UNIVERSITY OF OKLAHOMA

GRADUATE COLLEGE

BALANCING INVESTORS' INFORMATION NEEDS WITH ACCOUNTING CONSERVATISM: THE ROLE OF VOLUNTARY DISCLOSURE OF NON-GAAP EARNINGS

A DISSERTATION

SUBMITTED TO THE GRADUATE FACULTY

in partial fulfillment of the requirements for the

Degree of

DOCTOR OF PHILOSOPHY

By

HSIN-YI HSIEH
Norman, Oklahoma
2010

BALANCING INVESTORS' INFORMATION NEEDS WITH ACCOUNTING CONSERVATISM: THE ROLE OF VOLUNTARY DISCLOSURE OF NON-GAAP EARNINGS

A DISSERTATION APPROVED FOR THE
MICHAEL F. PRICE COLLEGE OF BUSINESS

BY

_____
Dr. Robert Lipe, Chair

_____
Dr. Frances Ayres

_____
Dr. Karen Hennes

_____
Dr. Scott Linn

_____
Dr. Wayne Thomas

Acknowledgements

I am sincerely grateful for the guidance of my dissertation chair, Robert Lipe, and other committee members: Frances Ayres, Karen Hennes, Scott Linn, and Wayne Thomas. I also wish to thank Han Yi, Mark Kohlbeck and workshop participants at Florida Atlantic University and the University of Oklahoma for valuable comments and suggestions. Comments from Sanaz Aghazadeh and Amber Whisenhunt are graciously acknowledged.

Table of Contents

List of Tables

Abstract

In this paper, I investigate whether accounting conservatism, or asymmetric timeliness of earnings, contributes to the disclosure of non-GAAP earnings. Earnings that incorporate losses in a timely manner inevitably produce transitory losses; the losses may improve incentives in a variety of contracts, but assessing stock value is complicated when earnings include both persistent and transitory components. One possible way for companies facing high contracting costs to balance contracting efficiency and equity valuation considerations is to report conservatively while providing additional information about transitory items via the disclosure of non-GAAP earnings. I hypothesize and test whether the disclosure of non-GAAP earnings is particularly prevalent in the presence of timely loss recognition and an elevated focus on equity valuation arising from equity offerings or CEO equity compensation/ownership. Results in my study show a greater propensity of sample firms to report non-GAAP earnings around the time of stock offerings in certain circumstances, but CEO stock compensation or ownership does not seem to motivate the use of non-GAAP earnings. Finally, firms with more conservative reporting are not more likely to disclose non-GAAP earnings. Findings of my study lend little support for the conjecture that non-GAAP earnings are used to inform investors of transitory earnings components from timely loss recognition.

Chapter 1 Introduction

Despite more stringent regulations set forth in the Sarbanes-Oxley Act, the use of non-GAAP earnings did not disappear after Regulation G. For example, Google began disclosing non-GAAP diluted EPS in October 2005. On the company's blog, Chief Accountant Mark Fuchs explained that "…because Wall Street analysts typically estimate and describe our results with non-GAAP EPS numbers, that resulted in some confusing apples-to-oranges analyses of our results. (By the way, we review non-GAAP results when we analyze our own performance.)".[1] Empirical evidence to date does not provide unambiguous conclusions about the motives for disclosing non-GAAP earnings. The literature on non-GAAP earnings disclosure shows that markets find non-GAAP earnings useful, but evidence consistent with opportunistic use of non-GAAP earnings also exists (Bradshaw and Sloan 2002; Bhattacharya et al. 2003; Brown and Sivakumar 2003; Bowen et al. 2005; Bhattacharya et al. 2004; Black and Christensen 2009).

Accounting conservatism has become a topic that interests many researchers in recent years. In spite of the rapid growth in this literature, to date our knowledge of the determinants and effects of conservatism is still limited. Although the FASB discourages both upward and downward bias in financial reporting, a growing number of studies report evidence consistent with the proposition that conservatism originates from the demand of companies to improve the efficiency of various contracts and to reduce taxes, regulatory costs, and litigation risks. In this study, I attempt to extend the literature on both non-GAAP earnings disclosure and accounting conservatism by examining whether

[1] Source: "Financial Reporting: The Alphabet Soup", entry posted on the Official Google Blog (http://googleblog.blogspot.com) by Mark Fuchs on October 13, 2005.

accounting conservatism contributes to the use of non-GAAP earnings under certain conditions.

Because reported GAAP earnings are used for various contracts, companies facing high contracting costs may report conservatively to increase the efficiency of their contracts. For example, by recognizing losses on a timelier basis than gains, conservatism can reduce the likelihood of rewarding management for unrealized gains that do not eventually materialize (Leone et al. 2006). Conservatism is also reported to be associated with lower cost of debt (Wittenberg-Moerman 2008; Zhang 2008).

However, timely recognition of losses but not gains can create a dilemma for companies that want both efficient contracts and accurate equity valuation. This form of conservatism records a loss today for anticipated future bad news. For example, consider a company with a long-term contract to sell products at a fixed price; if market conditions change so that future cost of sales will exceed the selling price, the company records a current period loss for all of the future expected losses. If such losses are recorded in an impartial manner, the current period loss should reflect all available bad news and therefore will not persist into the future. The lack of persistence differs from other sources of earnings, as prior research indicates that on average, current-period earnings components tend to persist into the future (Kormendi and Lipe 1987). Thus the dilemma — how can the company be sure that investors appreciate the lower persistence when the company records a conservative loss? Such companies may use additional disclosure to illustrate the transitory nature of losses from practicing conservatism, and non-GAAP earnings that exclude transitory items allow managers to demonstrate the persistent versus transitory components of earnings.

In this paper, I examine the reporting of non-GAAP earnings, or pro forma earnings, to see whether the concurrent existence of accounting conservatism and a strong focus on equity valuation spurs the use of pro forma earnings. Because earnings contain transitory items at times, managers with a strong focus on equity valuation may wish to report non-GAAP earnings to inform investors of the existence of transitory items. I measure the strength of focus on equity valuation using the propensity to access equity markets and three variables that capture different aspects of how CEO's wealth is affected by changes in stock price. Furthermore, conditional conservatism, which implies recording losses, but not gains, on a timely basis, by definition results in transitory losses. Therefore I expect to find even greater use of non-GAAP earnings among companies that report conservatively but also have a strong focus on valuation. I use the firm-year measure of conditional conservatism, *C_SCORE*, to capture the differential timeliness of loss recognition among companies. I also test whether conservatism has any stand-alone effect on the disclosure of non-GAAP earnings.

The main findings of my study are as follows. Results of my paper indicate a higher propensity to disclose non-GAAP earnings of sample firms around stock offerings, but do not support a link between equity compensation or ownership of CEOs and the use of non-GAAP earnings. Although timely loss recognition produces transitory items in earnings, the propensity to disclose non-GAAP earnings does not increase with the level of conservatism even among companies with recent equity offerings. I also find no evidence that conservatism, in the absence of enhanced valuation concerns, plays any role in the disclosure of non-GAAP earnings. Results are robust to several alternative measures of timely loss recognition and the alternative definition of non-GAAP earnings.

My study contributes to the literature on the motives for the disclosure of non-GAAP earnings. Lougee and Marquart (2004) find that non-GAAP earnings are more commonly used by companies with less informative GAAP earnings. A number of firm characteristics, such as low core earnings persistence, transitory items, or high risks can all produce low ERCs. Hence, the finding of Lougee and Marquardt does not identify which factors that lower ERCs are influencing the decision to disclose non-GAAP earnings. As an extension of Lougee and Marquardt, this paper further investigates if conditional conservatism, which is known to produce transitory losses, can be a motive for using non-GAAP earnings to inform investors about the differential persistence of earnings components. However, I find no support for greater use of non-GAAP earnings even among companies whose financial reporting is known to produce transitory items. Findings in my study casts doubt on the claim that non-GAAP earnings are used to inform investors of transitory earnings components.

In addition, my paper adds more evidence to the accounting conservatism literature. Recent studies bring up the question of whether companies that report more conservatively also exhibit unique disclosure behavior (Givoly et al. 2007; Hui et al. 2009; Li 2008). Hui et al. and Li both examine the relation between management forecasts and conservatism and arrive at opposite conclusions. In this paper, I examine a different disclosure venue and find no relation between conservatism and the use of non-GAAP earnings, implying that conservatism does not increase or decrease disclosure.

