THE ASSOCIATION BETWEEN VOLUNTARY DISCLOSURE, ACCRUAL LEVELS, AND ACCRUAL MISPRICING

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Abstract

Prior research shows that the accruals are less persistent than cash flow and that investors overweight the persistence of accruals. Prior research also shows that voluntary disclosure is a management tool that can reduce information asymmetry. In this study, I extend both streams of research by investigating the association between voluntary disclosure and firms' accruals. I begin by exploring the association between the magnitude of absolute accruals and the probability of observing an increase in voluntary disclosures. I find evidence that suggests managers increase disclosures as the magnitude of absolute accruals increases. This result is consistent with an increase in voluntary disclosure when the likelihood of equity mispricing increases or when earnings are less informative. Next, I investigate whether voluntary disclosures associated with earnings-announcement conference calls affect investors' assessments of the persistence of current accruals for future earnings. I document that conference calls are inversely related to the mispricing of accruals. That is, accrual mispricing persists for non-conference-call firms and accruals appear to be accurately priced for conference-call firms, consistent with voluntary disclosure reducing the information asymmetry associated with accruals.

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INTRODUCTION

In this study, I explore the association between voluntary disclosure and accrual levels and the pricing of those accruals. Prior research documents the benefits of voluntary disclosure in many contexts, such as analyst forecasting accuracy, cost of capital, and post-earnings announcement drift. However, to date, no study has examined the association between a firm's level of voluntary disclosure and a fundamental accounting construct – accruals, or the effectiveness of voluntary disclosure in the context of mitigating the accrual pricing anomaly (Sloan, 1996).

My study has two parts. First, I examine the association between voluntary disclosure (as measured by the existence of a conference call) and the level of absolute accruals. Consistent with theory in Verrecchia (1990) I expect voluntary disclosure to be positively associated with the level of absolute accruals (i.e. information asymmetry). I then consider the effectiveness of voluntary disclosure on the ability of investors to improve their pricing of the accrual component of current earnings. I do this by investigating whether those voluntary disclosures affect investors' assessments of the persistence of current-period accruals for future earnings. If higher levels of disclosure benefit investors by improving their assessments of the relative persistence of the accrual component of earnings, the over-weighting of the accrual component of earnings documented by Sloan (1996) will be reduced or eliminated.

I use a qualitative-dependent-variable model (Probit) to test the association between absolute-accrual levels and the existence of a conference call. To examine whether the existence of conference calls is associated with the pricing of accruals, I employ two methods consistent with Sloan (1996) and subsequent research. First, I use a rational-expectations model, where an earnings-forecasting equation is jointly estimated with a rational-pricing model (Mishkin 1983). Within these two equations, I add an indicator variable for the presence of a conference call to examine the impact of voluntary disclosure. My second set of tests relies on

portfolio analysis and Fama-Macbeth (1973) hedge-portfolio regressions.

My findings suggest that the existence of a 4th-quarter earnings-announcement conference call is positively associated with the level of absolute accruals. While the association is significant, the impact is small relative to other factors shown in prior research to be associated with an increase in disclosure. I also document that the existence of conference calls is inversely related to the mispricing of accruals. Mishkin tests suggest that mispriced accruals are eliminated within the conference-call firms while mispricing persists for the non-conference-call firms. As further evidence of the value of voluntary disclosures, the results based on portfolio analysis of abnormal returns documents a significant difference between high and low-disclosure firms within both the positive-accruals portfolio and the negative-accruals portfolio.

Finally, Fama-MacBeth (1973) regressions for a sub-sample of conference-call firms reveal that hedge returns are inversely associated with the number of annual conference calls held by a firm. An accrual-based trading strategy yields significantly positive abnormal returns for those firms that held just one conference call while the same trading strategy yields insignificant abnormal returns for firms that held several conference calls. This suggests that investors benefit more as firms hold a greater number of conference calls.[1] Overall, these findings are consistent with managers increasing disclosures when accruals (i.e. information asymmetry) are high; and voluntary disclosure mitigating the mispricing of those accruals.

I study the association between voluntary disclosure and accruals for several reasons. Collins and Hribar (2000) point out that "understanding what causes the market to fail to fully impound the future earnings implications of current accrual signals is a perplexing question that deserves further attention" (pg 122). I

[1] Evidence of more frequent conference calls can be seen in the current disclosure environment as several firms (e.g. Nokia and Intel) now hold a mid-quarter conference call in addition to their earnings-announcement conference call.

combine findings from the voluntary-disclosure literature with the accrual-mispricing literature in an attempt to address these concerns and to improve our understanding of both streams of research.

While trying to explain the results of Sloan (1996), studies have largely ignored the impact of managers, who have the ability to reduce security mispricing through voluntary disclosures (Healy and Palepu 1993). I provide direct evidence that voluntary disclosures by managers, as proxied by conference calls, are associated with investors' ability to impound the implications of current accruals for future earnings. The evidence presented here is an important step in helping managers, investors, and researchers understand how to improve the pricing of accruals.

From the firm's perspective, disclosure is costly and the benefits are difficult to measure. Documenting the benefits of voluntary disclosure provides managers with better insights into effective disclosure policy. This, in turn, may improve the overall quality of a firm's disclosure environment by providing managers with information that allows them to make decisions that direct resources towards more effective disclosure media (i.e. conference calls, Webcasts, press releases, etc.).

Prior to October 2000 access to conference calls was usually limited to analysts and large institutional investors. Concerned about the information gap between those who were privy to the call and individual investors, the SEC implemented Regulation Fair Disclosure (Reg. FD). Contrary to claims made by analysts and institutional investors that additional information was not released during these meetings, this study corroborates prior research that suggests conference calls provide useful information to participants.

My study proceeds as follows. In the next section, I review the prior research and develop my hypotheses. In section 3, I describe my research methods. I discuss the sample in section 4 and present my findings along with sensitivity analyses in section 5. A summary of the main results and concluding remarks are provided in the final section.

PRIOR LITERATURE AND HYPOTHESES

In this study, I integrate two streams of literature; voluntary disclosure and accruals mispricing. I begin by reviewing the voluntary-disclosure literature which includes a discussion of the general analytical and empirical disclosure research. This is followed by a discussion of the more recent conference-call research. I conclude my review with a discussion of the accrual-mispricing literature.

Voluntary-Disclosure Literature

Verrecchia (1983) and Jung and Kwon (1988) suggest that rather than waiting for information to be reflected in earnings (i.e. via private information search), managers will preempt quarterly-earnings information with additional disclosure if they believe the firm's equity is mispriced. Verrecchia (1990) shows when the precision of previously released information is low, managers are more likely to provide additional disclosures to the markets. He suggests that the increase in disclosure is a result of an increase in pressure from investors to release the manager's private information related to the "imprecise" prior information. In other words, when the likelihood of mispriced securities increases due to lower quality information about future earnings (i.e. less persistent accruals), the market exerts greater pressure on managers to reveal their private information.

Complementing the analytical research, Healy and Palepu (1993) suggest that managers prefer accurately priced equity for a variety of reasons, and managers who believe their firm's equity is mispriced can either make changes to the firm's financial policies (e.g. stock split or a change in dividend policy) or they can increase disclosure. Managers have obvious incentives to increase disclosure when they believe the firm's equity is underpriced. However, additional disclosures can also be expected when the firm's stock is overpriced. Both Healy and Palepu (1993) and Skinner (1994) suggest that legal liability is a sufficient incentive for managers to increase disclosure in the case of overpriced securities.

