bad news disclosures from managers. Managers have incentives to release good news because it boosts the stock price. On the other hand, the potential negative investor interpretation of silence (Verrecchia [1983], Milgrom [1981]), and litigation costs (which reduce the value of the managers' ownership interest) are incentives to release bad news" (p. 284–285). Consistent with this prediction, Nagar et al. find that a given firm's disclosures are positively related to both the proportion of managerial compensation that stock price affects and the value of shares held by the manager.

Following Nagar, Nanda, and Wysocki [2003], we use two measures of managerial incentives that are tied to stock price: stock price-based

compensation (i.e., $COMP$) and stock price-based wealth (i.e., $LWEALTH$). First, $COMP$ is computed as the ratio of the average annual ex ante stock price-based compensation (i.e., the sum of the total value of stock-option grants plus the value of restricted stock grants) to total direct CEO compensation.⁸ Second, $LWEALTH$ is the natural logarithm of the value of CEO shareholdings in the firm (using the fiscal year-end closing price). Data is taken from Execucomp or hand-collected from the definitive proxy statements (DEF 14A) in the EDGAR database.

4.1.2. Proprietary Information. When a manager possesses proprietary information, she faces a tension between the desire to protect this information, on the one hand, and make value-increasing disclosures, on the other. After all, such disclosures could potentially damage her firm's competitive position.⁹ Regulation Fair Disclosure (Reg FD) requires firms to make material disclosures broadly available, for instance through a conference call. Opponents of Reg FD argue that prohibiting selective disclosure (i.e., disclosing material information only to select groups of market participants) ultimately compels firms to disclose less information for fear that competitors will exploit the information provided (e.g., Bushee, Matsumoto, and Miller [2004]). For firms facing higher proprietary costs, an appropriate response is to replace selective disclosure with nondisclosure (Wang [2007]). We employ an indicator variable, $RDINT$, set to one if R&D expenditures averaged over 2000–2004 are nonzero; 0 otherwise, as our measure of a firm's proprietary costs.

4.1.3. Firm Performance. Prior research finds that kinds of disclosures managers make depend on how well their firm is performing (e.g., Schrand and Walther [2000], Gigler and Hemmer [2001], Miller [2002], Li [2008]). For example, Miller [2002] argues that "managers of firms facing an impending decline might strategically choose to provide high levels of disclosures that focus on the current/short-term strong earnings while limiting long-term forward-looking information" (p. 179). Such disclosure strategies are expected to affect both the demand for and the supply of information during earnings-related conference calls. We control for performance by

⁸ Following Nagar, Nanda, and Wysocki [2003], total direct CEO compensation includes bonus, salary, other annual cash awards, value of restricted stock grants, net value of stock-option grants, long-term incentive payout, and all other annual compensation. The value of stock-option grants is based on the reported value in DEF 14A filings.

⁹ The prediction regarding how competition affects managers' decisions to withhold information is theoretically ambiguous. Some models offer conflicting arguments regarding how competition affects a firm's decision to disclose proprietary information (e.g., Darrough and Stoughton [1990], Verrecchia [1990a], Newman and Sansing [1993], Gigler [1994]). In unreported analysis, we use the Herfindahl-Hirschman index (HHI) to measure a firm's competitive environment. Following Harris [1998] and Botosan and Stanford [2005], we estimate HHI by summing the squared market share of all firms in the three-digit SIC code. Replacing $RDINT$ with HHI does not affect inferences. The coefficient on HHI is statistically insignificant at conventional significance levels.

including a firm's industry-adjusted ROE (*ADJROE*), computed as net income to book value of equity adjusted for the median ROE of the same four-digit SIC code. To further capture how operating revenue affects disclosure choices, we also include $\Delta SALES$, which equals the current quarter sales less sales in the same quarter in the previous fiscal year, scaled by total assets.

4.1.4. Litigation Risk. When choosing voluntary disclosure policies, companies consider their risk of litigation. In theory, the threat of shareholder litigation can affect a firm's disclosure decisions in two ways, each counterbalancing the other. On the one hand, the risk of legal actions taken for inadequate or untimely disclosures can encourage firms to increase voluntary disclosure. On the other, the risk of litigation can reduce firms' incentives to provide disclosure. Prior research on the relation between voluntary-disclosure decisions and litigation risk provides mixed evidence (see Healy and Palepu [2001] for an overview). Field, Lowry, and Shu [2005] demonstrate that this may be in part attributable to the endogenous relation between litigation risk and disclosure. Their findings suggest that disclosure deters rather than triggers (certain types of) litigation.

Despite the fact that forward-looking disclosures are protected by the Safe Harbor provisions of the 1995 Private Securities Litigation Reform Act, Rogers and Van Buskirk [2009] report that plaintiff attorneys frequently include in their allegations boilerplate arguments for why Safe Harbor provisions do not protect management's forward-looking statements. Rogers and Van Buskirk [2009] find that firms that have been subject to disclosure-related litigation reduce the amount of information they provide to investors (i.e., they are less likely to host an earnings-related conference call or issue an earnings forecast).

Following Field, Lowry, and Shu [2005], we use the standard deviation of daily returns over a one year period starting (ending) 365 days (one day) before the date of the conference call (*STDRET*) as our proxy for litigation risk.

4.2 CONTROL VARIABLES

Prior research indicates that several other company characteristics determine investor demand for disclosure. In fact, some of our main variables are correlated with these characteristics. To alleviate concerns about correlated omitted-variable bias, we control for these characteristics in our analyses.