In the next chapter I discuss relevant literature, and state the hypotheses and research questions investigated in my study. Details of the research design are described

in Chapter 3. Chapter 4 discusses the empirical results, and Chapter 5 concludes the paper.

Chapter 2 Background and Hypothesis Development

2.1 Equity Valuation and the Disclosure of Non-GAAP Earnings

Various empirical and anecdotal evidence indicates that equity valuation is an important consideration in managers' decisions to issue voluntary disclosure, as increased disclosure may help reduce information asymmetry and thereby generate benefits such as lowering the cost of capital or litigation risks (see Healy and Palepu 2001 for a comprehensive review). In the survey of CFOs of Fortune 500 companies by Graham et al. (2005), the majority of respondents concur that they would disclose additional financial information to increase the predictability of their companies' future prospects or to correct undervaluation of their stock.

One form of voluntary disclosure examined in prior studies is the disclosure of non-GAAP earnings, often referred to as pro forma earnings. The use of pro forma earnings has been controversial. Proponents of pro forma earnings believe that non-GAAP numbers help financial statement users better understand the level of core earnings of the company, whereas critics fear that companies use pro forma earnings as a means of disguising poor performance to mislead investors. As a part of the regulatory reform set forth in the Sarbanes-Oxley Act, the Security Exchange Commission (SEC) adopted Regulation G in March 2003 to tighten the rules on the reporting of non-GAAP earnings. Regulation G mandates that when a public company provides material information that contains a non-GAAP financial measure, the company must concurrently provide the most comparable GAAP measure, as well as a reconciliation of the difference between non-GAAP earnings and the most comparable GAAP measure. In 2009, the SEC brought the first enforcement action under Regulation G, charging

SafeNet, Inc. for classifying "ordinary operating expenses as non-recurring integration expenses" (U.S. Securities & Exchange Commission Accounting and Auditing Enforcement Release No. 3068, November 12, 2009). The reporting of non-GAAP earnings remains an area of focus of the SEC despite the amount of time that has elapsed since the introduction of Regulation G.[2]

Much debate concerns the motives behind pro forma earnings disclosure in the literature as well as in practice. Evidence exists for both informative as well as opportunistic use of non-GAAP earnings. Several studies show that, compared to GAAP earnings, pro forma earnings are more value relevant and more likely to induce analyst forecast revisions (Bradshaw and Sloan 2002; Bhattacharya et al. 2003; Brown and Sivakumar 2003). These findings suggest that either non-GAAP earnings are indeed useful or markets are systematically "fooled" by the alternative earnings metrics. However, the latter explanation is not supported by prior studies (Lougee and Marquardt 2004; Johnson and Schwartz 2005). In addition, experimental research shows that professional investors do not naively take non-GAAP numbers reported by management at their face value (Frederickson and Miller 2004; Elliott 2006), indicating that market participants cannot all be fooled.

On the other hand, the use of pro forma earnings looks biased in some cases (Bowen et al. 2005; Black and Christensen 2009; Brown et al. 2009). For example, Bowen et al. (2005) find that companies tend to emphasize the more favorable metrics. Bhattacharya et al. (2004) and Black and Christensen (2009) report a non-trivial number

[2] According to a recent article on CFO.com, in a conference speech, Wayne Carnall, chief accountant for the SEC's Division of Corporation Finance, listed non-GAAP disclosures as one of the areas to which the Commission will pay close attention ("What's On the SEC's Radar?" by Marie Leone. CFO.com. September 29, 2010).

of cases of firms excluding depreciation or stock compensation expenses that occur year after year as a part of ordinary operations. A number of papers also document notable changes in the use of non-GAAP earnings soon after Reg G became effective (Entwistle et al. 2006; Marques 2006; Yi 2007; Heflin and Hsu 2008; Kolev et al. 2008). Collectively, these findings suggest that at least some pro forma earnings are likely motivated by managerial opportunism.

Lougee and Marquardt (2004) find that firms with less informative GAAP earnings (or smaller earnings response coefficients, hereafter ERCs) are more likely to report non-GAAP earnings. One contributing factor to smaller ERCs is the existence of transitory earnings components. Prior literature shows that earnings of differential persistence would receive different multiples (Lipe 1986; Kormendi and Lipe 1987). The computation of GAAP earnings will at times include transitory items, even for companies with generally highly informative GAAP earnings. In fiscal periods when transitory items are recorded, managers may wish to inform investors about the existence of these transitory items. The intent to inform investors about transitory items may explain why some companies report pro forma earnings lower than reported GAAP earnings, because failure to understand the transitory nature of a one-time gain can unduly raise market expectations for future performance, resulting in shareholder litigation (Healy and Palepu 1993).

The desire to help investors correctly assess the persistence of various earnings components should be stronger when managers are particularly concerned about the valuation of the company's stock. For example, managers can become increasingly concerned about equity valuation prior to equity financing transactions or when their

personal wealth varies with stock price (Healy and Palepu 1993, 1995, 2001). In other words, the enhanced focus on equity valuation can exacerbate the incentives to make additional disclosure in periods when transitory items occur.

Increased disclosure can be accomplished via various mechanisms, such as increased discussions in mandatory reports, conference calls, management forecasts, and news releases. Those measures of disclosure examined in prior studies are summarized in Appendix 1. In this paper, I examine the disclosure of pro forma earnings because, compared to other forms of voluntary disclosure, pro forma earnings are perhaps the most direct way to illustrate to investors the recurring level of earnings by removing transitory items from GAAP earnings.[3] My first hypothesis therefore predicts that managers who have a stronger focus on equity valuation and thus wish to inform investors about differential persistence of earnings components will likely disclose alternative non-GAAP measures.

H1: The propensity to disclose non-GAAP earnings increases in the strength of managers' focus on equity valuation.

2.2 Conservatism and Contracting Efficiency

Basu (1997) defines conservatism as "…capturing accountants' tendency to require a higher degree of verification for recognizing good news than bad news in

[3] Management forecasts of non-GAAP earnings issued shortly before the announcement of the actual outcome can also have similar effects. However, not all management forecasts are based on non-GAAP earnings. Also, management forecasts may be motivated to preempt litigation risk (Skinner 1994; Kasznik and Lev 1995) or to lower analyst expectations (Matsumoto 2002), whereas reporting non-GAAP earnings at the earnings announcement is unlikely to lead to these alternative objectives.

financial statements" (page 5). Watts (2003) adopts this definition of conservatism but also emphasizes that "conservatism refers to the cumulative financial effects represented in the balance sheet and to income or earnings cumulated since the firm began operation" (page 208). Beaver and Ryan (2005) and Ball and Shivakumar (2005) characterize the asymmetric timeliness of loss versus gain recognition examined in Basu's seminal paper as "conditional conservatism" to better reflect the news dependent nature of such conservatism. In contrast, "unconditional conservatism" refers to the type of asset understatements that do not depend on the outcome of business events.[4]

Accounting conservatism existed long before formal accounting standards were established, and its popularity continues to rise in recent years (Basu 1997; Givoly and Hayn 2000; Watts 2003; Lobo and Zhou 2006). Watts (2003) offers some explanations for accounting conservatism based on economic incentives. Watts argues that conservatism results from the demand to improve contracting efficiency between a firm and various parties, to mitigate the risk of shareholder litigation, and to reduce tax and political costs.[5] Ball and Shivakumar (2005) emphasize that only conditional conservatism can improve contracting efficiency because unconditional conservatism of known magnitude (which understates an asset's balance in a systematic manner) can be inferred and contracted around by parties involved. Consistent with their conjecture, Qiang (2007) finds conditional conservatism, but not unconditional conservatism, is

[4] Examples of unconditional conservatism are the expensing of R&D expenditures or the use of the LIFO inventory assumption in periods of rising prices. Under these methods, the amount or timing of expense recognition requires little managerial discretion and is not conditional on certain business outcome, such as the success of a new project.

[5] As Watts summarizes in the paper, "conservatism is a means of addressing moral hazards by parties to the firm having asymmetric information, asymmetric payoffs, limited horizon, and limited liability" (Watts 2003, page 209).

associated with contracting costs, suggesting that only conditional conservatism facilitates contracting efficiency.