Voluntary disclosure can reduce security mispricing directly by increasing the precision of previously-released information (i.e. the financial statements). It can also reduce security mispricing by increasing market intermediation, that is, increasing private-information search by analysts and institutional investors (see Diamond and Verrecchia 1991 and Kim and Verrecchia 1994). Several empirical studies provide evidence consistent with voluntary disclosure reducing mispricing. Lang and Lundholm (1996) find that higher disclosure levels (as measured by AIMR scores) are associated with more accurate and less-disperse analyst earnings forecasts. Lundholm and Myers (2002) document that higher quality disclosures are associated with stock prices that are more highly correlated with future earnings. They suggest that additional disclosure can reduce the effects of recognition lag in GAAP earnings (Warfield and Wild 1992) and 'bring the future forward'.

My voluntary-disclosure metrics are derived from conference calls, a specific form of voluntary disclosure that has grown significantly during the past decade. Through a conference call, a company communicates with a group of interested parties via telephone or the Internet. A conference call is usually held immediately following an earnings announcement. In this call, management may detail a company's financial performance, list factors influencing those results, and offer comments on industry trends and long-term strategies. Unlike prepackaged disclosures such as press releases and MD&A, a question-and-answer session usually follows the initial briefing. This session provides investors a unique opportunity to request information directly from managers that addresses specific concerns related to accruals (e.g. unearned revenues, accounts receivable, and loan loss reserves) and increases the informativeness of current-period accruals for future earnings.

While empirical studies of conference calls have been limited, the evidence suggests they are a valid proxy for voluntary disclosure. Consistent with Verrecchia (1990), Tasker (1998) shows that firms with less-informative financial statements are more likely

to hold a conference call. [2] Frankel et al. (1999) document that conference-call firms are larger and more profitable, and suggest that investors expect higher future growth from these firms. They conclude that conference calls provide information over and above that contained in the company's quarterly press release. Bowen et al. (2002) document that conference calls increase analysts' ability to forecast earnings accurately, And more recently, Kimbrough (2005) finds that post-earnings announcement drift declines in the period surrounding a firm's decision to initiate a conference call, while Brown et al. (2004) document a 25-basis-point reduction in the cost of equity capital for firms that initiate conference calls.

In summary, analytical research suggests managers will increase disclosure as a result of equity mispricing or imprecise prior disclosures. This increase in disclosure reduces information asymmetries between market participants resulting in greater market efficiency. Using several different proxies for voluntary disclosure, empirical studies document results consistent with the theoretical literature. More recently, studies document that conference calls contain important information that reduces information asymmetry and market participants use that information to make more-informed decisions.

Accrual-Mispricing Literature

Sloan (1996) provides evidence that the accrual component of earnings is less persistent than the cash component. As such, the persistence of *aggregate* earnings is a function of the relative magnitudes of the accrual and cash components. Sloan (1996) also shows that stock prices act as if investors fail to recognize the differential persistence of earnings components and focus naïvely on aggregate earnings (i.e. investors overestimate the persistence of accruals), which ultimately leads to mispriced securities.

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[2] Whereas Tasker (1998) focuses on *industry* measures of financial-statement informativeness using market values, book values, and sales, I directly examine the impact of firm-specific accruals.

Recent studies have tried to explain this apparent anomaly with limited success. Ali et al. (2000) find that the predictive ability of accruals for subsequent returns is higher for large firms, firms with a larger percentage of institutional holdings, and firms followed by more analysts. Bradshaw et al. (2001) document analyst's failure to use the information contained in accruals. Contrary to the naïve-investor hypothesis put forth by Sloan (1996), these findings suggest that sophisticated investors have a greater fixation on earnings relative to naïve investors.

Xie (2001) finds that the accrual mispricing anomaly is due largely to the market's overpricing of discretionary accruals, while the findings in Beneish and Vargus (2002) document that investors can use the information about managers' contemporaneous trading to assess the likelihood the firm's accruals are of high or low quality, which implies top managers make trading decisions based on their knowledge of factors associated with the quality of accruals. More recently, Fairfield et al. (2003) suggest that the accrual-mispricing anomaly results from investors not pricing growth in net operating assets, and Mashruwala et al. (2004) suggest that the accrual pricing anomaly is not arbitraged away because of idiosyncratic risk and transaction costs.

In summary, while prior accruals research demonstrates that accruals generally have incremental information, mounting evidence suggests that both analysts and investors appear to ignore the components of earnings and fixate on earnings alone when making investment decisions and earnings forecasts.

Hypotheses

The prior voluntary-disclosure literature suggests that managers will increase disclosure when equity is mispriced or when the precision of prior information is low. The prior accrual research documents that the accrual component of current earnings is less persistent than the cash component and investors fail to account for the difference when pricing equity. The result is predictably-mispriced securities.

The findings in these two streams of literature lead me to my first hypothesis. If extreme accruals are less persistent and associated with greater equity mispricing, we should observe greater voluntary disclosure from managers for two reasons; investors should exert more pressure on managers to reveal their private information, and managers who believe their firm's equity is mispriced should increase disclosure to help investors price the security more accurately. Stated in the alternative form, my first hypothesis is:

H1: *The probability of observing a conference call (i.e. increased disclosure) is positively associated with the level of absolute accruals in current earnings.*

The previous discussion provides motivation for why managers will increase disclosure by holding a conference call. From that discussion, it follows that conference-call disclosures should lead to better informed investors, and therefore, more efficient prices. If managers have superior information about current-period accruals, and they convey that information to investors during the earnings-announcement conference call, accrual mispricing should be reduced as investors use the additional information to improve their assessment of the impact of current accruals on future earnings. My second hypothesis, stated in the alternative form, is:

H2: *Voluntary disclosures provided through conference calls are negatively associated with the mispricing of accruals.*

RESEARCH DESIGN

Voluntary Disclosure Metric

My primary measure for voluntary disclosure is a binary variable that indicates the presence of a conference call in connection with a firm's 4^{th}-quarter earnings announcement. This metric, denoted *CC4*, is equal to one if a firm held a conference call

during the 4th-quarter earnings announcement and zero otherwise. I focus initially on 4th-quarter conference calls because, relative to earlier conference calls (i.e. the 1st , 2nd or 3rd quarter), managers have more complete information about annual accruals and are more able to provide information to investors about the implications of these accruals for future earnings. This approach is also consistent with managers having less discretion related to accruals during the 4th quarter. Unlike interim reports, annual accruals are audited and estimates of annual costs allocated to interim periods are now known (Mendenhall and Nichols 1988). As such, managers must "square up" with their previous estimates, and discussion of annual accruals is most likely concentrated in the 4th-quarter call.[3]

Test of H1

Hypothesis 1 predicts that managers of firms with higher levels of absolute accruals are more likely to hold a conference call. I test Hypothesis 1 using a qualitative dependent variable model (Probit) where the dependent variable is *CC4*. In addition to absolute accruals, I include several variables in the model to control for other determinants of conference calls. Frankel et al. (1999) and Tasker (1998) document that the decision to hold a conference call is correlated with firm size, growth, profitability and analyst following, while Bushee et al. (2F003) document that open conference calls are associated with membership in the high-tech industry. Prior research also documents an inverse relation between market mispricing and the level of institutional holdings (Bartov et al. 2000; Collins et al. 2003). I also include a lagged conference call variable as an adverse-selection argument suggests a positive correlation between the presence of a lagged conference call and the decision to hold a current conference call. That is, if a firm has held previous earnings-announcement conference calls and chooses to

[3] I assume that disclosures provided by managers in conference calls are not available elsewhere, however, if they are, it biases against finding significant results.

skip a conference call, investors will assume managers are withholding bad news and bid the price of the firm down.