4.2.1. Company Size. How company size affects a firm's willingness to disclose information during conference calls is ambiguous. Prior empirical research suggests that information quality is an increasing function of firm size (e.g., Atiase [1985], Lang and Lundholm [1993], Bamber and Cheon [1998]). Analytical research provides conflicting predictions about how the quality of information available to the public *prior* to the conference call influences firms' disclosure decisions *during* the call. One camp argues

that firms with good information quality will issue less expansive disclosures because information asymmetry is lower in such firms (e.g., Verrecchia [1983]). Another camp shows that as information quality increases, which, in turn, increases the quality of the manager's information, managers are incentivized to disclose more because investors will deem such disclosures more credible (Verrecchia [1990b]). Given the ambiguity, we do not attempt to predict the sign of our company-size variable. We compute company size (LMV) as the natural logarithm of a firm's beginning-of-year market value. We use the logarithm specification of market value in our analysis because the variable is highly skewed. The logarithm also captures any decreasing marginal effect of size on disclosures.

4.2.2. Company Age. Evidence on the relation between a firm's age and its disclosure practice is mixed. Chen, DeFond, and Park [2002] argue that future prospects are more uncertain among firms whose operations are less predictable (as is often the case with younger firms). Consequently, when evaluating younger firms, investors and analysts are more likely to demand additional disclosures. Chen, Chen, and Cheng [2008], on the other hand, find that a firm's disclosure practice varies inversely with the maturity of its public relations. We measure firm age (AGE) by the natural logarithm of the number of months the firm has been listed on CRSP. Since AGE is highly skewed, we use the natural logarithm in our analysis.

4.2.3. Analyst Participation and Involvement during the Call. Analysts and the firms they follow participate in a give-and-take interaction. When firms desire the visibility that being followed by analysts brings, analysts can demand guidance from management to track a given firm (Arya and Mitten-dorf [2007]). Prior research has documented that if a firm opts not to disclose information, it runs the risk of losing its analyst following (Bhushan [1989], Healy, Hutton, and Palepu [1999], Lang and Lundholm [1996]).

We introduce several variables to capture analysts' interest in participating in ($R(\#AN)$) and their involvement during ($R(\#QUES)$, $R(\#WRDS)$) the call. Consistent with prior studies, we find that the number of analysts participating in the conference call is strongly correlated with firm size, institutional ownership, and industry membership (e.g., Bhushan [1989], O'Brien and Bhushan [1990]). To avoid strong multicollinearity, we regress the number of participating analysts on LMV , $\%INST$, and several dummy variables that capture industry membership (using three-digit SIC codes). We include in our main regression model the residual, $R(\#AN)$, from this regression— $R(\cdot)$ is by construction orthogonal to LMV , $\%INST$, and industry membership. We similarly obtain $R(\#QUES)$ and $R(\#WRDS)$, where $\#QUES$ represents the number of questions asked (or remarks made) and $\#WRDS$ represents the number of words uttered by analysts during the call's question-and-answer section.

4.2.4. Institutional Ownership. While prior studies find that institutional investors enjoy increased access to firm-specific information (i.e., they are

better informed) and have different preferences for disclosure than other investors, extant evidence is mixed (e.g., Healy, Hutton, and Palepu [1999], Bushee and Noe [2000], Ajinkya, Bhojraj, and Sengupta [2005]). Using data from Compact D/SEC, we compute the percentage of stocks held by institutional investors ($\%INST$) as the number of shares held by institutions over the total number of common shares outstanding.¹⁰

4.2.5. Earnings-Announcement Return. Lang and Lundholm [2000] argue that SEC registrants use their disclosure policies to influence market perceptions. Evidence from Kimbrough [2005] suggests that initiating conference calls can reduce investor underreaction to earnings announcements. To capture a given firm's desire to alter investors' perceptions, we control for the market response to the earnings announcement using $PDRET$, which we compute as the quote midpoint at the start of the call ($SMID$) less the quote midpoint at the call start time one trading day before the conference call ($PDMID$) divided by $SMID$.¹¹

4.2.6. Missing Earnings Benchmarks. Survey evidence in Graham, Harvey, and Rajgopal [2005] suggests that missing the earnings target can put surprised analysts on the defensive during the conference call. During interviews, CFOs explained to the authors, "if they meet the earnings target, they can devote the conference call to the positive aspects of the firm's future prospects. In contrast, if the company fails to meet the guided number, the tone of the conference call becomes negative. The focus shifts to talking about why the company was unable to meet the consensus estimate" (p. 32). Moreover, interviewed CFOs say that analysts begin to doubt the credibility of both the assumptions underlying the current earnings number and the forecast of future earnings. As a proxy for the atmosphere during the conference call, we include in our regression model an indicator variable $MISS$. $MISS$ is set to 1 if actual EPS for the quarter is less than that quarter's mean consensus forecasted EPS (both taken from the I/B/E/S unsplit-adjusted summary file), and 0 otherwise.

4.2.7. Interim Disclosures. In their seminal paper, Ball and Brown [1968] document that the market, to a large extent, anticipates the information

¹⁰ Institutional ownership data from Compact D/SEC is missing for Real Estate Investment Trusts (REITs) (SIC 6798). We hand collected this information from Standard & Poor's *Security Owner's Stock Guide*.

¹¹ Additionally, controlling for investor sentiment during the quarter before the conference call (using a firm's market-adjusted return cumulated from day -92 to day -2 relative to the conference call date; $QTRRET$) has little apparent effect. Baginski, Hassell, and Kimbrough [2004] and Hutton, Miller, and Skinner [2003] argue that managers have incentives to provide supplemental disclosures when forecasting bad news. Unreported analysis, however, shows no asymmetric response to negative and positive $PDRET$ or negative and positive $QTRRET$. Furthermore, neither the absolute value of $PDRET$ nor the absolute value of $QTRRET$ is statistically significant at conventional levels in equation (1).

content of the annual earnings numbers prior to the date of release. Several studies have suggested that the information content of the annual earnings announcement is inversely related to the amount of available interim information (e.g., Grant [1980]). To control for differential quantity (or quality) of interim versus annual (i.e., information disclosed in the fourth quarter of a fiscal year) information, we include indicator variables for the second, third, and fourth quarters of the fiscal year.