Asymmetric information between managers and shareholders and the limited horizon of managers create opportunities for managers to take self-serving actions at the expense of shareholders' wealth. For example, if compensation is tied to earnings, then managers may be motivated to inflate current period earnings or invest in negative-NPV projects with positive short-term results in order to maximize their compensation. The dysfunctional incentives are especially descriptive of companies with low managerial ownership. Consistent with the contention of Watts (2003), LaFond and Roychowdhury (2008) document that companies with lower managerial ownership are more conservative. Specifically, conservatism can potentially constrain managerial opportunism in two ways in the view of the two researchers. First, by requiring lower verifiability for losses, the downward bias induced by conservatism partly offsets the upward bias arising from earnings management motivated by managers' desire to attain higher compensation.[6] Second, a reporting policy that requires accelerating loss recognition discourages managers from investing in negative NPV projects that have short-term positive outcomes or solely cater to managers' self interest (Ball and Shivakumar 2005).

Conditional conservatism may also arise from lenders' asymmetric exposure to bad versus good news. By imposing stricter verification requirement on gains than on losses, conditional conservatism provides greater assurance to creditors on the security of their investments by reducing earnings available for distributions to shareholders and by

[6] Linking executive compensation to conservative earnings can also reduce the costly ex-post settling up problem (Leone et al. 2006).

preventing managers from taking on excessively risky projects (Ahmed et al. 2002; Ball and Shivakumar 2005). Timely recognition of losses but not gains also makes covenant violations more likely (Zhang 2008). Consistent with these propositions, several empirical papers report a negative relation between different measures for cost of debt and conservatism (Ahmed et al. 2002; Wittenberg-Moerman 2008; Zhang 2008), consistent with conservatism reducing debt contracting costs. Ball, Robin, and Sadka (2008) show that differential timeliness of earnings increases in the size of debt markets at the country level. Although Guay and Verrecchia (2008) question how conservatism improves debt contracting efficiency when lenders can write firm and transaction specific contracts, Beatty, Weber, and Yu (2008) report a positive association between debt contract modifications (specifically, adjustments contained in net worth covenants to exclude a part of positive income in the calculations) and financial reporting conservatism that is not explained by other demands, suggesting that the ability to customize debt contracts does not preclude creditors' demand for conservative financial reporting.

2.3 Conservatism and Equity Valuation

The role of accounting conservatism in equity valuation is unclear. FASB regards biases, regardless of directions, as undesirable for financial reporting (Statement of Financial Accounting Concepts No. 2, paragraphs 92 and 94). On the other hand, Watts (2003) argues that FASB fails to recognize the beneficial effects of conservatism in contracting. By addressing the underlying uncertainty surrounding various contracts, conservatism eventually increases the wealth of shareholders (Watts 2003). LaFond and

Watts (2008) report evidence consistent with conditional conservatism reducing the information asymmetry between inside and outside investors, as proxied by the probability of informed trading (PIN). Lower information asymmetry can in turn reduce deadweight losses and increase firm value. Guay and Verrecchia (2007) posit that conservatism, which they regard as managers' precommitment to disclose bad news, creates part of the conditions that lead to full disclosure and in turn, lower cost of capital. Empirical evidence is mixed on the relation between conditional conservatism and the cost of equity capital. Francis et al. (2004) examine key earnings attributes and find no association between cost of equity and Basu's differential timeliness measure, but recent work by Lara et al. (2010) documents a decreasing cost of capital in conservatism using Callen et al.'s conservatism ratio.[7]

Information produced by timely recognition of unrealized bad news is highly relevant for assessing future cash flows, but timely loss recognition produces transitory negative amounts in reported earnings. Investors will probably want to separate recurring and non-recurring portions of earnings, which means a conservative reporting choice requires them to exert more effort to analyze earnings. In particular, investors with limited attention may fail to process information that is not salient because processing non-salient information incurs additional cognitive costs (Hirshleifer and Teoh 2003). To the extent that the effects of conservatism on earnings are separately identified and labeled as special items, investors may be more likely to make correct assessments.

[7] Another line of literature focuses on the effect of unconditional conservatism on equity valuation. For example, Ahmed, Morton, and Schaeffer (2000) and Mason (2004) confirm the prediction of the Feltham and Ohlson (1995) model that investors assign greater multiples to operating assets of more conservative companies. Other studies argue that the "balance sheet" type of conservatism can at times hinder investors' assessment of equity value (Penman and Zhang 2002; Lev et al. 2005; Rajan et al. 2007).

Research shows that special items are also commonly excluded by analysts (Bradshaw and Sloan 2002; Gu and Chen 2004). However, analysts do not exclude all special items, and the evidence of differential timeliness of earnings is pervasive in different line items from the income statement (Basu 1997). If investors are unable to accurately identify the transitory components of earnings that are products of timely loss recognition, they will not successfully assign appropriate multiples that reflect the transitory nature of these items. In other words, conditional conservatism may impose greater information processing costs on equity investors, despite the fact that conservatism is implemented to reduce contracting costs and consequently maximize firm value.

2.4 The Joint Effect of Conservatism and Equity Focus on Voluntary Disclosure

If companies face conditions that demand highly efficient contracts, they may respond to the situation by reporting conservatively to reduce contracting costs. If the same companies also wish to ensure that investors recognize transitory items arising from this timely loss recognition, managers can balance the two conflicting incentives in two ways. First, managers may adjust the level of conservatism by choosing not to follow the conservative policy in periods when they foresee an increased demand for proper valuation of the company's stock. However, accounting conservatism is likely a "sticky" policy. If managers are allowed discretion to deviate from the conservative reporting policy in selected periods, such a reporting policy is unlikely to effectively address underlying issues (e.g. information asymmetry) that create a demand for conditional conservatism. For example, if managers are allowed to delay loss recognition and thus extend the life of an unprofitable investment project, such flexibility would not

effectively prevent managers from taking risky, negative NPV projects *ex ante* (Ball and Shivakumar 2005). Also, basing executive compensation or debt covenants on earnings that do not consistently incorporate timely loss recognition will not mitigate ex-post settling up or trigger covenants more easily.

A second way for managers to balance contracting efficiency and valuation considerations is through increased disclosure. As discussed earlier, conditional conservatism produces transitory losses. In other words, conservatism can create one of the conditions that reduce the informativeness of GAAP earnings, and highly price-conscious managers may respond to the issue by informing the markets about the differential persistence of earnings via the disclosure of non-GAAP earnings. This leads to my second hypothesis:

H2: Conditional conservatism enhances the increasing effect of valuation focus on the propensity to disclose non-GAAP earnings.

My first hypothesis builds upon the notion that, to the extent that earnings contain transitory components, managers with a strong valuation focus may issue non-GAAP earnings to highlight such items. H2 describes a factor, conditional conservatism, that can intensify the effect predicted in H1. Stated differently, H1 predicts a main effect of equity valuation focus on the disclosure of non-GAAP earnings, while H2 concerns the modifying effect of conditional conservatism on the relation between valuation focus and disclosure. The question remains as to whether conditional conservatism alone plays any role in the decision to report non-GAAP earnings. In other words, for companies with

only a moderate concern about equity valuation, would conservative reporting somehow increase or decrease their tendency to disclose non-GAAP earnings? Both Li (2008) and Hui et al. (2009) use management forecasts to investigate the relation between conservatism and voluntary disclosure. Li (2008) argues that conservatism increases the need to forewarn analysts of lower earnings, while Hui et al. (2009) posit that timely loss recognition lowers the demand for preempting bad news.[8] Because actual non-GAAP results are not released until the earnings announcement, reporting non-GAAP earnings cannot be motivated by the desire to preempt bad news.

Conditional conservatism may directly motivate the use of pro forma earnings for firms with only a modest concern about valuation if non-shareholder contracting parties who demand conservatism also frequently refer to these non-GAAP metrics. However, little is known about whether non-GAAP performance measures are useful for other stakeholders. In addition, the sample in my study consists of only public companies which are unlikely to have zero demand for conservatism or zero concern about valuation, and therefore empirically observing a main effect of conservatism is possible for this reason. In the absence of a comprehensive understanding of how conservatism alone may affect the disclosure of non-GAAP earnings, I leave the effect of conservatism on the disclosure of non-GAAP earnings as a research question to be investigated.

RQ1: Does conditional conservatism affect the propensity to disclose non-GAAP earnings?

[8] Neither of the two studies draws a significant distinction between conditional and unconditional conservatism.

Prior literature suggests that conditional conservatism is induced by contracting costs, which are functions of factors such as information asymmetry. If conditional conservatism is found to directly or indirectly affect the disclosure of non-GAAP earnings, then the observed relation could be driven by the underlying factors that create the demand for conservatism rather than by conservatism per se. To understand how conservatism affects the disclosure of non-GAAP earnings, I include a second research question:

RQ2: Do contracting costs increase the propensity to disclose non-GAAP earnings? And if so, is the increase due to links from contracting costs to conservatism to non-GAAP earnings disclosure?