The decision to hold a conference call is modeled as follows with firm subscripts suppressed:

$$Prob(CC4_t) = f(\phi_1 + \phi_2 SIZE_t + \phi_3 BTM_t + \phi_4 ROA_t + \phi_5 INST\%_t + \phi_6 Analysts_t + \phi_7 Hitech_t + \phi_8 CC4_{t-1} + \phi_9 ABSAcc_t + \kappa_t) \quad (1)$$

where f is the cumulative standard normal distribution function; $CC4_t$ is an indicator variable equal to one if the firm held a 4th-quarter conference call during year t and zero otherwise; $SIZE_t$ is the decile ranking of total assets at year-end t; BTM_t is the decile ranking of the book-to-market ratio at year-end t; ROA_t is the decile ranking of return on assets during year t; $INST_t$ is the decile ranking of the percentage of institutional holdings at year-end t; $Analysts_t$ is the decile ranking of the number of analysts following the firm at year-end t; $Hitech_i$ is an industry dummy representing high-technology firms;[4] $CC4_{t-1}$ is an indicator variable for whether the firm held a 4th-quarter conference call during year t-1 and zero otherwise; and $ABSAcc_t$ is the decile ranking of the absolute value of accruals for year t.[5] I transform all decile rankings to range from zero to one to reduce the influence of extreme observations (Bhushan 1994).

Consistent with prior research, I expect positive coefficient estimates for firm size, profitability, institutional holdings, analyst

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[4] I define high technology industries as pharmaceuticals (SIC code 2833-2836), research and development services (8731), programming (7371-7373), computers (3571-3577), electronics (3559, 3660-3679), radio and telephone communications (4812-4829 and 4840-4899), or online retailers (5961).

[5] Whereas Sloan (1996) uses the balance-sheet approach to estimate accruals, I estimate accruals using the statement-of-cash-flows approach, defined as ordinary income minus operating cash flows. Collins and Hribar (2002) demonstrate that accruals estimated using the balance-sheet approach results in tests of accrual mispricing that are understated due to erroneous classification of extreme-accrual firms.

following, high-technology industry membership, and the presence of a lagged conference call; and a negative coefficient estimate for the book-to-market ratio. A positive coefficient on $ABSAcc_t$ ($\phi_{12} > 0$) supports Hypothesis 1 and is consistent with large accruals (negative or positive) increasing the probability that managers will hold a conference call.

Tests of H2

I test Hypothesis 2 using two methods. First, I adopt Mishkin's (1983) model of rational expectations. Based on the assumption that abnormal returns are zero in expectation, the Mishkin model combines an annual earnings-forecasting equation with a rational-pricing equation to form a system of equations which are jointly estimated. I modify the basic equations to allow estimation of the impact of conference calls as follows:

$$E_{t+1} = \delta_0 + \delta_1 Acc_t + \delta_{1H} CC4\_Acc_t + \delta_2 CFO_t + \delta_{2H} CC4\_CFO_t + \omega_{t+1} \quad (2)$$

$$CSAR_{t+1} = \beta[E_{t+1} - \delta_0 - \delta_1^* Acc_t - \delta_{1H}^* CC4\_Acc_t - \delta_2^* CFO_t - \delta_{2H}^* CC4\_CFO_t] + \varepsilon_{t+1} \quad (3)$$

where E_{t+1} is ordinary income at time t+1, Acc_t is accruals at time t, measured as ordinary income at time t minus operating cash flows at time t, CFO_t is cash flows from operations at time t, $CSAR_{t+1}$ is cumulative size-adjusted abnormal returns during time t+1, and the terms $CC4\_Acc_t$ and $CC4\_CFO_t$, are interactions between the high-disclosure metric (*CC4*) and accruals (*Acc*) and operating cash flows (*CFO*), respectively.[6] Consistent with prior research, earnings, cash flows and accruals are each deflated by average total assets.

[6] Size-adjusted returns are measured as the difference between a firm's 12-month buy-and-hold return and the buy-and-hold return for the same 12-month period on the market-capitalization-based portfolio decile to which the firm is assigned. Abnormal returns are cumulated for twelve months starting on the first day of the 4th month after the firm's fiscal year end.

Equation 2 is the forecasting equation, where δ_1 captures the persistence of accruals for firms that do not hold conference calls while ($\delta_1+\delta_{1H}$) captures the persistence of accruals for firms that do hold conference calls. Equation 3 is the pricing equation, where δ^*_1 captures the market-implied persistence of accruals for non-conference-call firms and ($\delta^*_1 +\delta^*_{1H}$) captures the implied persistence of accruals for conference-call firms. Rational pricing requires that each coefficient in Equation 2 equal its respective asterisked coefficient in Equation 3 (i.e. $\delta_i = \delta^*_i$ where i = 1, 1H, 2, 2H).

Sloan (1996) documents that accruals are less persistent than cash flows (i.e. δ_2 is significantly greater than δ_1), and investors misprice accruals with an implied persistence that is too high (i.e. δ^*_1 is significantly greater than δ_1). If conference calls are associated with a reduction in the market's mispricing of accruals as predicted, the ratio of ($\delta_1 + \delta_{1H}$) to ($\delta^*_1 + \delta^*_{1H}$) will be closer to one (i.e. greater) than the ratio of δ_1 to δ^*_1. In addition, a ratio statistically equal to 1 is evidence of rational pricing. That is, the implied persistence of accruals from Equation 3 is not significantly different from the forecasted persistence from Equation 2.

It is important to note that many of the variables included in Equation 1 have been shown to be associated with stock returns in prior research. Hence, the factors associated with the decision to increase disclosure should be controlled for in order to make cross-sectional comparisons of returns across high and low-disclosure firms. As an additional test, I correct for potential self-selection bias related to the decision to hold a conference call using the 2-stage approach proposed by Heckman (1979). Stage one requires a model of the decision variable (i.e. holding a conference call) which is accomplished with Equation 1. In stage two, the predicted values from estimating the decision model (Equation 1) are used to compute the Inverse Mills ratio (lambda).[7] I then introduce lambda into the Mishkin model as follows:

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[7] Lambda is the ratio of the probability density function (PDF) to the cumulative density function (CDF) for the predicted values from Equation 1 if a conference-

$$E_{t+1} = \delta_0 + \delta_1 Acc_t + \delta_{1H} CC4\_Acc_t + \delta_2 CFO_t + \delta_{2H} CC4\_CFO_t + \delta_3 Lambda\_Acc_t + \delta_4 Lambda\_CFO_t + \omega_{t+1} \quad (4)$$

$$CSAR_{t+1} = \beta[E_{t+1} - \delta_0 - \delta_1^* Acc_t - \delta_{1H}^* CC4\_Acc_t - \delta_2^* CFO_t - \delta_{2H}^* CC4\_CFO_t - \delta_3^* Lambda\_Acc_t - \delta_4^* Lambda\_CFO_t] + \varepsilon_{t+1} \quad (5)$$

where $Lambda_t\_Acc_t$ is the interaction between the lambda and Acc, $Lambda_t\_CFO_t$ is the interaction between the lambda and CFO_t, and all other variables are as previously defined. The lambda interactions correct for self-selection bias related to the decision to hold a conference call embedded in δ_{1H} and δ_{1H}^* in Equations 2 and 3.

The Mishkin test is a test of statistical significance. I also include a test of economic significance. That is, can investors earn abnormal returns to a trading strategy based on the publicly available information used in this study? These tests have generally been implemented by analyzing hedge-portfolio trading strategies. Statistical analysis, however, on a hedge-portfolio trading strategy in this study is problematic for two reasons. First, due to data availability constraints my sample is limited to the period 1994 – 2001. This limits the number of annual hedge-portfolio observations to eight, thereby reducing the power to detect results. Second, and more important, the decision to increase disclosure is influenced by a number of factors that are correlated with stock returns (e.g. size, institutional holdings, and growth), and controlling for these correlations in a pure hedge-portfolio trading strategy is difficult.