5. *Conditions under Which Corporate Executives Suppress Information*

5.1 ECONOMETRIC SPECIFICATION

To explore under what circumstances managers withhold information from the public, we employ the following ordinal logistic regression (equation (1) hereafter): $\text{Prob.}(DIDISC) = F(\eta'X + \varepsilon)$, where $F(\bullet) = e(\bullet)/(1 + e(\bullet))$, wherein the dependent variable, *DIDISC* (an acronym for *d*ummy *i*ncomplete *d*isclosure), is coded as 1 in cases where at least one question per call remains unanswered, and 0 otherwise, and *X* is a vector that represents the explanatory and control variables, as discussed earlier.¹² Employing ordinal logistic regression techniques, however, entails a disadvantage: The information contained in the ordering (i.e., the number of unanswered questions per call) is lost. That said, using ordered logistic estimation instead leaves our inferences materially unaffected (results are untabulated).

5.2 DESCRIPTIVE STATISTICS

Table 3 reports the summary statistics. For our sample of 681 calls made by S&P 1500 firms, the average (median) number of unanswered queries is 1.37 (1). The raw number of unanswered questions (*NUQ*) ranges from 0 to a maximum of 10. Table 3 also lists the descriptive statistics for percentage of institutional ownership (%*INST*). %*INST* ranges from 0 to 99.99% with a mean (median) of 74.17 (78.35). Because shares that are shorted are owned by more than one party (i.e., the original lender plus the purchaser on the other side of the short sale; see also Asquith, Pathak, and Ritter [2005]), for some companies, institutional ownership can be high and even exceed 100% in some instances. The mean (median) ratio of stock-based to total compensation (*COMP*) is 0.42 (0.45). These descriptive results are consistent with Nagar, Nanda, and Wysocki [2003] from 1995 through 1997. The

¹² Alternatively, in untabulated analysis we scale the number of unanswered questions by the number of queries made during the call. Because the variable is highly skewed, we categorize this ratio by its quantiles (5, 10, and 20), with all zeroes grouped in the first quantile. Employing robust OLS estimation, replacing *DIDISC* in equation (1) with this alternative variable and controlling for fixed-industry effects (based on four-digit SIC codes) leaves all inferences unaltered.

TABLE 3
Descriptive Statistics

Variable	Obs.	Mean	Median	Std. Dev.	Min.	Max.
<i>DIDISC</i> (0,1)	681	0.6534	1	0.4762	0	1
<i>NUQ</i>	681	1.3788	1	1.5166	0	10
<i>RDINT</i>	681	0.4273	0	0.4950	0	1
<i>%INST</i>	681	74.17	78.35	20.61	0	99.99
<i>LWEALTH</i>	681	9.4641	9.2931	3.1957	0	20.41
<i>COMP</i>	681	0.4227	0.4572	0.2791	0	0.9999
<i>LMV</i>	681	7.4849	7.3605	1.4907	1.7316	12.50
<i>LAGE</i>	681	5.5457	5.6131	0.6620	3.3322	6.2576
<i>ADJROE</i>	681	0.0205	0.0521	0.2656	-0.7741	1.5716
<i>STDRET</i>	681	0.0208	0.0186	0.0086	0.0073	0.0641
<i>CCR</i>	681	0.0007	0.0007	0.0169	-0.0699	0.1021
Δ <i>SALES</i>	681	0.0312	0.0211	0.0678	-0.1806	1.2254
<i>PDRET</i>	681	0.0016	0.0022	0.0454	-0.2593	0.1730
<i>MISS</i>	681	0.2276	0	0.4195	0	1
<i>QTR1</i>	681	0.2863	0	0.4523	0	1
<i>QTR2</i>	681	0.2745	0	0.4466	0	1
<i>QTR3</i>	681	0.2158	0	0.4117	0	1
<i>QTR4</i>	681	0.2232	0	0.4166	0	1

DIDISC is set to 1 when one or more questions remain unanswered during a call, and 0 otherwise. *NUQ* is the raw number of unanswered questions per call. *RDINT* is an indicator variable set to one if R&D expenditures averaged over 2000–2004 are nonzero; 0 otherwise. *%INST* is the percentage of a firm's stocks held by institutional investors, calculated as the number of shares held by institutions over the total number of common shares outstanding. *LWEALTH* is the natural logarithm of the value of CEO shareholdings in the firm (using the fiscal year-end closing price). *COMP* is computed as the ratio of the average annual ex ante stock price-based compensation (i.e., the sum of total value of stock option grants plus the value of restricted stock grants) to total direct CEO compensation. *LMV* is the logarithm of a firm's market value of equity. *LAGE* is measured as the log of the number of months the firm has been listed on CRSP. *ADJROE* is a firm's industry-adjusted ROE, computed as net income to book value of equity adjusted for the median ROE of the same four-digit SIC code. To control for undue influence of outliers, we winsorize *ADJROE* at 1% from above and from below. *STDRET* is the standard deviation of daily returns over a one-year period starting (ending) 365 days (one day) before the date of the conference call. *CCR* is the stock price reaction during the conference call window, defined as the quote midpoint 60 minutes after the start of the call (*AMID*) less the quote midpoint at the start of the call (*SMID*) divided by *AMID*. Δ *SALES* is current-quarter sales (Compustat quarterly item 2) less sales in the same quarter in the previous fiscal year, scaled by total assets (Compustat quarterly item 44). *PDRET* is the quote midpoint at the start of the call (*SMID*) less the quote midpoint at the same time one trading day before the conference call (*PDMID*) divided by *SMID*. *MISS* is an indicator variable set to 1 when actual EPS for the quarter is less than the mean consensus forecasted EPS for that quarter (both taken from the I/B/E/S unsplitted-adjusted summary file), and 0 otherwise. *QTR1*–*QTR4* are indicator variables for each fiscal quarter.

average value of shares held by the CEO, however, is much higher for our sample firms, which are based on 2004 data, than it was for theirs. This finding fits with the fact that over time CEO wealth has been increasingly exposed to firm stock prices; indeed, the exposure tripled between 1980 and 1994 and doubled again between 1994 and 2000 (Hall and Liebman [1998], Bergstresser and Philippon [2006]).