Chapter 3 Research Design

3. 1 Model and Main Variables

All of the above hypotheses and research questions can be examined in a single model. Below I describe in detail how each construct is measured in the study.

3.1.1 Equity Valuation Focus

H1 predicts that the existence of a strong focus on equity valuation will increase the use of non-GAAP earnings. Prior studies in the voluntary disclosure literature have already examined capital market transactions as a possible motive for voluntary disclosure, although pro forma earnings is rarely the chosen measure of voluntary disclosure in these studies. Several papers report an increase in certain types of voluntary disclosure for companies that access capital markets more frequently (Lang and Lundholm 1993; Frankel et al. 1995; Lang and Lundholm 2000).[9] Lang and Lundholm (1993) find that analysts' ratings of disclosure tend to be higher prior to equity or debt financing events. Frankel et al. (1995) show that companies that access capital markets more frequently issue more management forecasts in the long run. In a later study, Lang and Lundholm (2000) study the content of news released by companies before equity offerings and find evidence of some firms hyping their stock by releasing more optimistic news shortly before financing activities. However, Lang and Lundholm (2000) also find evidence that companies that consistently disclose more information experience much less price decline at the time of equity offering announcements, suggesting that disclosure indeed reduces information asymmetry.

[9] One exception is Botosan and Harris (2000), who report no evidence that companies with greater propensity to access capital markets are more likely to initiate quarterly segment disclosure.

Following these studies, I use a company's propensity to access capital markets as the proxy for the strength of management's concern about equity valuation. Prior studies generally measure the existence of external debt or equity financing events around or subsequent to the window in which the change in disclosure activities is measured (Frankel et al. 1995; Botosan and Harris 2000; Richardson et al. 2004; Verrecchia and Weber 2006; Francis et al. 2008). Lang and Lundholm (2000) show that compared to non-offering firms, offering companies release more favorable news during the six months prior to the announcement of the offering, but the increased disclosure is even more pronounced during the eighteen months subsequent to the announcement. Frankel et al. (1995) show that companies with a higher propensity to access capital markets consistently issue more management forecasts. Based on these findings, I measure the propensity to access capital markets based on the existence of equity financing activities *prior* to and shortly after the disclosure of pro forma earnings. Specifically, valuation focus is proxied by an indicator variable, *OFFER*, coded as one for companies that sell equity during an eight-quarter window surrounding the end of the fiscal year for which the disclosure of pro forma earnings is measured.[10] The eight quarters encompass the eighteen months preceding the said fiscal year end as well as the succeeding six months. A company is identified as selling equity in a given quarter if the amount of cash from sales of common and preferred stock during the quarter equals one percent or more of beginning-of-quarter market value of the company's common equity.[11]

[10] In additional sensitivity tests, I also repeat the main analyses with different windows in which equity financing activities are measured.

[11] Following Richardson et al. (2004), I exclude the smallest sales of equity as these issuances are likely due to the exercise of employee stock options.

Voluntary disclosure can also be motivated by management's concern about the effect of stock price on their job security and personal wealth (Healy and Palepu 2001). Nagar et al. (2003) argue that managers would be more willing to release private information when their wealth substantially depends on the value of their employers' stock price. The ideal measure of how sensitive one's personal wealth is to the price of his/her employer's stock would be the ratio of managers' equity-based compensation to personal wealth (Nagar et al. 2003). Since data on personal wealth are not available, I consider using three measures to capture the equity valuation demand that is driven by personal wealth considerations related to equity compensation: the value of unexercised stock options owned by the company's CEO, the percentage of CEO compensation that is stock-based, and the level of CEO equity ownership.[12]

3.1.2 Accounting Conservatism

As discussed earlier, only conditional conservatism, or asymmetric timeliness of earnings, is likely to improve contracting efficiency. Thus, the proper measure of conservatism for my tests should exclusively reflect the news dependent nature of conditional conservatism and measure the cross-sectional variation in asymmetric timeliness of losses versus gains. Although I perceive conservatism to be a reporting policy that does not drastically vary from one year to another, researchers can only

[12] The level of CEO ownership is intended to capture how the value of CEO's stockholding is affected by changes in the price of the company's stock. Intuitively, the higher the level of CEO ownership is, the larger the effect of changes in stock price would be on the CEO's personal wealth. So managers would be more concerned about equity valuation if their stockholdings are large. However, Nagar et al. (2003) show a negative overall effect of insider ownership on the frequency of management forecasts. They further demonstrate the existence of non-linearity in the negative relation and the effect is positive and insignificant when insider ownership is small. Given their findings, observing a negative relation between the level of CEO ownership and the disclosure of non-GAAP earnings in my sample is also possible.

observe timely reporting of losses in periods containing substantial bad news. In good news periods, one cannot readily distinguish between conditionally conservative and non-conservative earnings based on reported numbers. For example, the observed level of conservatism should be higher for a firm year in which unrealized future losses related to an unpromising project are immediately accrued in full. When this occurs, managers are more likely to consider issuing additional voluntary disclosure to explain the effect of conservatism on reported earnings. In other words, a multi-year policy of conditional conservatism does not spur the reporting of non-GAAP earnings in every year; the additional disclosure is only needed in periods when transitory losses appear in income. Thus, a firm-year level measure of conditional conservatism seems more appropriate than a firm-level measure for my study.

One approach to measuring conservatism at the firm-year level is to estimate the Basu model for each sample firm using time-series data with a fixed or rolling window of estimation that generates a firm or firm-year level measure of asymmetric timeliness of earnings.[13] However, this approach has at least two disadvantages. First, the requirement of firm-level time-series data of a reasonably long horizon could lead to a small sample size and induce a survivor bias in sample formation. Second, the measure cannot be reliably estimated if a company does not have overall bad news in any of the years used for estimation.

[13] Basu uses annual stock returns to distinguish between good and bad news periods. He regresses earnings on stock returns, a dummy variable of negative stock returns for bad news, and an interaction term of the two. A positive coefficient on the interaction term of bad news dummy variable and stock returns indicates that earnings incorporates bad news more timely. Subsequent studies sometimes use the ratio of the coefficient on the interaction term to the sum of the coefficient on the interaction term and the coefficient on stock returns as the measure of relative timeliness of losses versus gains.

Khan and Watts (2009) extend Basu's study and propose a firm-year measure of conservatism, which they refer to as C_SCORE. This measure is developed based on the notion that accounting conservatism varies with firm size, market-to-book ratio, and leverage, as these factors have been reported in prior studies to reflect underlying conditions that create differential contracting demand for conservatism. The details regarding how to estimate the C_SCORE are described in the Appendix 2. By factoring size, market-to-book ratio, and leverage into a *cross-sectional* Basu regression, the resulting C_SCORE closely resembles the Basu coefficient while overcoming the two disadvantages of estimating the Basu model using time-series data. Hence, I use the C_SCORE as the measure of conditional conservatism.

A few studies challenge the validity of differential earnings timeliness measures derived from Basu's earnings-return regression (Dietrich et al. 2007; Givoly et al. 2007). Dietrich et al. argue that the asymmetric timeliness measure from the earnings-return regression is biased because returns are endogenous on earnings and non-earnings news. Givoly et al. observe that Basu's differential timeliness measure can lead to false conclusions about the existence of conservatism at times.

Some of these criticisms have been addressed in depth by Ball et al. (2009) and Ryan (2006). Ball et al. (2009) formally derive the positive coefficient reported in Basu (1997) and subsequent studies. Ball et al. also provide explanations for observed asymmetry in operating cash flows, refuting the claim by Dietrich et al. that observed asymmetric timeliness of earnings is an artifact of asymmetric timeliness of cash flows. They also argue that bias suggested by Dietrich et al. would at best be minimal due to the limited ability of earnings to explain contemporary stock returns.

As posited by Ryan (2006) and Ball et al. (2009), asymmetric timeliness of earnings is the most theoretically sound measure of conditional conservatism. Ryan points out that other measures of conservatism, such as market-to-book ratio, cumulative nonoperating accruals, or skewness of earnings relative to cash flows, are either driven by unconditional conservatism or do not adequately capture the "timeliness" of loss recognition. Since my study pertains exclusively to conditional conservatism, an empirical proxy that reflects the differential timeliness of earnings seems most appropriate.