As such, I adopt the regression method used by Collins et al. (2003). Although this method does not resolve the power issue, it does allow me to control for factors that are correlated with both the

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call firm is observed, and the ratio of the PDF to (1 – CDF) for the predicted values from Equation 1 if a conference-call firm is not observed.

decision to hold a conference call and stock returns. Using Fama-MacBeth (1973) type regressions, I estimate the following relation between size-adjusted abnormal returns and the scaled decile ranking of accruals each year and calculate t-statistics based on the mean estimated coefficients for the eight annual regressions:

$$CSAR_{t+1} = \delta_0 + \delta_{0H} CC4_t + \delta_1 DACC_t + \delta_{1H} CC4\_DACC_t + \delta_2 SIZE_t + \delta_3 XIO_t + \delta_4 XIO\_DACC_t + \delta_5 EP_t + \delta_6 BTM_t + \sum_{i=1}^{i=4} \delta_{i+6} IND_{i,t} + \delta_{11} Lambda_t + \varepsilon_{t+1} \quad (6)$$

where *DACC* is the decile ranking of current-year accruals; [8] *EP* is the decile ranking of ordinary earnings per share deflated by price per share; *XIO* is the decile ranking of transient institutional holdings, as defined by Bushee (1998), at year-end t; *XIO_DACC* is an interaction term between *XIO* and *DACC*; and *IND* are four industry dummy variables representing high-technology, utilities, financial services, and general services (Buchheit and Kohlbeck, 2002). I include transient institutional investors to control for the findings in Collins et al. (2003). All other variables are as previously defined and decile rankings are transformed to range between zero and one.

The coefficient estimate for δ_1 in Equation 6 represents the hedge return for an accrual-based trading strategy in firms with low levels of voluntary disclosure. Consistent with prior research, I expect δ_1 to be positive. The incremental hedge return for an accrual-based trading strategy in firms with high levels of voluntary disclosure is represented by δ_{1H}. If conference calls mitigate accrual mispricing, the hedge-returns for the high-disclosure firms ($\delta_1 + \delta_{1H}$) will be significantly lower than the hedge-returns for the low-

[8] Accruals are ranked in descending order in Equation 6 (i.e. firms with extreme negative accruals are represented by 1 while firms with extreme positive accruals are represented by 0). This facilitates interpretation of the coefficient as the abnormal return to a long position in negative-accrual observations and a corresponding short position in positive-accrual observations.

disclosure firms (δ_1). As such, a negative coefficient estimate for δ_{1H} supports Hypothesis 2.

SAMPLE AND DESCRIPTIVE STATISTICS

I collect data from the following sources; 1) financial data from the 2003 *Compustat* Annual Industrial Research file; 2) quarterly earnings release dates from the 2003 *Compustat* Quarterly Industrial Research file; 3) stock returns from the 2003 *CRSP* daily returns file; 4) conference-call data from the 2003 *FirstCall* Conference Call file; 5) analyst-following from the 2003 *I/B/E/S* summary file; and 6) institutional holdings from *CDA/Spectrum* 13f's. The initial sample is constructed of all annual *Compustat* firms from 1994 to 2001 with the necessary financial data, four quarterly-earnings-announcement dates (in order to identify earnings-announcement conference calls), average total assets in excess of $1 million (as financial data are scaled by average total assets) and a stock price less than $250. The sample is restricted to observations starting in fiscal-year 1994 in order to correspond to the conference-call data provided by *FirstCall.*

These requirements result in 38,356 firm-year observations for 8,705 unique firms. I delete 2,278 observations with missing returns data from *CRSP.* To reduce the influence of outliers in the Mishkin tests (where actual values of *E*, *Acc* and *CFO* are used rather than decile rankings), I also delete 726 observations with extreme earnings, accruals, and operating cash flows.[9] The final sample consists of 35,352 firm-year observations for 8,092 unique firms. The number of observations per year ranges from a minimum of 3,882 in 1994 to a maximum of 4,898 in 2000, with 4,556 in 2001.

Descriptive statistics for the sample are provided in Table 1. As indicated in Panel A, the sample represents both small and large firms. On average, book value of equity is 67% of market value of equity, total debt is 50% of total assets, and aggregate institutional

[9] Extreme observations are defined as observations with ordinary income scaled by assets in excess of +/ – 300% and observations with absolute accruals or operating cash flows in the 99th percentile.

ownership (INST%) is 31.33% of total outstanding common equity. Approximately 32% of the observations include a 4th-quarter conference call. In untabulated findings, an additional 15% of the sample held a conference call other than the 4th quarter conference call. Mean and median accruals (Acc) are – 5.2% and – 4.3%, respectively, of average total assets while mean and median operating cash flows (CFO) are 4.5% and 6.8%, respectively, of average total assets. These values are slightly lower than the values reported by Collins et al. (2003) which is likely due to the inclusion of smaller firms in my sample and a different sample period.[10]

In Panel B, I report sample descriptive statistics conditional on the presence of a 4th –quarter earnings conference call. Consistent with prior studies, high-disclosure firms are larger with respect to total assets, more profitable, have a greater percentage of shares held by institutions, greater analyst following, greater negative accruals, and greater operating cash flows (all with p-values of < 0.01).

Correlation coefficients are reported in Table 2 and are generally consistent with prior research. Interestingly, however, I report a significantly lower negative correlation between accruals and operating cash flows (Pearson = – 0.17 p-value < 0.001, Spearman = – 0.37 p-value < 0.001). In untabulated findings, annual correlations reveal a significant, and almost monotonic, decrease in the negative correlation between accruals and operating cash flows over the past 20 years (from – 0.59 in 1981-1983 to – 0.21 in 1999-2001). Nevertheless, a negative correlation is consistent with prior studies.

RESULTS

Hypothesis 1

The results from estimating Equation 1 are reported in Table 3. The model appears to capture the elements affecting the decision

[10] While the amounts reported here differ slightly from Collins et al. (2003), their sample excludes firms with less than $25 million in sales or $50 million in assets which generally have less institutional interest, but which nonetheless hold conference calls. As a sensitivity test I exclude these firms. Mean and median values are similar to values reported by Xie (2001) and Collins et al. (2003).

to hold a conference call sufficiently, as it correctly predicts the firm's decision to hold a 4th-quarter conference call 83.3% of the time. All variables, except institutional holdings, are significant and reflect their predicted sign. The most influential variable, however, is the lagged conference call variable ($CC4_{t-1}$). This is consistent with the adverse-selection argument, suggesting that once a firm starts holding conference calls, the trend continues.

The significant positive coefficient on *ABSAcc* ($\phi_{12} = 0.088$, p-value < 0.001) supports Hypothesis 1; large absolute accruals are positively associated with the decision to hold a 4th-quarter conference call. Given that the most influential variable is the presence of a previous conference call ($CC4_{t-1}$), it appears that the decision to hold an earnings-announcement conference call is rather constant. The remaining variables, while statistically significant, may be more important in the decision to hold an initial conference call but play a smaller role in the decision to continue holding conference calls. As such, the impact of accrual levels on the decision to hold a conference call may be muted once a firm has already committed to a given level of disclosure.[11]

Hypothesis 2 - Mishkin Tests

Results from jointly estimating Equations 2 and 3 are presented in Table 4. The base-model on the left-hand side replicates the results of Sloan (1996). The persistence of accruals in the forecasting equation (0.579) is less than the implied persistence level in the pricing equation (0.825). A rational-pricing test for the base model tests whether the ratio $\delta_1 / \delta_1^* = 0.702$ is equal to one. Consistent with prior research, this test is rejected (p-value < 0.001) – investors continue to overweight the persistence of accruals.

The right-hand side of Table 4 includes an indicator variable for the existence of a 4th-quarter conference call to test Hypothesis 2. The forecasted persistence of accruals is not significantly different between firms with or without a 4th-quarter conference call

[11] I also re-estimate Equation 1 by predicting the firm's *initial* conference call. Reported results are unaffected by this alternative specification.