5.3 MULTIVARIATE LOGISTIC ANALYSIS

Table 4 reports the results of our multivariate analysis of *DIDISC*, our indicator variable for incomplete disclosure, on a large number of firm- and call-specific disclosure determinants. We adjust standard errors for

possible dependence in the residuals for having multiple observations per industry. Petersen [2009] shows that when the residual contains information that the researcher is not using, standard errors can be biased. The way participants formulate questions suggests they are cognizant of the common disclosure practices in a given firm's industry. *A priori*, this awareness could discourage analysts from asking for particular kinds of information (a habit that researchers cannot observe). However, our review of call transcripts shows that participants will occasionally reference common practice while introducing their question (e.g., "I know that, competition-wise, you don't want to say exactly, but . . .") and then proceed to pursue the

TABLE 4
Conditions under Which Corporate Executives Withhold Information from Public View

# Unanswered Questions	[0, 1–10]				[0, 3 – 10]
	(1)	(2)	(3)	(4)	(5)
LWEALTH	-0.0159 (1.13)	-0.0125 (0.91)	-0.0097 (0.76)	-0.0101 (0.77)	-0.0439 (1.63)
COMP	-0.3507 (1.90)	-0.3307 (1.80)	-0.3774 (2.05)	-0.3997 (2.10)	-1.0383 (2.45)
RDINT	0.1164 (0.74)	0.0903 (0.58)	0.1635 (1.06)	0.1161 (0.75)	0.3677 (0.50)
ΔSALES	-1.6586 (1.78)	-1.7437 (1.90)	-1.6460 (1.87)	-2.0520 (2.34)	-3.6450 (2.31)
ADJROE	-0.1083 (0.48)	-0.1003 (0.45)	-0.0827 (0.39)	-0.1018 (0.48)	-0.6411 (2.31)
STDRET	2.4682 (0.40)	0.1540 (0.02)	0.2186 (0.03)	-1.3212 (0.21)	-29.8484 (1.81)
LMV	0.1254 (3.38)	0.1237 (3.36)	0.1314 (3.50)	0.1229 (3.37)	0.2192 (2.19)
LAGE	-0.2195 (3.10)	-0.2297 (3.29)	-0.2468 (3.53)	-0.2227 (3.02)	-0.2465 (1.93)
%INST	— —	— (0.01)	0.0001 (0.06)	-0.0001 (0.13)	0.0007
PDRET	— —	— (1.77)	-1.5017 (1.23)	-1.0757 (0.46)	-1.0609
MISS	— —	— (1.67)	0.2125 (1.54)	0.1821 (2.21)	0.6507
R(#AN)	— —	— —	— (1.10)	0.0209 (1.78)	0.0918
R(#QUES)	— —	— —	— (2.56)	0.0089 (2.77)	0.0128
R(#WRDS)	— —	— —	— (1.94)	-0.0001 (0.68)	-0.0001
QTR2	— —	-0.2104 (1.57)	-0.2268 (1.60)	-0.2242 (1.52)	-1.3999 (4.77)
QTR3	— —	-0.0157 (0.13)	-0.0366 (0.31)	-0.0174 (0.15)	-0.7477 (2.08)
QTR4	— —	0.0104 (0.08)	0.0083 (0.06)	0.0160 (0.11)	-0.5198 (1.74)

(Continued)

TABLE 4—Continued

# Unanswered Questions	[0, 1–10]				[0, 3 – 10]
	(1)	(2)	(3)	(4)	(5)
N	681	681	681	681	366
N groups	248	248	248	248	180
Log pseudolikelihood	−471.98	−470.82	−468.75	−464.00	−84.78
Wald Chi-square	24.41	25.77	29.80	59.55	77.45
	($p < 0.01$)				
Pseudo- R^2	0.0112	0.0136	0.0179	0.0279	0.1617