One of the concerns raised by Givoly et al. is about the stability of the asymmetric timeliness measure. They show that, unlike other measures of conservatism such as book-to-market ratio or negative cumulative nonoperating accruals, the differential timeliness measure does not exhibit high correlation over successive subperiods. However, the news dependent nature of conditional conservatism means that observed timeliness of earnings will vary across successive subperiods unless news realizations and distributions are stable across all subperiods examined. On the other hand, other measures such as book-to-market ratio or negative cumulative accruals reflect not only conditional but also unconditional conservatism, which is larger in magnitude (Ryan 2006). Since unconditional conservatism pertains to the use income-decreasing accounting consistently regardless of news realizations, measures capturing unconditional conservatism are expected to be relatively stable over time.

Nevertheless, drawing inferences based on a single measure of conservatism can be dangerous (Ryan 2006; Givoly et al. 2007). To ensure that the conservatism measure distinguishes firm years in which earnings incorporate unrealized bad news from those in

which timely loss recognition does not occur, I further filter the sample based on additional evidence on the existence of conservative reporting. Pae (2007) shows that timely loss recognition is implemented via discretionary accruals. Hence, unexpected negative accruals in response to recent bad news, absent prior bad news, likely indicate the practice of conservatism. Specifically, I first calculate discretionary accruals by estimating a modified Jones model at the industry level. An indicator variable, *ACCCON*, is coded as one for those with negative discretionary accruals, negative 12-month market-adjusted return in the current fiscal year, and non-negative 12-month market-adjusted return in the preceding year, and zero otherwise. *ACCCON* can be used to filter the sample for stronger evidence of timely loss recognition, as well as an alternative measure of conditional conservatism.

3.1.3 Disclosure of Non-GAAP Earnings

Because my study investigates whether the demand for conservative reporting and a strong valuation focus — together or alone — increase companies' propensity to report pro forma earnings, the dependent variable indicates the use of non-GAAP earnings. Non-GAAP results are mostly disclosed during quarterly earnings announcements. Hence, I search actual press releases from the 8-Ks filed by companies for evidence of the use of non-GAAP earnings. The main dependent variable, *PRF*, is coded as one if a company reports pro forma earnings in any quarter of a given fiscal year. Additionally, an ordinal variable, *NPRF*, is used to measure the frequency of the use of pro forma earnings

in quarterly earnings announcements within a given year.[14] Because year-to-date or prior-year results are often included in the earnings announcement, some companies report year-to-date non-GAAP earnings even when no non-GAAP earnings adjustments are made for the most recent quarter. In these cases, I do not code the firms as disclosing non-GAAP earnings in that quarter.

3.2 Validating the Relation between Conditional Conservatism and the Contracting Demand

The prediction of H2 builds upon prior literature that suggests conservatism arises from the demand for improved contracting efficiency. Conservatism may, in turn, modify companies' voluntary disclosure behavior because of their valuation considerations. Furthermore, such a link only exists for conditional conservatism and not unconditional conservatism, as the latter is not perceived to facilitate contracting and generally would not produce large transitory earnings that may concern valuation-focused managers. Qiang (2007) and Lara et al. (2009) explicitly test whether contracting costs induce both types of conservatism and find no association between unconditional conservatism and their contracting cost proxies. Specifically, Qiang regresses measures of conditional and unconditional conservatism, respectively, on proxies of debt and equity contracting costs, as well as other hypothesized stimulants of conservatism, such as litigation risk, regulatory cost, and taxation to test for association. Since I use a different measure of

[14] I do not use the amount of items excluded from GAAP earnings. I expect that conservative companies will need to explain their GAAP earnings more frequently than aggressive reporters. However, whether the magnitude of the amount of timely recognized losses will increase in the degree of conservatism is unclear.

conditional conservatism, as a confirmatory test I first validate their findings in my sample by estimating following two equations. [15]

$$C\_SCORE_{it} = \lambda_0 + \lambda_1 Contract\_Eq_{it} + \lambda_2 Contract\_Dbt_{it} + \lambda_3 LIT_{it} + \lambda_4 REG_{it} + \lambda_5 TAX_{it} + \lambda_6 C\_INDEX_{it} + \delta_{it} \quad (1)$$

$$C\_INDEX_{it} = \gamma_0 + \gamma_1 Contract\_Eq_{it} + \gamma_2 Contract\_Dbt_{it} + \gamma_3 LIT_{it} + \gamma_4 REG_{it} + \gamma_5 TAX_{it} + \nu_{it} \quad (2)$$

C_SCORE in equation (1) is Khan and Watts' measure of conditional conservatism, or asymmetric timeliness of earnings. *C_INDEX,* the measure of unconditional conservatism, is the Conservatism Index developed by Penman and Zhang (2002).[16] *C_INDEX* measures the balance of unrecorded reserves due to expensing of R&D and advertising expenditures, as well as the choice of the earnings-suppressing LIFO method. *C_INDEX* is included in equation (1) because larger amounts of unrecorded reserves (high *C_INDEX*) reduce the need for asset write-downs related to conditional conservatism (low *C_SCORE*) (Beaver and Ryan 2005). As for the independent variables in the regressions, Qiang (2007) and Lara et al. (2009) use measures of corporate governance to proxy for equity contracting cost and leverage-based measures for debt contracting cost. Following Qiang (2007), the equity contracting

[15] Variables in the models are measured on an annual basis. For brevity the firm and year subscripts are omitted in subsequent discussions.

[16] Qiang (2007) uses a measure derived from Beaver and Ryan (2005) that captures the persistent understatement of earnings as her proxy for unconditional conservatism. This measure cannot be used in my study because it is time-invariant.

cost variable, *Contract_Eq*, is defined as the percentage of independent directors.[17] Proxies for debt contracting cost (*Contract_Dbt*), firm litigation risk (*LIT*), regulatory cost (*REG*), and taxation (*TAX*) are constructed using Compustat data following definitions in Qiang (2007).[18] Positive λ_1 and λ_2 in equation (1) would be consistent with findings in prior studies that conditional conservatism arises from contracting demand. On the other hand, γ_1 and γ_2 in equation (2) are not expected to be significant because unconditional conservatism has not been shown to facilitate contracting.

3.3 Main Model Specification

All the hypotheses and research questions can be addressed in a single model. The main model is specified as follows in equation (3)[19]:

$$f(DV_{it}) = \alpha + \beta_1 OFFER_{it} + \beta_2 COMP_{it} + \beta_3 C\_SCORE_{it} + \beta_4 C\_SCORE_{it} * OFFER_{it} + \beta_5 C\_SCORE_{it} * COMP_{it} + \beta_6 LOGTA_{it} + \beta_7 IND_{it} + \varepsilon_{it} \quad (3)$$

[17] Data on the percentage of independent directors are obtained from the RiskMetrics database and supplemented by hand collected data for those not covered by RiskMetrics. Qiang (2007) measures equity contracting cost using the percentage of outsiders on the board; she obtained such data from the Compact D database. Qiang argues that the percentage of outside directors, a proxy for governance by stockholders, reflects the *expected* equity contracting costs.

[18] Qiang measures debt contracting cost as the ratio of private to total long-term debt. Similar to the equity contracting cost variable, the debt contracting cost variable measures the strength of debt governance, which reflects the *expected* debt contracting cost. The firm litigation risk variable is the factor score of five market variables: equity beta, share turnover, market value, return skewness, and annual returns. Regulatory cost is captured by a binary variable that indicates whether the amount of a company's sales, deflated by average sales in the industry, is in the top quartile of the sample. Finally, tax cost is the association between book and tax income, estimated from time-series regressions of income taxes on tax expense. All aforementioned variables are constructed using Compustat or CRSP data.

[19] Variables in the models are measured on an annual basis based on annual and quarterly data. For brevity the firm and year subscripts are omitted in subsequent discussions.

DV, the dependent variable in equation (3), will be either the existence of a non-GAAP earnings disclosure during the year (*PRF*) or the frequency of the disclosure within the year (*NPRF*). *OFFER* and *COMP* are proxies for the strength of equity valuation focus. *OFFER* is an indicator variable coded as one when the company issues stock in the ten quarters around disclosure of pro forma earnings. *COMP* is one of the three variables that measure each of the following: the percentage of equity-based compensation (*COMP_STKBASE*), the value of unexercised stock options owned by the CEO deflated by the amount of total compensation (*COMP_UNEXOPT*), and CEO stock ownership (*COMP_OWN*). *C_SCORE* is the value of the firm-year measure of differential timeliness of earnings developed by Khan and Watts (2009).