(δ_{lH} = 0.012, p-value = 0.474), eliminating the need for additional controls for differences in forecasted persistence. The negative coefficient on δ_{1H}^{*} is consistent with my prediction that greater disclosure is associated with more accurately priced accruals. For low-disclosure firms, there is significant mispricing of accruals as the ratio δ_l / δ_1^{*} = 0.617 is less than one (p-value < 0.001). However, for conference-call observations, there is no evidence of mispriced accruals as a test that the ratio $(\delta_l + \delta_{lH}) / (\delta_1^{*} + \delta_{1H}^{*})$ = 0.990 is equal to 1 cannot be rejected (p-value = 0.790). I also find that high disclosure is associated with a significant decrease in mispricing relative to low disclosure, as 0.617 < 0.990 (p-value < 0.001).

To correct for potential self-selection bias related to the decision to hold a conference call, I estimate Equations 4 and 5 which include the Inverse Mills ratio. Results are reported in Table 5. Like Table 4, there is no difference in the forecasted persistence of accruals between low and high-disclosure firms (δ_{lH} = 0.002, p-value = 0.905) and the accruals of low-disclosure firms are mispriced, as δ_l / δ_1^{*} = 0.620 is significantly different from 1 (p-value < 0.001). Again, there is no evidence of accrual mispricing in high-disclosure firms as $(\delta_l + \delta_{lH}) / (\delta_1^{*} + \delta_{1H}^{*})$ = 1.011 is not significantly different from 1 (p-value = 0.958), and the difference between low and high-disclosure firms is significantly different from zero (0.620 < 1.011, p-value < 0.001).

Portfolio Tests

Results from earlier tests suggest the mispricing of accruals is concentrated in non-conference-call observations. As such, a hedge-portfolio trading strategy that takes advantage of accruals mispricing (taking a long position in firms with large negative accruals and short position in firms with large positive accruals) should yield significantly higher returns when implemented on low-disclosure firms, relative to high-disclosure firms. Table 6 reports the results of forming portfolios based on accrual levels and disclosure levels. In the first column, firms are sorted into three portfolios where the most

negative accruals are grouped in *ACC1* and the most positive accruals are grouped in *ACC3*.[12] Consistent with prior research, significant positive (negative) abnormal returns of 5.13% (-4.52%) are observed for the negative (positive) accrual portfolio.

I then re-form portfolios taking disclosure level into consideration. Mishkin results suggest that in the negative (positive) accruals portfolio, one should observe more positive (negative) abnormal returns for low-disclosure firms. In the negative-accruals portfolio, a marginally significant difference between high and low disclosure firms (3.51% vs. 6.02%, p-value = 0.105) is observed, while in the positive-accruals portfolio a significant difference between high and low disclosure firms (-2.05% vs. -5.76%, p-value = 0.007) is observed. These results corroborate the Mishkin tests, providing additional support for Hypothesis 2.

Hedge Regressions

Fama-Macbeth (1973) annual hedge-portfolio regression results are reported in Table 7. In column 1, results are reported from estimating annual regressions using my primary disclosure metric, *CC4*. After controlling for other factors associated with abnormal returns, forming a hedge portfolio within low-disclosure firms results in a significant annual abnormal return of 19.3% (p-value < 0.001). As predicted, the sign of the estimated coefficient for high-disclosure observations is negative, although it is not significant (δ_{1H} = –1.4%, p-value = 0.829). The abnormal return for a trading strategy within the high-disclosure firms ($\delta_1 + \delta_{1H}$) is 17.9% (p-value = 0.020), suggesting there is no economic difference in the observed abnormal returns between low and high-disclosure firms.

Two important issues arise related to the use of the variables lambda and *CC4*. First, I include lambda in my models to correct for

[12] Prior research has generally used decile-based portfolios for hedge portfolio analysis. Due to sample size, I form portfolios based on tertiary rankings in order to maximize the number of observations in the two portfolios of interest. This increases the power of my tests, which is particularly important once I re-form the two extreme portfolios based on the presence of a conference call. Consistent with prior research, decile rankings are used in subsequent hedge-portfolio regressions.

potential self-selection bias related to the decision to hold a 4th-quarter conference call. The ability of lambda to correct for this bias is a function of how well the conference-call decision is modeled in the first stage. While the factors identified in Equation 1 are quite accurate in predicting the conference-call decision (i.e. 83.3% concordant), the pseudo R^2 for the model is less than 28%. This suggests that additional unidentified factors may exist, and to the extent that these factors are correlated with stock returns, lambda will not completely control for self-selection bias. Second, a significant shortcoming of using *CC4* as a measure of voluntary disclosure is the fact that many firms held several conference calls during the year but, for whatever reason, did not hold a 4th-quarter conference call. Approximately 15% of the total sample (5,268 observations) falls into this category. Misclassification of these observations biases against finding significant results because these firms are classified as non-conference-call observations.

To address the first problem, I reduce my original sample to a sub-sample of firms that held one or more conference calls during the current year. Now, all sample observations are conference-call firms thus eliminating the impact of self-selection bias related to the decision to hold a conference call. To address the second problem I introduce an alternative disclosure metric, denoted *SUMCC*, which is the quintile-ranking of the total number of conference calls (both earnings and non-earnings conference calls) held during the current year scaled to range between zero and one.[13] Low disclosure is now represented by firms holding one conference call during the year, while high disclosure is represented by firms holding four or more conference calls.

Results reported in Column 2 of Table 7 reveal that an accrual-based trading strategy in conference-call firms with fewer conference calls (i.e. one conference call) generates an average hedge-portfolio return of 22.3% (p-value < 0.001). The incremental hedge-portfolio return in firms that provide more disclosure is negative and significant as predicted (– 18.4%, p-value = 0.020) and

[13] The correlation between *CC4* and *SUMCC* is 0.76 (p-value < 0.001).

the average hedge-return of 3.9% ($\delta_1 + \delta_{1H}$) for a strategy within the high-disclosure portfolio is insignificant p-value = 0.405.[14]

Sensitivity Tests

I re-estimate my models using various specifications to address potential issues related to research design choices and prior research findings as sensitivity tests. These results are untabulated as they do not affect the overall findings. Below I detail those additional tests.

To address concerns about design choices relating to independent variables, I perform the following sensitivity tests. I use decile rankings to mitigate the influence of extreme observations in Equation 1. Alternatively, I estimate the model using actual values. The results are qualitatively unaffected as the coefficient estimate for *ABSAcc* is still significantly positive. Extending the methodology used in Column 2 of Table 7 to the Mishkin tests, I re-estimate Equations 2 and 3 and Equations 4 and 5 using the *SUMCC* metric. The reported results are qualitatively unaffected.

To address potential concerns about my abnormal-returns metric, I conduct the following tests. I measure abnormal returns as the difference between a firm's annual buy-and-hold raw return and the annual buy-and-hold raw return for the size-decile portfolio to which that firm belongs at the beginning of the year. Alternatively, I re-estimate all tests using the buy-and-hold daily abnormal return (i.e. abnormal returns are calculated daily and then cumulated). All reported results and inferences are unaffected by this alternative measure of abnormal returns. Also, several observations (2,278) are deleted from the sample because the firm had missing returns data. Dropping these observations may induce a survivorship bias in my test results. Alternatively, I include these firms and assume an

[14] To address differences in the number of observations across years, I also perform z-tests of significance using the separate coefficient t-statistics from the annual regressions. The results reported in Table 7 are unaffected.

abnormal return of zero. All reported test results are unaffected by the inclusion of these observations.

To address concerns related to my voluntary disclosure metric, I include several additional tests. Bushee et al. (2004) identify errors in the *FirstCall* database related to omitted conference calls (i.e. *FirstCall* is more likely to not report a firm holding a quarterly conference call when, in fact, the firm did hold a conference call). To address this issue, I include several additional tests that are designed to reduce the number of potential errors due to omitted conference calls in the *Firstcall* database.