Reported are coefficient estimates and z-statistics (based on heteroskedasticity-robust standard errors) based on ordinal logistic estimation procedures. z-statistics are reported in parentheses below the coefficient estimates. Standard errors are corrected for clustering at the four-digit SIC industry level. Coefficients that are statistically significant at the 10% level (two-tailed) or better are reported in **bold**. The random sample includes 681 firms in the Standard & Poor's (S&P) 1500 index (S&P 500, S&P 400 MidCap, and S&P 600 SmallCap). Column (5) includes a sample of S&P 1500 firms for which the number of unanswered questions during the call exceeds two, using full-disclosure firms (i.e., *DIDISC* equals 0) as the benchmark. The dependent variable is *DIDISC*. *DIDISC* is set to 1 in cases where one or more questions remain unanswered during a call, and 0 otherwise. *LWEALTH* is the natural logarithm of the value of CEO shareholdings in the firm (using the fiscal year-end closing price). *COMP* is computed as the ratio of the average annual ex ante stock price-based compensation (i.e., the sum of total value of stock-option grants plus the value of restricted-stock grants) to total direct CEO compensation. *RDINT* is an indicator variable set to one if R&D expenditures averaged over 2000–2004 are nonzero; 0 otherwise. *LMV* is the logarithm of a firm's market value of equity. *LAGE* is measured as the log of the number of months the firm has been listed on CRSP. ΔSALES is current quarter sales (Compustat quarterly item 2) less sales in the same quarter in the previous fiscal year, scaled by total assets (Compustat quarterly item 44). *ADJROE* is a firm's industry-adjusted ROE, computed as net income to book value of equity adjusted for the median ROE of the same four-digit SIC code. To control for undue influence of outliers, we winsorize *ADJROE* at 1% from above and from below. *STDRET* is the standard deviation of daily returns over a one year period starting (ending) 365 days (one day) before the date of the conference call. *%INST* is the percentage of a firm's stocks held by institutional investors, calculated as the number of shares held by institutions over the total number of common shares outstanding. *PDRET* is the quote midpoint at the start of the call (*SMID*) less the quote midpoint at the same time one trading day before the conference call (*PDMID*) divided by *SMID*. *MISS* is an indicator variable set to 1 if actual EPS for the quarter is less than the mean consensus forecasted EPS for that quarter (both taken from the I/B/E/S unsplit-adjusted summary file), and 0 otherwise. *R(#AN)* is the residual from a first-stage regression of the number of analysts participating in the call (#AN) on *LMV*, *%INST*, and indicator variables capturing industry membership (using three-digit SIC codes). Similarly, *R(#QUES)* and *R(#WRDS)* represent the residual from a first-stage regression of the number of questions asked (#QUES) or the number of words expressed (#WRDS) during the question-and-answer section of the call on *LMV*, *%INST*, and industry membership, respectively. *QTR2*–*QTR4* are indicator variables for each fiscal quarter.

information nonetheless.¹³ Also, corporate executives regularly cite prevailing industry practice to account for their disclosure decisions. To illustrate, in response to a question on changing radio formats in the new quarter, management of Entravision Communications states during the conference call on November 4, 2004: "... you know, we don't disclose any format changes that we might employ in our radio division. I'm sure you understand." The reported standard errors are corrected for clustering at the four-digit SIC industry level. Although it entails a considerably reduced sample size (due to several covariates perfectly predicting the outcome of interest), using four-digit SIC indicator variables for each cluster instead (not reported in a table) leaves our inferences materially unchanged. Diagnostic tests show that multicollinearity is not an issue in this study (untabulated).

¹³ The excerpt is taken from Tetra Technologies Inc.'s conference call on April 26, 2004.

The results reported in table 4 obtain across two different samples: one of calls in which at least one question remains unanswered (columns 1–4) and another of calls in which the number of unanswered questions exceeds two (column 5); in both cases, full-disclosure calls are used as the benchmark. Untabulated analysis indicates that investors respond equally negatively to both types of calls. Nonetheless, as a robustness check, we also present results from the second sample because this sample potentially represents firms that maintain more restrictive corporate disclosure policies.¹⁴ One might then expect that, irrespective of the circumstances, managers of these firms will be less forthcoming when communicating with analysts.

Column 1 in table 4 reports the results for our baseline model together with firm size and company age as our first two control variables. Consistent with evidence in Nagar, Nanda, and Wysocki [2003], we document a positive association between a CEO's stock price-based incentives and firm disclosures. While both *COMP* and *LWEALTH* have the expected negative sign, only *LWEALTH*'s coefficient is significantly different from zero at $p < 0.06$ (two-sided). Firm size is significantly negatively related to a firm's willingness to disclose information during meetings with the investment public. Finally, we find that more mature firms (*LAGE*) and companies with sales growth (Δ *SALES*) are less likely to withhold information.

In columns 2–4, we gradually include more control variables in our model specification and find that our explanatory variables are robust to the inclusion of these covariates. Three findings in particular are worth mentioning. First, column 3 reports a significantly negative coefficient on *PDRET*, which suggests that, when facing a negative response to an earnings announcement, corporate executives become more reluctant to release private information during the following related conference call. Including call-specific variables (i.e., $R(\#AN)$, $R(\#QUES)$, and $R(\#WRDS)$) in our model, however, makes the coefficient on *PDRET* insignificant (column 4). Second, column 4 reports that of our three measures of analyst involvement during the call, $R(\#QUES)$ and $R(\#WRDS)$ are significantly different from zero at $p < 0.05$ or better. Diagnostic tests indicate that the negative sign on $R(\#WRDS)$ results from the high degree of collinearity between this variable and $R(\#QUES)$. A formal *F*-test for the joint significance of the coefficients on $R(\#QUES)$ and $R(\#WRDS)$ is statistically significant at $p < 0.02$. We interpret this finding as support for the idea that sell-side analysts play an active role in uncovering firm information. Third, the coefficient on *MISS* is significantly positive in column 3 (albeit only weakly significant in column 4), which supports the suggestion in Graham, Harvey,

¹⁴ To illustrate, Xerox Corp. mentions in its disclosure guidelines that its company's policy is to not disclose any information that could be "useful to a competitor, to someone negotiating with the company, or in litigation with Xerox; contrary to senior management statements on strategy, the state of current business, or the business outlook; an embarrassment to Xerox, its customers or suppliers; or unfair disparagement to competitors" (available at www.xerox.com).

and Rajgopal [2005] that missing earnings benchmarks puts surprised analysts on the defensive and gives the conference call a negative tone.

Taken together, the collective evidence suggests that incomplete disclosures occur in a nonrandom fashion.