LOGTA, the natural logarithm of total assets, is included as a control variable because large companies tend to disclose more. Both Bhattacharya et al. (2004) and Lougee and Marquardt (2004) report greater use of pro forma earnings in high tech and service sectors, so I add an industry indicator variable, *IND*, to equation (3) to control for the effect of peer pressure on the disclosure decision.[20] Botosan and Harris (2000) argue that voluntary disclosure is affected by the pressure to conform to industry practice. This implies that the propensity to use pro forma earnings is likely higher among high tech and service companies due to the greater pressure to conform to the disclosure practice of competitors in these sectors.

H1 predicts that companies are more likely to report pro forma earnings in the presence of a strong focus on equity valuation. Hence, β_1 and β_2 are expected to be

[20] Based on findings in Bhattacharya et al. (2004), *IND* is coded as one for observations in high tech and service industries. I use the definition of Francis and Schipper (1999) for high tech companies. Service companies pertain to those with SIC code of 7000-8999.

positive. H2 suggests that conditional conservatism will further enhance the need to communicate with investors regarding the effect of transitory earnings components. This results in significantly positive coefficients on the interaction terms, β_4 and β_5. The estimate for β_3 can answer RQ1 concerning whether conservatism alone influences the decision to disclose non-GAAP earnings. In particular, a positive value of β_3 suggests the use of non-GAAP earnings by stakeholders other than current or prospective shareholders. If the results show a significant main effect of conservatism on the disclosure of non-GAAP earnings, RQ2 can be addressed by performing a path analysis to identify potential effects of contracting costs on the disclosure of pro forma earnings.

Chapter 4 Empirical Results

4.1 Sample Selection and Descriptive Statistics

Because my research questions explore the differential propensity to disclose, ideally I would like to use a sample of all companies to conduct the test. Unfortunately, due to the lack of machine-readable non-GAAP earnings data, the hurdle of manual data collection results in a relatively small sample. The small sample size poses a challenge for detecting the hypothesized effects. As increasing the sample size is not feasible, I want to examine the hypothesized effects in periods in which detecting such effects is most likely. The final sample consists only of firm years of US public companies in the post-Regulation G period. Section 401(b) of SOX and the subsequent Regulation G are intended to deter companies from using non-GAAP financial information to mislead investors (Entwistle et al. 2006). Examining the post-SOX period has the benefit of reducing noise and therefore, increasing the power of my test. In the pre-SOX period when the consequences and penalties of misleading pro forma disclosure were less salient to managers, a larger proportion of pro forma earnings may have been disclosed solely to mislead investors. In fact, Entwistle et al. examine press releases issued by S&P 500 companies between 2001 and 2003 and find that the level of reported pro forma earnings has gone down from 2001 to 2003 and that presentations of pro forma earnings also become less misleading over time. Given the potentially greater variations of motives for disclosing pro forma numbers in the pre-SOX period, a larger sample would be necessary to detect the hypothesized effects. Because Regulation G became effective on March 28, 2003, my sample period consists only of fiscal years 2004 – 2008 of Compustat companies to ensure that all fiscal years under study commence after the effective date of

Regulation G. In addition, a few prior studies on pro forma disclosure choose to collect all pro forma disclosures over a period of time and match these observations with other companies from the same industry of comparable size. I do not choose matching because successful matching will likely require comprehensive knowledge of the underlying determinants of the disclosure of non-GAAP earnings, but to date researchers have limited understanding of such determinants.

To construct the sample, I first calculate the conservatism measure, *C_SCORE*, and the *OFFER* variable for each firm year of US companies covered in the Compustat database during fiscal 2004-2008. There are 14,477 firm-year observations with non-missing values of *C_SCORE* and *OFFER*. Availability of data required to calculate additional test variables further reduces the number of firm years to 5,641. Finally, these 5,641 observations are sorted into deciles based on *C_SCORE*, and I retain only 1,111firms from the top and bottom deciles as the sample. To determine if a company discloses non-GAAP earnings, I search filings of 8-Ks for announcements of quarterly results using the SEC EDGAR database and, when 8-Ks are not filed, press release archives in the Lexis-Nexis database or on the company's website. The final sample consists of 1,014 firm years (from 610 firms) of fiscal 2004 – 2007 with press release data that can be retrieved.[21]

Panel A of Table 1 shows the distribution of sample firms by industry.[22] No single industry accounts for more than ten percent of the sample. The sample seems to be

[21] Measuring the *OFFER* variable for fiscal year 2008 requires data from the first two quarters of fiscal year 2009, which is only available for a small number of companies. As a result, fiscal year 2008 is excluded from the final sample.

[22] Industry classification is based on the 49 industry definitions from the website of Kenneth R. French. http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/Data_Library/det_49_ind_port.html.

a fair representation of the Compustat universe in terms of industry membership, but has a notably smaller percentage of trading companies relative to the Compustat universe. Retail, wholesale, and electronic equipment are the three largest sectors in the sample; together they account for 22% of the sample. The propensity of sample companies to disclose non-GAAP earnings is reported in the last two columns. In 45.6% of the sample firm years, non-GAAP earnings are included in press releases of actual results in at least one quarter of the fiscal year. The percentage decreases to 33.5% when the definition of non-GAAP earnings excludes EBIT and EBITDA.[23] The evolution of the use of non-GAAP earnings over recent years is described in Panel B of Table 1. The percentage of companies that do not report non-GAAP earnings at all declines slightly from 2004 to 2007, regardless of whether EBIT and EBITDA are defined as non-GAAP earnings or not. Over the entire sample period, 15.2% of firm years have non-GAAP earnings that are not EBIT or EBITDA in all four quarters of a given year. In other words, almost half (15.2% /33.5% = 45%) of the companies that report non-GAAP earnings do so consistently.

Recall that the dependent variable in equation (3) is either an indicator variable, *PRF*, coded as one if non-GAAP earnings are disclosed in any quarter of a year, or an ordinal variable, *NPRF*, that records the number of quarters in which non-GAAP earnings

---

[23] Prior studies (such as Bhattacharya et al. (2003)) do not consider the use of EBITDA as disclosure of non-GAAP earnings because of the long history of EBITDA reporting. However, Reg G requires reconciliation for the use of EBIT and EBITDA due to the concern that EBIT and EBITDA are measured in a variety of ways across companies. This seems to be a valid concern, as many companies report "adjusted EBITDA" which exclude one or more items beyond interest, tax, and depreciation and amortization (for example, gain from the sale of assets).

are disclosed.[24] If non-GAAP earnings are used to inform investors of transitory items due to timely loss recognition, disclosed non-GAAP earnings should exceed reported GAAP earnings. Some companies report non-GAAP earnings that are less than GAAP earnings, which cannot be attributed to conservative financial reporting. Therefore, to further reduce measurement error, I also measure the dependent variables differently by considering only the disclosure of non-GAAP earnings that exceed reported GAAP results. Two additional dependent variables are thus created, *UPPRF* (dichotomous) and *NUPPRF* (ordinal), to indicate the existence and frequency of disclosure of upward non-GAAP earnings adjustments. Panel B of Table 1 also describes the frequency of disclosure of non-GAAP earnings over time when only upward non-GAAP earnings adjustments are considered. As reported in the table, 29.1% (1-70.9%) of the sample report upward non-GAAP earnings adjustments in at least one quarter, and 8.1% of company years in the sample consistently report upward non-GAAP earnings adjustments in all four quarters.

Panel A of Table 2 summarizes the descriptive statistics of the main variables used for hypothesis testing. The mean and median of *C_SCORE* are .13 and .12, both of which are slightly higher than .105 and .097 reported by Khan and Watts (2009). This is not surprising since the sample in this study is comprised of more recent years and prior studies report increasing conservatism over time (Givoly and Hayn 2000; Lobo and Zhou 2006).[25] In the sample, 29% of company years have engaged in equity financing activities recently (mean of *OFFER*=.29). On average, 29% of CEO compensation is in the form of

[24] In subsequent regression analyses, I follow prior studies and only report results based on the dependent variables that disregard the disclosure of EBIT or EBITDA as non-GAAP earnings.

[25] The mean and median reported in Khan and Watts (2009) are based on year 1963 – 2005.

restricted stock or proceeds from exercises of stock options (mean *COMP_STKBASE* = .29). The intrinsic value of CEO's unexercised options is 3.2 times as large as his/her annual total compensation, and on average CEOs in the sample own 8% of their employers' outstanding shares.