First, I use an indicator variable equal to one if the firm held *any* conference call during the current fiscal year and zero otherwise. This specification results in an additional 5,275 high-disclosure observations (15% of the sample). Second, I identify the year in which each firm held its first conference call and assume that the firm continues to hold a conference call in each subsequent year. And third, I implement a within-firm test for conference-call *firms* only. I identify a sub-sample of firms that started using conference calls during the sample period and assume that once they start using conference calls they always hold a conference call. This requirement results in a sample of 24,306 observations of which 6,263 observations are non-conference-call observations. Eliminating the non-conference-call *firms* allows me to investigate the change in accrual mispricing after adoption of a conference call for only those firms that choose to hold conference calls. For each of these alternative disclosure metrics, the reported results are qualitatively unaffected.

To address concerns related to findings in the prior accrual-mispricing research, I perform the following tests. Collins et al. (2003) suggest that the level of transient institutional holdings (XIO%) as defined by Bushee (1998) is associated with less accrual mispricing. In untabulated findings, XIO% is positively correlated (0.294, p-value<0.001) with a 4^{th}-quarter conference call. As such, I re-estimate Equations 4 and 5 and include an additional control for the level of transient institutional holdings. Again, the reported results are unaffected.

Mashruwala et al. (2004) document that accrual mispricing persists because of high idiosyncratic volatility and high transaction costs. Hence, if conference call firms are associated with lower idiosyncratic volatility and lower transaction costs, it may be the case that my conference-call metrics are capturing the Mashruwala et al. findings rather than differences in disclosure. To address their findings, I re-estimate Equation 6 and include controls for transaction costs and idiosyncratic volatility. Consistent with Mashruwala et al., I use dollar trading volume (VOL) and stock price (PRC) as proxies for transactions costs and the residual variance from a regression of firm-specific returns on the market return as a proxy for arbitrage risk (ARBRISK). I include the additional controls in Equation 6 first as main effects and also as interactions with DACC. Consistent with Mashruwala et al. (2004), VOL is negatively associated with accrual mispricing.[15] The reported results are, however, unaffected by the inclusion of these additional variables.

Finally, to address the Mashruwala et al. findings in my Mishkin tests, I re-estimate Equation 1 including VOL, PRC, and ARBRISK as additional predictors of conference calls. From these results, I re-calculate lambda and then re-estimate Equations 4 and 5. The Mishkin tests are unaffected by the inclusion of proxies for idiosyncratic risk and transaction costs.

SUMMARY AND CONCLUSIONS

The objective of this paper is to study and document the association between voluntary disclosure and accruals, a fundamental accounting construct. I examine the association first from the perspective of the impact of accrual levels on the firms' voluntary disclosure decision. Then, given the firms' disclosure decision, I examine the association between voluntary disclosures and the market's pricing of accruals. My primary measure for voluntary disclosure is an indicator variable that identifies a firm's

[15] The sign for PRC (negative) and ARBRISK (positive) are as predicted; however, both coefficients are insignificant.

decision to hold a fourth-quarter earnings conference call. I also include several alternative conference-call based proxies for voluntary disclosure.

I find that managers are more likely to hold an earnings-announcement conference call when earnings consist of large absolute accruals, although this correlation is small relative to other variables that affect a firm's disclosure level. More interestingly, I document that conference calls play a significant role in the pricing of accruals. Using a rational-expectations model I show that firms with high levels of discretionary disclosures exhibit little or no mispricing of accruals, while accrual mispricing persists for firms with low levels of voluntary disclosures. This finding is robust to controls for the level of investor sophistication and firm characteristics that are correlated with both the decision to hold a conference call and security returns.

Using portfolio analysis, I show that low-disclosure firms with extreme positive accruals have lower future abnormal returns than high-disclosure firms with similar accruals. While at the same time, low-disclosure firms with extreme negative accruals have higher abnormal returns than high-disclosure firms with similar accruals. Results from hedge-portfolio regressions provide mixed results. There is no difference in hedge-portfolio returns between high and low-disclosure firms when high disclosure is defined as a 4^{th}-quarter conference call. However, for a sub-sample of firms that held at least one conference call during the current year, results are consistent with my prediction. I find significantly lower abnormal returns to a hedge-portfolio trading strategy in the firms that hold more conference calls while significant abnormal returns persist for a similar trading strategy in firms that hold fewer conference calls.

I study the association between accruals and voluntary disclosure for a number of reasons. Several studies have tried, with limited success, to explain the results of Sloan (1996). These studies have generally focused on the investor or financial statement components while ignoring a key management tool – voluntary disclosure. This is particularly important as managers have the ability to reduce security mispricing through voluntary disclosures.

My results suggest that while increased disclosure has a cost, there is a clear benefit to all market participants as measured by the pricing of accruals. This study can be useful for improving the overall quality of a firm's information environment by providing managers with information that allows them to make decisions that direct future resources towards more effective disclosure media (i.e. conference calls, Webcasts, press releases, etc.). Finally, the SEC implemented Reg. FD after much controversy. Contrary to claims made by analysts and institutional investors that additional information was not released during these meetings, this study corroborates prior research that suggests conference calls provide useful information to participants and equal access should help level the playing field for all investors.

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TABLE 1
Descriptive Statistics

Panel A: Descriptive Statistics of Key Variables (N=35,352 firm-years from 1994-2001)

Variables	Mean	Std. Dev.	25%	Median	75%	% Positive
Assets	$2,514	$18,843	$51	$185	$805	-
BTM	0.67	3.92	0.28	0.51	0.85	-
DTA	0.50	0.26	0.31	0.50	0.67	-
INST%	31.33	27.43	3.96	26.76	53.95	-
Analysts	4.15	6.08	0	2.00	6.00	-
E	-0.006	0.182	-0.020	0.035	0.078	70.5
Acc	-0.052	0.121	-0.096	-0.043	0.001	25.5
CFO	0.045	0.158	0.001	0.068	0.128	75.1
CSAR	0.009	0.890	-0.420	-0.106	0.221	41.1

TABLE 1 (continued)

Panel B: Descriptive Statistics Conditional on Level of Disclosure

Variables[a]	No CC4 (N=24,160)		CC4 (N=11,192)		Test of Means (t-stat)	Test of Medians (z-stat)
	Mean	**Median**	**Mean**	**Median**		
Assets	1,415	112	4,887	570	12.22**	56.48**
BTM	0.60	0.44	0.71	0.54	3.38**	19.08**
DTA	0.50	0.50	0.51	0.52	2.82**	5.92**
INST%	25.09	17.71	44.78	47.61	64.30**	53.83**
Analysts	2.88	1.00	6.88	5.00	53.08**	60.85**
E	-0.01	0.03	0.00	0.04	6.47**	7.98**
Acc	-0.05	-0.04	-0.06	-0.05	8.89**	8.53**
CFO	0.04	0.06	0.06	0.08	14.54**	13.56**
CSAR	0.00	-0.12	0.02	-0.06	2.32*	9.19**

*/** Significantly different at the 0.05 and 0.01 levels respectively.

[a] Variables are defined as follows:
Assets = total assets at year end (in millions);
BTM = the year-end book value of equity divided by year-end market value of equity;
DTA = total liabilities divided by total assets;
ROA = income divided by average total assets;
INST% = the percentage of shares held by institutional investors at year end;
Analysts = the number of analysts following the firm at year end;
CC = an indicator variable equal to 1 if firm held a conference call during the 4th quarter of the current fiscal year, and zero otherwise;
E = income before extraordinary items;

Acc = accruals which is defined as earnings minus operation cash flows (*E* – *CFO*);
CFO = operating cash flow;
CSAR = the size-adjusted abnormal return which is equal to the difference between a firm's 12-month buy-and-hold returns and the buy-and-hold return for the same 12-month period on the market-capitalization-based portfolio decile to which the firm is assigned.