As a test for robustness, we re-estimate equation (1), this time only marking calls for incomplete disclosure when they contain three or more unanswered questions. Ultimately, 130 calls meet this criterion. Column 5 in table 4 reports the results using full-disclosure calls as a benchmark. Overall, this restriction does not affect our results. Several findings, however, are meaningful. First, the coefficient on *STDRET*, our proxy for litigation risk, is significantly negative at $p < 0.07$ (two-sided), a finding consistent with evidence in Field, Lowry, and Shu [2005] showing that disclosure potentially deters certain types of litigation. Second, this alternative measure for incomplete disclosure allows us to document strong support for the mitigating effect stock price-based incentives have on the disclosure agency problem. Specifically, both the proportion of CEO compensation affected by stock price (*COMP*) and the value of shares held by the CEO (*LWEALTH*) are positively related with managerial disclosure at $p < 0.10$ or better. The statistical, as well as economic, significance for *COMP* in column 5 is higher than in column 4. Finally, the coefficient on *ADJROE* is significantly negative. That is, over and above $\Delta SALES$, *ADJROE* is positively associated with a firm's forthcoming disclosures when communicating with analysts.

5.4 FURTHER TESTS

5.4.1. No Recent CEO Change. Given that a new CEO has spent less time in the firm, she is arguably less informed about the firm's ins and outs. To create a more homogenous sample of firms with executives who are likely to be equally informed, we re-estimate equation (1), this time including only those firms whose CEOs have been in office for at least one year. Using data from Execucomp, we find that this restriction leaves our inferences unaltered (untabulated).

5.4.2. Irregular Items. Leuz and Schrand [2008] argue that, given SEC disclosure requirements regarding discontinued operations, any fundamental changes in a firm's operations are likely to affect that firm's willingness to disclose information. How "irregular" items (e.g., special items, discontinued operations) impact disclosures during the call, however, is ambiguous. On the one hand, the more information shared about the irregular item pre-call, the less we would expect analysts to demand additional disclosures. On the other hand, if the irregular item is mentioned in an earnings announcement, we would expect analysts to call for background information.

To control for fundamental changes in the firm, we include *SPITEM* and $|DISCOP|$ in our analysis. $|SPITEM|$ is the absolute value of special items (Compustat Quarterly Item 32) divided by end-of-quarter total assets. $|DISCOP|$ is the absolute value of discontinued operations (Compustat Quarterly Item 33) divided by end-of-quarter total assets. Unreported

analysis shows that the coefficients on both variables are insignificantly different from zero. Our main inferences remain unchanged.

5.4.3. Issuance of Debt or Equity. Prior research suggests that the decision to issue securities and debt influences disclosure policy (e.g., Gibbins, Richardson, and Waterhouse [1990], Frankel, McNichols, and Wilson [1995], Healy, Hutton, and Palepu [1999]). We measure a firm's external financing activities (*EXTFIN*) as the cumulative proceeds from equity offering and public debt issuance reported in the SDC's Global New Issues database between 2003 and 2005 (i.e., surrounding our sample year 2004), scaled by total assets (Frankel, McNichols, and Wilson [1995]). Untabulated analysis shows that including *EXTFIN* in our model does not affect our main findings. The coefficient on *EXTFIN* is statistically insignificant at conventional levels.

6. Incomplete Disclosure and Investor Trading during the Call

6.1 ECONOMETRIC SPECIFICATION AND VARIABLE MEASUREMENT

We divide investor responses during the conference call into two groups: calls marked for incomplete disclosure versus calls marked for full disclosure. To test whether investors negatively interpret withheld information—that is, whether they interpret the event as “bad news”—we use ordinary least squares to estimate the following regression model (hereafter, called equation (2)), $CCR = F(\eta'DIDISC + \gamma'Z + \varepsilon)$, wherein *DIDISC* is our main variable of interest and *CCR* is the stock-price reaction during the conference call window, which is defined as the quote midpoint 90 minutes after the start of the call (*AMID*) less the quote midpoint at the start of the call (*SMID*) divided by *AMID*. We define our conference call window as beginning at the start of the call and ending 90 minutes thereafter. As a sensitivity test, we redefine our conference call window as ending 120 minutes after the start of the call. Although a longer window potentially introduces confounding effects, it also accounts for the possibility that news released during the call's question-and-answer section may result in trading outside of the original 90-minute call window.

We include two control variables (*Z*) in an attempt to capture some drift effect (after all, the earnings press release took place shortly before the earnings-related conference call) or momentum effect. Specifically, we include *PDRET* (i.e., prior 24-hour return) and *QTRRET* (i.e., prior 90-day return) in equation (2). *PDRET* is the quote midpoint at the start of the call (*SMID*) less the quote midpoint at the same time one trading day before the conference call (*PDMID*) divided by *SMID*. *QTRRET* is the market-adjusted returns cumulated from day -92 to day -2 relative to the date of the conference call.¹⁵

¹⁵ To control for other circumstances that could give rise to investor responses, in unreported analysis we further include *LMV*, *LAGE*, *ADJROE*, Δ *SALES*, *SALES*, *MISS* (see table 4

TABLE 5
Do Investors Interpret Silence Negatively?