The mean of the dichotomous dependent variable, *PRF*, is .34. The average number of quarters of a year in which non-GAAP earnings are disclosed is .93 (mean of *NPRF*). Two alternative measures for each of the dependent variables, *PRF_EB* and *NPRF_EB*, are reported by extending the definition of non-GAAP earnings to include disclosures labeled as EBIT or EBITDA as disclosures of non-GAAP earnings. Thus, *PRF_EB* and *NPRF_EB* have higher mean values (.46 and 1.45 respectively) compared to *PRF* and *NPRF*. *UPPRF* and *NUPPRF*, the dependent variables that record only upward non-GAAP earnings adjustments, have a mean of .29 and .70. For both *UPPRF* and *NUPRF*, I also report slight variations, *UPPRF_EB* and *NUPPRF_EB*, which include the disclosed EBIT/EBITDA as non-GAAP earnings.

Correlation coefficients among main variables are reported in Panel B of Table 2. Note that the strength of a manager's focus on equity valuation is proxied by the existence of equity financing events, *OFFER*, and three compensation variables: *COMP_STKBASE*, *COMP_UNEXOPT*, and *COMP_OWN*. Table 2 indicates that *OFFER* is not significantly correlated with any measure of the disclosure of non-GAAP earnings. On the other hand, *COMP_STKBASE* and *COMP_UNEXOPT* are positively correlated with all disclosure measures, whereas *COMP_OWN* demonstrates a negative association with each of the disclosure measures. *C_SCORE*, the conservatism measure, by construction is strongly negatively associated with *LOGTA* (Spearman correlation

coefficient = -.506; p-value < .0001), and is also negatively correlated with all disclosure measures. Since larger companies generally disclose more, it is difficult to ascertain whether the negative correlation between *C_SCORE* and disclosure of non-GAAP earnings is driven by the effect of firm size based on simple correlations. Finally, *ACCCON*, the dichotomous variable used to filter *C_SCORE* for further evidence of timely loss recognition, does not show significant correlation with any disclosure variable.

4.2 Results of Testing for the Relation between Conditional Conservatism and the Contracting Demand

Panel A of Table 3 reports descriptive statistics of variables used in validating the relation between conditional conservatism and the contracting demand. Compared to the sample used by Qiang (2007), companies in my sample rely more on private debt (mean *Contract_Dbt* = .94 vs. .76 reported by Qiang), and have lower regulatory costs due to smaller market share (Mean *REG* = .4 vs. .62 reported by Qiang). In addition, sample firms exhibit a greater variation in terms of litigation risk and taxation, compared to what is reported by Qiang.

C_SCORE (the measure of conditional conservatism) and *C_INDEX* (the measure of unconditional conservatism) are then regressed on the proxies for factors affecting the demand for conservatism. Results are reported in Panel B of Table 3. As expected, *C_INDEX* is not significantly associated with the two contracting cost variables, *Contract_Eq* and *Contract_Dbt*. However, contrary to the findings of Qiang, *C_SCORE* is also not significantly related to either of the contracting cost proxies. In addition, the

coefficient on *LIT* is significantly negative, opposite to what is reported by Qiang. These differences can occur for several reasons. First, the measures of conditional and unconditional conservatism adopted by Qiang are firm-level measures obtained from a different model. Second, the sample examined by Qiang consists of different companies from a different period, making it possible that the predicted relation does not hold in the sample used in my study. Third, *C_SCORE* may not be a valid proxy for conditional conservatism. The third possibility is especially problematic because it casts doubt on the validity of using *C_SCORE* as the main measure of conditional conservatism in my study.

To further understand the cause of the lack of support for the expected association, I first construct Qiang's conservatism measures, using companies that appear in my sample with required data from the prior six years.[26] Results (untabulated) based on 494 firms show a significantly positive relation between conditional conservatism and the proxy for equity contracting cost, but the positive association between conditional conservatism and the debt contracting cost variable is statistically insignificant. Furthermore, the coefficients on *REG* and *TAX* are both significantly positive, as opposed

[26] Qiang constructs her measures of conditional and unconditional conservatism using regressions of the book-to-market ratio on current and six lagged annual stock returns using a sample of 633 firms over 1988-1999. She allows for differential timeliness of good and bad news by incorporating indicator variables for negative returns in the regressions. In her estimation, the differential timeliness also varies with six proxies for factors that induce conservatism via the addition of 3-way interaction terms among the return, the indicator variable for negative return, and each of the six proxies for current as well as lagged returns. The six proxies reflect equity contracting cost, debt contracting cost, firm and auditor litigation risks, regulatory cost, and cost of taxation. The unconditional conservatism is measured as one minus the predicted value of the firm intercept in the model, as the firm intercept captures the persistent understatement of book value. The measure of conditional conservatism is calculated as the sum of predicted value of the 14 two- and three-way interaction terms, averaged across sample years for each firm and then multiplied by minus one.

to the negative signs reported in her study. These inconsistent results, based on the same conditional conservatism measure used by Qiang, suggests that the difference in sample period and composition may at least partially contribute to the lack of significance of the coefficients on contracting cost variables in results of equation (1).

To see whether *C_SCORE* performs differently in a larger sample, I re-estimate equations (1) and (2) using a sample consisting of companies in the original sample, plus all other Compustat companies with sufficient machine readable data to construct the variables used in equations (1) and (2) in the sample period (a total of 2,676 observations from 1,214 companies). Results of this analysis are reported in Panel C of Table 3. The coefficients on *Contract_Dbt*, *TAX*, and *REG* are all in the directions reported by Qiang and significant at the 5% level or lower. These results based on this larger sample are consistent with *C_SCORE* being the valid proxy for conditional conservatism. However, the signs of coefficients on *Contract_Eq* and *LIT* remain opposite to what is reported in prior studies (Qiang 2007; Ahmed and Duellman 2007), suggesting some fundamental differences between *C_SCORE* and the measure used in Qiang's study.[27] To avoid the danger of drawing inferences based on an inappropriate measure, I also employ an additional accrual-based measure (*ACCCON*) to further filter the sample for evidence of

[27] I measure *Contract_Eq* slightly differently from prior studies. Prior studies test the relation between conservatism and the percentage of outsiders on the board, whereas *Contract_Eq* is defined as the percentage of independent directors. Qiang obtains data on the percentage of outside directors based on the availability of officer remuneration information, as non-employee directors would not have remuneration information available. RiskMetrics, the major source of director data for my study, determines that a director is independent if he/she has "no material connection to the company other than a board seat (http://www.riskmetrics.com). The connection can be "financial, personal, or otherwise". Hence, a non-employee, outside director may be non-independent if he/she has a material relation to the company, such as being a family member of an executive or having a transaction with the company for an amount above the materiality threshold.

conditional conservatism, and use alternative measures of conditional conservatism in sensitivity tests.

4.3 Main Analyses

Results of tests of H1 and H2 are reported in Table 4. H1 predicts that companies with a stronger focus on equity valuation are more likely to report non-GAAP earnings, implying a positive coefficient on *OFFER* and the three compensation variables, *COMP_STKBASE*, *COMP_UNEXOPT*, and *COMP_OWN*. Panel A of Table 4 summarizes the results based on the dichotomous measures of the disclosure of non-GAAP earnings. The first three columns report the results with *PRF* as the dependent variable, whereas columns four to six pertain to results based on *UPPRF*, which considers only the cases in which disclosed non-GAAP earnings exceed GAAP earnings as the event of disclosure. Consistent with the prediction of H1, the coefficient on *OFFER* is significantly positive at 5% level in all six columns. In contrast, the coefficient is negative and insignificant for *all* compensation measures. These results indicate that firms with a higher propensity to access equity markets are more likely to report non-GAAP earnings, as well as upward non-GAAP adjustments, around the time of security offerings. In contrast, CEOs' equity ownership or compensation does not seem to motivate the reporting of non-GAAP earnings, as none of the coefficients on the compensation variables is significant.