E, CFO, and *Acc* are scaled by average total assets.

TABLE 2
Contemporaneous Pearson (above diagonal) and Spearman (below diagonal) Correlation Coefficients (p-values in parentheses, N=35,352 firm-years from 1994-2001)[a]

	Assets	***BTM***	***DTA***	***INST***	***Analyst***	***E***	***Acc***	***CFO***
Assets	1.00	-0.01 (0.271)	0.13 (0.001)	0.56 (0.001)	0.238 (0.001)	0.26 (0.001)	0.04 (0.001)	0.27 (0.001)
BTM	-0.04 (0.001)	1.00	-0.04 (0.001)	-0.03 (0.001)	-0.036 (0.001)	-0.00 (0.764)	-0.00 (0.906)	-0.01 (0.221)
DTA	0.42 (0.001)	-0.01 (0.015)	1.00	0.05 (0.001)	0.073 (0.001)	-0.03 (0.001)	-0.08 (0.001)	0.03 (0.001)
INST	0.55 (0.001)	-0.13 (0.001)	0.05 (0.001)	1.00	0.562 (0.001)	0.23 (0.001)	0.03 (0.001)	0.24 (0.001)
Analyst	0.544 (0.001)	-0.237 (0.001)	0.049 (0.001)	0.722 (0.001)	1.00	0.163 (0.001)	-0.013 (0.014)	0.198 (0.001)
E	0.31 (0.001)	-0.19 (0.001)	-0.16 (0.001)	0.23 (0.001)	0.208 (0.001)	1.00	0.52 (0.001)	0.76 (0.001)
Acc	0.02 (0.004)	0.03 (0.001)	-0.06 (0.001)	0.00 (0.672)	-0.015 (0.004)	0.35 (0.001)	1.00	-0.17 (0.001)
CFO	0.30 (0.001)	-0.12 (0.001)	-0.04 (0.001)	0.24 (0.001)	0.215 (0.001)	0.62 (0.001)	-0.37 (0.001)	1.00

[a] Variables are defined as follows:
Assets = total assets at year end (in millions);
BTM = the year-end book value of equity divided by year-end market value of equity;
DTA = total liabilities divided by total assets;
INST = the percentage of shares held by institutional investors at year end;
Analyst = the number of analysts following the firm at year end;
E = income before extraordinary items;
Acc = accruals which is defined as earnings minus operation cash flows (*E – CFO*);
CFO = operating cash flow;

E, CFO, and *Acc* are scaled by average total assets.

TABLE 3
Probit Regression of Conference-Call Decision (1994-2001)

$$Prob(CC4_t) = f(\phi_1 + \phi_2 SIZE_t + \phi_3 BTM_t + \phi_4 ROA_t + \phi_5 INST\%_t + \phi_6 Analysts_t + \phi_7 Hitech_t + \phi_8 CC4_{t-1} + \phi_9 ABSAcc_t + \kappa_t) \quad (1)$$

Variables[a] (N = 35,252)	**Predicted Sign**	**Coefficient Estimate**	**χ^2-statistic**	**p-value**
Intercept		-1.704	2,267.8	<0.001
SIZE	(+)	0.837	685.4	<0.001
BTM	(–)	-0.251	81.2	<0.001
ROA	(+)	0.162	35.1	<0.001
INST%	(+)	-0.008	0.1	0.834
Analysts	(+)	0.629	275.3	<0.001
Hitech	(+)	0.258	163.6	<0.001
$CC4_{t-1}$	(+)	1.378	5,668.5	<0.001
ABSAcc	(+)	0.088	11.0	<0.001

Pseudo R^2	27.4%
Percentage Concordant	83.3%
Percentage Discordant	16.5%

[a] Variable are defined as follows:

f = the cumulative standard normal distribution function;
$CC4_t$ = an indicator variable equal to one if the firm held a 4th-quarter earnings conference call during fiscal year t and zero otherwise;
SIZE = the decile ranking of the total assets at year-end t;
MTB = the decile ranking of the market value of equity at year-end t divided by year-end book value of equity;
ROA = the decile ranking of return on assets during year t;

INST = the decile ranking of the percentage of institutional holdings at year-end t;
Analysts = the decile ranking of the number of analysts following the firm at year-end t;
Hitech = an indicator variable equal to one if the firm belongs to a high-tech industry defined as pharmaceuticals (SIC code 2833-2836), research and development services (8731), programming (7371-7373), computers (3571-3577), electronics (3559, 3660-3679), radio and telephone communications (4812-4829 and 4840-4899), or online retailers (5961) and zero otherwise;
ABSAcc = the decile ranking of the absolute value of the accrual component of earnings=
$CC4_{t-t}$ = an indicator variable equal to one if the firm held a 4th-quarter earnings conference call the previous year and zero otherwise.

All decile rankings are transformed to range from 0 to 1.

TABLE 4
Nonlinear Generalized Least Squares Estimation of the Rational Pricing of Accruals Conditional on the Level of Disclosure[a]

Market Pricing of Accruals (*N=35,352 firm years from 1994-2001*)

$$E_{t+1} = \delta_0 + \delta_1 Acc_t + \delta_{1H} CC4\_Acc_t + \delta_2 CFO_t + \delta_{2H} CC4\_CFO_t + \omega_{t+1} \quad (2)$$

$$CSAR_{t+1} = \beta[E_{t+1} - \delta_0 - \delta_1^* Acc_t - \delta_{1H}^* CC4\_Acc_t - \delta_2^* CFO_t - \delta_{2H}^* CC4\_CFO_t] + \varepsilon_{t+1} \quad (3)$$

Base Model			**High vs. Low Disclosure**			
Parameter	**Coef. Estimate**	**(t-stat)**	**Parameter**	**Pred.**	**Coef. Estimate**	**(t-stat)**
δ_1 (*Acc*)	0.579	(69.74)	δ_1 (*Acc*)	+	0.576	(58.67)
			δ_{1H} (*CC4_Acc*)	?	0.012	(0.72)
δ_1^* (*Acc*)	0.825	(18.33)	δ_1^* (*Acc*)	+	0.933	(17.08)
			δ_{1H}^* (*CC4_Acc*)	–	-0.339	(-3.56)
δ_1 / δ_1^*	0.702				0.617	
$(\delta_1 + \delta_{1H}) / (\delta_1^* + \delta_{1H}^*)$	n/a				0.990	

Rational Pricing Tests:

Accruals mispriced?	0.702 = 1?	p < 0.001	Low Disc. mispriced?	0.617 = 1?	p < 0.001
			High Disc. mispriced?	0.990 = 1?	p = 0.790
			Low vs. High	0.617 = 0.990?	p < 0.001
Model Significance: Likelihood ratio = 147.38			Model Significance: Likelihood ratio = 479.14		

[a] Variables are defined as follows:

CSAR = the one-year-ahead size-adjusted returns, measured as the difference between a firm's 12-month buy-and-hold return and the buy-and-hold return for the same 12-month period on the

market-capitalization-based portfolio decile to which the firm is assigned;

E = income before extraordinary items, scaled by average total assets;

Acc = accruals defined as $E_t - CFO_t$;

CC4_Acc = interaction term between *CC4*, an indicator variable that equals one for firms with a 4th-quarter conference call and zero otherwise, and *Acc*;

CFO = cash flows from operations, scaled by average total assets;

CC4_CFO = interaction term between *CC4*, an indicator variable that equals one for firms with a 4th-quarter conference call and zero otherwise, and *CFO*.