Return Window	90 Minutes		120 Minutes	
	(1)	(2)	(3)	(4)
Intercept	0.0032 (2.40)	0.0024 (1.38)	0.0031 (2.16)	0.0027 (1.42)
<i>DIDISC</i>	-0.0034 (2.15)	-0.0035 (2.20)	-0.0037 (2.20)	-0.0038 (2.25)
<i>PDRET</i>	-0.0624 (2.39)	-0.0622 (2.37)	-0.0672 (2.34)	-0.0670 (2.32)
<i>QTRET</i>	0.0012 (0.20)	0.0015 (0.23)	0.0016 (0.25)	0.0019 (0.28)
<i>QTR2–QTR4</i>	–	Included	–	Included
<i>N</i>	681	681	681	681
<i>F</i> -value	3.87	2.51	4.10	2.51
(<i>p</i> -value)	(<0.01)	(<0.02)	(<0.01)	(<0.02)
<i>R</i> ²	0.0271	0.0293	0.0277	0.0292

Reported are coefficient estimates and OLS *t*-statistics based on heteroskedasticity-robust standard errors (*t*-values are reported in parentheses below the coefficient estimates). Coefficients that are statistically significant at the 10% level (two-tailed) or better are reported in **bold**. *CCR* (the dependent variable) is the stock price reaction during the conference call window, defined as the quote midpoint 90 minutes after the start of the call (*AMID*) less the quote midpoint at the start of the call (*SMID*) divided by *AMID*. In columns 3–4, we report results using quote midpoints 120 minutes after the start of the call. The sample includes only firms in the Standard & Poor's (S&P) 1500 index (S&P 500, S&P 400 MidCap, and S&P 600 SmallCap). *DIDISC* is set to 1 in cases where one or more questions remain unanswered during a call, and 0 otherwise. *PDRET* is the quote midpoint at the start of the call (*SMID*) less the quote midpoint at the same time one trading day before the conference call (*PDMID*) divided by *SMID*. *QTRET* is the market-adjusted returns cumulated from day -92 to day -2 relative to the conference call date. *QTR2–QTR4* are indicator variables for each fiscal quarter.

6.2 MULTIVARIATE ANALYSIS

Table 5 reports our findings. Reported are coefficient estimates and OLS *t*-statistics based on heteroskedasticity-robust standard errors (reported in parentheses below the coefficient estimates). As stated earlier, our dependent variable is (based on) the stock-price reaction during the 90- and 120-minute windows after the start of the call. As in section 5, we report results only for our random sample of firms in the S&P 1500 index. The visibility literature suggests that investors often overlook large groups of stocks because of their low visibility (e.g., “local-stock bias” in Loughran and Schultz [2005]). In other words, for disclosures to be effective, the firm must enjoy some degree of visibility (e.g., Merton [1987]). In fact, Lehavy and Sloan [2008] suggest that, even more than its fundamentals, a firm’s visibility impacts its stock price. Since S&P 1500 firms have a larger “investor base” (i.e., more investors are aware of the firm’s existence), it is arguable that investors are more likely to respond to information released (or withheld) during calls related to these firms.

for a description of these variables), *DSPITEM*, *DDISCOP* (see section 5 for a description), *NUMEST* (the number of forecasts issued for the current quarter, from the I/B/E/S summary file), *R(#AN)*, *R(#QUES)*, and *R(#WRDS*) in equation (2). Results are not different from those reported in table 5.

After controlling for potential drift or momentum effects, we find strong support for the assumption maintained in the literature that investors interpret “silence” negatively. For all of our tests, the coefficient on *DIDISC* is significantly negative at $p < 0.05$ (two-sided) or better. This finding is consistent with the notion that investors can unravel withheld information. Moving from the 90-minute return window to 120-minute return window (columns 3 and 4 in table 5) does not materially affect our inferences.

6.3 WOULDN’T OBFUSCATION BETTER SERVE MANAGERS’ INTERESTS?

One important remaining question is why managers occasionally state openly during the call that they are unwilling to disclose the requested information. After all, the incomplete revelation hypothesis (Bloomfield [2002]) seems to imply that investors react less severely (or at least more slowly) to obscure, as opposed to outright withheld, information. Nevertheless, in 108 of our 1,194 sample calls (9%) managers simply state they “don’t disclose” the requested information. Extant evidence on the use of obfuscation in corporate disclosures is scant. Li [2008] finds that firms with losses, or with transient income, fill their annual reports with long sentences and “big words.” He also shows that changes in the length of a firm’s annual report are negatively correlated with future returns, which suggests that by writing these longer reports managers are able to soften or delay market reactions to news. Evidence from Hammersley, Myers, and Shakespeare [2008], however, suggests that investors discount vague Section-302 disclosures more severely than they do clear ones.

To shed some light on this topic, we reread sample call transcripts from our S&P 1500 firms and created an indicator variable *UNABLE*, which is set to 1 if an executive’s response suggests she is unable to provide the information, and 0 otherwise. Using full-disclosure calls as a benchmark, we then separately re-estimate equation (2), once for calls wherein *UNABLE* equals 1 ($N = 91$) and again for calls wherein *UNABLE* equals 0 (indicating “unwillingness” to disclose; $N = 354$). In either case, *DIDISC* is our variable of interest. Unreported analysis shows that our main findings on *DIDISC*, conditional on *UNABLE* either being equal to 1 or 0, remain unaltered for both subsamples.

6.4 FURTHER TESTS

6.4.1. Trading Volume. Holthausen and Verrecchia [1990] show that unexpected return variance and trading volume are equally valid measures of information content. To assess whether calls are informative, we also examine levels of trading volume during conference calls. For firm i , we compute *ABNVOL* as the total trading volume (in USD) in the 90 minutes following the start of firm i ’s conference call (*TVOL*) less the median trading volume (in USD) during a 90-minute interval beginning at the same time as firm i ’s call on a regular no-call trading day in the same quarter (*MVOL*). This reference period measures “normal” firm-specific volume levels. To control for systematic differences in trading volume across firms, we scale *ABNVOL* by

MVOL.¹⁶ Consistent with our primary results, we find that earnings-related conference calls convey material information, as evidenced by the unusually large volume of trading during the call. Unreported analysis shows that the average level of trading volume is noticeably higher (at $p < 0.01$) during the conference call window than during the benchmark period. At the 1% level in two-tailed tests, the difference in means for incomplete-disclosure calls is significantly higher compared with complete-disclosure calls. These differences are also economically significant. The average trading volume of the conference-call window is roughly three times that of the benchmark period. In sum, consistent with evidence in Frankel, Johnson, and Skinner [1999], these findings show that conference calls convey to call participants information beyond that provided by the press release. Moreover, our results demonstrate that withholding information increases investor trading.