TABLE 5
Nonlinear Generalized Least Squares Estimation of the Rational Pricing of Accruals Conditional on the Level of Disclosure, with Correction for Self-Selection Bias

$$E_{t+1} = \delta_0 + \delta_1 Acc_t + \delta_{1H} CC4\_Acc_t + \delta_2 CFO_t + \delta_{2H} CC4\_CFO_t + \delta_3 Lambda\_Acc_t + \delta_4 Lambda\_CFO_t + \omega_{t+1} \quad (4)$$

$$CSAR_{t+1} = \beta[E_{t+1} - \delta_0 - \delta_1^* Acc_t - \delta_{1H}^* CC4\_Acc_t - \delta_2^* CFO_t \; \delta_{2H}^* CC4\_CFO_t - \delta_3^* Lambda\_Acc_t - \delta_4^* Lambda\_CFO_t] + \varepsilon_{t+1} \quad (5)$$

(N=35,252 firm-years from 1994-2001)

Parameter	Prediction	Coefficient Estimate	(t-stat)
δ_1 (*Acc*)	+	0.568	(46.88)
δ_{1H} (*CC4_Acc*)	?	0.002	(0.14)
δ_3 (*Lambda_Acc*)	?	0.017	(1.10)
δ_1^* (*Acc*)	+	0.917	(13.52)
δ_{1H}^* (*CC4_Acc*)	–	-0.353	(-3.42)
δ_3^* (*Lambda_Acc*)	?	0.036	(0.41)
δ_1 / δ_1^*		0.620	
$(\delta_1 + \delta_{1H})/(\delta_1^* + \delta_{1H}^*)$		1.011	

Rational Pricing Tests:

Low Disc. mispriced? 0.620 = 1?	$p < 0.001$
High Disc. mispriced? 1.011 = 1?	$p = 0.958$
Low vs. High 0.620 = 1.011?	$p < 0.001$

Model Significance: Likelihood ratio = 721.50

[a] Variables are defined as follows:

CSAR = the one-year-ahead size-adjusted returns, measured as the difference between a firm's 12-month buy-and-hold return and the buy-and-hold return for the same 12-month period on the market-capitalization-based portfolio decile to which the firm is assigned;

E = income before extraordinary items, scaled by average total assets;

Acc = accruals defined as $E_t - CFO_t$;

CC4_Acc = interaction term between *CC4*, an indicator variable that equals one for firms with a 4th-quarter conference call and zero otherwise, and *Acc*;

CFO = cash flows from operations, scaled by average total assets;

CC4_CFO = interaction term between *CC4*, an indicator variable that equals one for firms with a 4th-quarter conference call and zero otherwise, and *CFO*;

Lambda = the Inverse Mills ratio, calculated from estimating Equation 1, interacted with *Acc* and *CFO*.

TABLE 6
One-Year-Ahead Size-Adjusted Returns ($CSAR_{t+1}$) for Portfolios Based on Annual Rankings of Accruals and Disclosure Level[a]

				Disclosure Level				
		Full Sample[b]		High		Low		Difference in Means
Accrual Rank	Pred.	Mean	t-stat	Mean	t-stat	Mean	t-stat	p-value*
ACC1	(+)	5.13% (11,781)	5.29	3.51% (4,162)	2.23	6.02% (7,619)	4.89	0.105
ACC2		1.94% (11,786)	2.73	3.60% (4,537)	3.87	0.90% (7,249)	0.09	0.048
ACC3	(–)	-4.52% (11,785)	-6.03	-2.05% (3,939)	-1.77	-5.76% (7,846)	-5.98	0.007
				Predictions:	*ACC1:*	High < Low		
					ACC3:	High > Low		

[a] Variables are defined as follows:

CSAR = the one-year-ahead size-adjusted return, measured as the difference between a firm's 12-month buy-and-hold returns and the buy-and-hold return for the same 12-month period on the market-capitalization-based portfolio decile to which the firm is assigned;

High = observations that either held a conference call during the 4th-quarter earnings announcement or held at least three earnings-announcement conference calls during the current year,

Low = observations that did not hold a 4th-quarter earnings-announcement conference call or had 2 or fewer conference calls during the current year;

ACC = tertiary-ranked portfolios (1= large negative, 3=large positive) based on accruals, which is the difference between ordinary income and net cash flow from operating activities, scaled by average total assets.

[b] The number of observations per cell is provided in parentheses.
[*] where predictions are made (i.e. *ACC1* and *ACC3)*, p-values are reported for one-tailed t-tests in differences of means between high and low disclosures, p-values for two-tailed tests are reported otherwise.

TABLE 7
Fama-MacBeth Regressions of One-Year-Ahead Size-Adjusted Returns on Portfolio Ranks of Accruals and Other Predictors of Returns

$$CSAR_{t+1} = \delta_0 + \delta_{0H} CC4_t + \delta_1 DACC_t + \delta_{1H} CC4\_DACC_t + \delta_2 SIZE_t + \delta_3 XIO_t + \delta_4 XIO\_DACC_t + \delta_5 EP_t + \delta_6 BTM_t + \sum_{i=1}^{i=4} \delta_{i+6} IND_{i,t} + \delta_{11} Lambda_t + \varepsilon_{t+1} \quad (6)$$

Summary of Separate-Year Regressions from 1994-2001

			(1) Full Sample *CC4*	(2) CC-Only *SUMCC*
Variables[a,b]		**Prediction**	**Mean Estimate (t-stat)†**	**Mean Estimate (t-stat)†**
Intercept	(δ_0)	?	-0.195 (-4.04)	-0.106 (-1.96)
CC4 / SUMCC	(δ_{0H})	?	0.033 (1.28)	0.088 (1.51)
DACC	(δ_1)	+	0.193 (5.43)	0.222 (8.94)
CC4_/ SUMCC_DACC	(δ_{1H})	–	-0.014 (-0.23)	-0.184 (-3.05)
SIZE	(δ_2)	–	-0.068 (-1.06)	-0.095 (-1.76)
XIO	(δ_3)	?	0.094 (9.39)	0.070 (1.51)
XIO_DACC	(δ_4)	–	-0.065 (-1.52)	-0.035 (-0.41)
EP	(δ_5)	+	0.075 (0.81)	0.024 (0.24)
BTM	(δ_6)	+	0.065 (1.96)	0.027 (0.57)
Avg. adjusted R^2			5.19%	5.77%
H_0:$\delta_1 + \delta_{1H} = 0$ t-stat (p-value)			3.00 (0.020)	0.89 (0.405)

[a] Lambda and industry dummies are suppressed for presentation simplicity.

†Consistent with Bradshaw et al. (2004), t-statistics are based on the standard error of the coefficient estimates for the eight annual regressions, adjusted for

autocorrelation in the coefficient estimates based on an assumed AR(1) autocorrelation structure. Standard errors are multiplied by an adjustment factor, $\sqrt{\frac{(1+\varphi)}{(1-\varphi)}\frac{2\phi(1-\varphi^n)}{n(1-\varphi)^2}}$, where n is the number of annual regressions and φ is the first-order autocorrelation of the annual coefficient estimates.

[b] Variables are defined as follows:

CSAR = the one-year-ahead size-adjusted return, measured as the difference between a firm's 12-month buy-and-hold returns and the buy-and-hold return for the same 12-month period on the market-capitalization-based portfolio decile to which the firm is assigned;

CC4 = an indicator variable equal to 1 if a firm held a 4th qtr earnings conference call and zero otherwise;

SUMCC = the quintile ranking of the number of conference calls held by firm i during the current year, transformed to range from 0 to 1;

DACC = the decile ranking of current-year accruals, defined as operating earnings minus operating cash flows;

SIZE = the decile ranking of total assets;

XIO = the decile ranking of transient institutional holdings;

EP = the decile ranking of ordinary income per share scaled by price per share;

BTM = the decile ranking of book value of equity scaled by market value of equity;

IND = four industry dummies representing high-tech firms, utilities, financial services, and general services (other firms are included in the intercept);

Lambda = the Inverse Mills ratio calculated from estimating Equation 1.

All decile rankings are transformed to range from 0 to 1.