6.4.2. Incomplete Disclosures by Type. In our primary analyses, we treat all unanswered requests for information as equally unfavorable signals about a stock's value or quality. Consequently, we implicitly expect investors to price-protect themselves evenly across all instances of withheld information. It is conceivable, however, that investors can obtain certain information about a stock from alternative sources. For instance, they might receive additional *industry-related* information (e.g., changes in the level of competition, a firm's current market share, bargaining power of suppliers) directly from competitors or via branch organizations. Thus, when managers withhold this type of information during a conference call, stock discounts do not necessarily follow. To investigate this further, we partition our incomplete-disclosure calls by information type using the topic classification in Panel A of table 2. We expect incomplete disclosures to have the greatest impact on stock price when the withheld information pertains to *firm-specific* financial disclosures (e.g., sales, margins, expenses, special items, net income) or *firm-specific* business (e.g., production, operations, mergers/acquisitions). Fairfield, Sweeney, and Yohn [1996] find that the best predictors of future earnings are sales and the cost of goods sold, and Lundholm and Sloan [2006] nominate sales as the single most important input to a forecasting model. We therefore expect that information withheld about these line items in particular will result in (negative) investor responses.

Untabulated results indicate that *DIDISC* in equation (2) is significantly negative at $p < 0.01$ for unanswered firm-specific information requests only. Consistent with our expectations, using full-disclosure calls as a benchmark and based on a sample comprising 15 (6%) calls containing unanswered questions and 236 (94%) calls containing full disclosure, we find

¹⁶ Frankel, Johnson, and Skinner [1999] do not scale their measure for trading volume. While the statistical significance of differences in medians generally improves, overall inferences remain materially unchanged when using unscaled, as opposed to scaled, trading volume (untabulated).

that *DIDISC* is insignificantly different from zero at conventional levels for other types of incomplete disclosure.

6.4.3. Uncertainty of Information Arrival. The disclosure literature offers an alternative rationale for why firms withhold information in the absence of an exogenous proprietary cost: basic uncertainty about whether the manager actually possesses private information to share (see Verrecchia [2001]). Dye [1985] predicts that if investors believe the information has not yet arrived, they will not necessarily downwardly revise their demands for the firm's shares. As a proxy for uncertainty about the existence of information, we use the percentage of stocks held by institutional investors (%*INST*). Dye [1998] predicts that a firm's disclosure threshold (i.e., how likely a firm will withhold private information) decreases as the probability that investors are informed increases. This prediction assumes that informed investors are able to distinguish between attempts to hide information from the public, on the one hand, and the plain nonexistence of information, on the other, as explanations for incomplete disclosure. Findings in several studies suggest that institutional investors have increased access to firm-specific information and, hence, are better informed (e.g., Piotroski and Roulstone [2004]).

To test the uncertain information arrival hypothesis, we create and include in equation (2) an interaction term between *DIDISC* and *DINST*, which is set to 1 if %*INST* is greater than or equal to the sample median, and 0 otherwise.¹⁷ Unreported analysis shows that the coefficient on *DIDISC* (i.e., the main effect) remains statistically significant at $p < 0.05$. At conventional levels, the coefficient on *DIDISC* · *DINST* is statistically insignificantly different from zero. In other words, irrespective of the condition under which managers decide to withhold information, we find that investors react negatively during the call to this event.

7. Conclusion

We examine the disclosure choices firms make during public earnings-related conference calls between managers and the investment community. The demand for disclosure arises from information asymmetry and agency conflicts between managers and outside investors. Because of their close proximity to their firm's operating activities, managers are privy to information related to these activities. While prior studies have extensively examined managerial disclosure choices, the literature on incomplete disclosure is scant. The live nature of conference calls between corporate executives

¹⁷ We acknowledge that a conference call is possibly not a particularly suitable setting to test the uncertain information arrival hypothesis. After all, participants on the call are in the position to seek out (by simply asking for the reason) why management does not disclose certain information. We hasten to add that this does not imply that corporate executives then will always announce the (true) reason.

and call participants enables us to investigate whether managers withhold or fully disclose their private information.

In this study, we manually review and code a large sample of call transcripts to discover whether managers withhold requested information and, if so, under what conditions. Our evidence suggests that managers regularly leave call participants in the dark by not answering their questions. We find that the best predictors of such an event are firm size, CEO stock price-based incentives, company age, firm performance, litigation risk, and whether analysts are actively involved during the call's Q&A section. Finally, we document strong support for the assumption maintained in the literature that investors interpret silence negatively, that is, they seem to equate no news with bad news. In short, the results of our study suggest that silence speaks.

A question that our paper leaves unaddressed is why some managers wait to provide information during a conference call, rather than disclosing such information in SEC filings or through other media. Frankel, Johnson, and Skinner [1999] conjecture that managers may be drawn to this format because "conference calls, being less formal than written press releases, are subject to a lower standard of legal liability than statements made during press releases" (p. 136). They also claim that managers are sometimes unsure of the informational needs of investors and so prefer the flexibility of providing information in response to analysts' questions. Matsumoto, Pronk, and Roelofsen [2008] argue that the combination of analysts' active involvement during a call and managers' reluctance to withhold information requested in public can result in the release of additional information. While the evidence we provide speaks somewhat to the latter argument, we ultimately leave this interesting question for future research.

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