Panel B of Table 4 presents the results based on the ordinal dependent variables that measure the number of quarters in which a company reports non-EBIT/EBITDA-based non-GAAP earnings (*NPRF*) or such non-GAAP earnings that exceed the

comparable GAAP measure (*NUPPRF*). Unlike in the case of dichotomous variables, I do not expect that firms with higher concerns about equity valuation would necessarily report non-GAAP earnings in more quarters of a year. Two companies that both recognize news equally timely may differ in the manner in which news arrives due to the nature of their business. Even if both companies always report non-GAAP earnings to highlight the items resulting from timely loss recognition during the quarter in which such losses are reported, the one for which news arrives more steadily and frequently in smaller amounts may need to disclose non-GAAP earnings in more quarters than the other. As a result, I do not predict the sign on the proxies for the strength of equity valuation focus. Again, in Panel B none of the coefficients on the compensation measures is significant. The coefficient on *OFFER* is again significantly positive in all models, suggesting greater propensity to report non-GAAP earnings around stock offerings.

H2 predicts that conservatism further enhances the effect of valuation concerns on the disclosure of non-GAAP earnings. Positive coefficients on the interaction terms in equation (3) between *C_SCORE* and *OFFER*, as well as between *C_SCORE* and each compensation variable, are thus expected. Contrary to the prediction, Panel A of Table 4 shows a negative coefficient on *C_SCORE_OFFER* in all six models, and the negative coefficient becomes marginally significant when compensation is measured by the value of unexercised stock options owned by the CEO (*COMP_UNEXOPT*). The negative coefficients can also be observed in Panel B of Table 4. On the other hand, the positive (negative) coefficients on *COMP_STKBASE* and *COMP_UNEXOPT* (*COMP_OWN*) do not seem meaningful due to the lack of significance in either Panel A and B of Table 4.

This suggests that, given a high propensity to access the equity market, companies with more conservative financial reporting are not more (or possibly even less) likely to report non-GAAP earnings, even though their conservative reporting tends to produce transitory losses.

In terms of control variables, consistent with prior studies, the use of non-GAAP earnings is more prevalent in high-tech and service industries as indicated by the significantly positive coefficient on *IND* in all models. *LOGTA* is highly significant in all specifications regardless of how compensation or disclosure of non-GAAP earnings is measured. In other words, the disclosure of non-GAAP earnings is particularly common among large companies. This observation differs from the finding in Lougee and Marquardt (2004), who match their sample firms based on size and industry.[28] By construction, *C_SCORE* is negatively related to the market value of the firm, which is highly correlated with *LOGTA*. This raises a question whether the inclusion of *LOGTA* as a control variable in the model is redundant. The inclusion of *LOGTA* in the model can be justified for two reasons. First, size is only one of the three factors used to construct *C_SCORE*, and therefore the correlation between firm size and *C_SCORE* is far from perfect. Second, because both *LOGTA* and *C_SCORE* are expected to each have an increasing effect on disclosure, the negative relation between the two variables would have made a positive coefficient on *C_SCORE* even more pronounced when *LOGTA* is included in the regression. In other words, instead of the inclusion of *LOGTA* decreasing the coefficient on *C_SCORE*, I expected inclusion to increase the coefficient on

[28] For each sample firm quarter for which non-GAAP earnings are disclosed, Lougee and Marquart identify a match firm that operates in the same industry based on 4-digit SIC code and has the closest value of total assets.

C_SCORE by removing a negative omitted correlated variable bias.[29] Both reasons favor including *LOGTA* in the regression.

Next, I re-estimate the models reported in Panel A and include additional control variables, *FOLLOW* and *NEGSURP*. Managers may disclose pro forma earnings in response to the demand of analysts and institutional investors (Bowen et al. 2005).[30] Thus, I account for the effect of investor sophistication by including a measure of analyst following, *FOLLOW*, in equation (3). *FOLLOW* is the number of analysts following the firm reported in I/B/E/S in the fiscal year examined, and it equals zero for sample firm years not covered by the I/B/E/S. Derived from Lougee and Marquardt (2004), *NEGSURP* is an indicator variable that is coded as one if, in any quarter of a year, reported GAAP earnings are lower than the results from the same period in the previous year. Panel C of Table 4 summarizes the results, which are qualitatively similar to those reported in Panel A, with the following exceptions: the significance of the positive coefficient on *OFFER* slightly decreases and the negative coefficients on *C_SCORE_OFFER* are no longer significant. Again, the conclusion remains that companies are more likely to report non-GAAP earnings around the sale of stock. Although the positive coefficient on *FOLLOW* is consistent with the conjecture that managers disclose non-GAAP earnings to cater to the information demand of sophisticated investors, the coefficient is insignificant in all models. On the other hand,

[29] When excluding *LOGTA* from the model, the coefficient on *C_SCORE* is indeed more negative in most cases. In the regressions reported in Panel A of Table 4, the coefficient on *C_SCORE* becomes more negative and highly significant, ranging from -2.51 to -4.13, when *LOGTA* is omitted from the model.

[30] Bowen et al. (2005) do not find any relation between institutional ownership and the relative emphasis placed by managers on pro forma earnings. However, a positive relation is supported when analyst following is used as the proxy for investor sophistication.

consistent with findings in prior studies, *NEGSURP* is positive and highly significant, indicating a strong tendency of companies to report non-GAAP earnings when GAAP results fall short of prior-year earnings.

The coefficient on *C_SCORE* addresses the first research question concerning the main effect of conservatism on the disclosure of non-GAAP earnings. As shown in Panel A, B, and C of Table 4, the coefficient on *C_SCORE* is negative in almost all specifications but is never statistically significant. Hence, this finding suggests that conservatism does not have any stand-alone effect on the disclosure of non-GAAP earnings in the absence of an enhanced focus on equity valuation.

As a robustness check, I further substitute *INST*, the level of institutional ownership, for *FOLLOW*, and *NEGFE*, an indicator variable for the cases in which reported EPS is lower than analyst forecast consensus, for *NEGSURP*, respectively. Panel D shows that the coefficient on *INST* is positive and highly significant, indicating that companies with higher institutional ownership are more likely to report non-GAAP earnings in general. Not surprisingly, *NEGFE* behaves similarly (results tabulated in Panel E) to *NEGSURP*, as reported in Lougee and Marquardt (2004). However, the significance of the positive coefficient on *OFFER* becomes lower or completely subsumed with the use of control variables concerning the information demand of sophisticated investors. When using *FOLLOW* as the proxy for investor sophistication, the coefficient on *OFFER* is significant at 5% in three of the six columns and at 10% in the other three. In Panel D where *INST* is used as the proxy for investor sophistication, the positive coefficient is only marginally significant in four of the six regressions.[31]

[31] Data on institutional ownership initially were obtained for only 976 observations of the sample based on matching of the 8-digit CUSIP contained in the Compustat database and the S34 master file in the Thomson

A comparison of Panel A to Panel C and Panel D reveals a decrease in the significance of the positive coefficient on *OFFER* when controlling for investor sophistication. One potential explanation for the diminishing significance is that both *OFFER* and proxies for investor sophistication are capturing the same underlying construct. This doesn't seem likely given the negative correlation between *OFFER* and *FOLLOW* (Pearson coefficient of correlation = -.17 with p-value less than 1%) as well as between *OFFER* and *INST* (Pearson coefficient of correlation = -.12 with p-value less than 1%). Another possible explanation is that the investor sophistication proxies are omitted variables that are correlated with the variable of interest (*OFFER*). Given the positive association between non-GAAP disclosure and each of *OFFER*, *FOLLOW*, and *INST*, adding an omitted variable that is negatively correlated with *OFFER* should have made the coefficient on *OFFER* more positive. However, the coefficient on *OFFER* becomes *less* positive once *FOLLOW* or *INST* is included in the regression, a result that is inconsistent with a simple omitted variable explanation. Overall, the limited evidence here does not allow me to draw a definite conclusion on the interplay between investor sophistication and the higher propensity to disclose non-GAAP earnings around stock offerings. Further research is needed to understand how investor sophistication affects the increased disclosure around equity financings.

In Panel E, where *NEGSURP* is replaced by *NEGFE*, the significance of the positive coefficient on *OFFER* becomes fully subsumed. To better understand the cause

---

Reuters database. For the remaining 38 observations, I extract institutional ownership data based on the match of 6-digit CUSIP (10 observations), stock ticker (12 observations) and name of the company (16 observations). In an alternative analysis, I assign the value of zero for *INST* to all 38 observations. Results are similar except the coefficient on *OFFER* is slightly larger across all six specifications and marginally significant in all but one specification.

to the loss of significance, I re-estimate the regressions reported in Panel A and Panel C using the reduced sample with available data to construct *NEGFE*. Results show a decrease in significance of the coefficient on *OFFER* compared to those reported in Panel A and Panel C based on the full sample, suggesting that the reduction in significance is at least partially attributed to the smaller sample size. Furthermore, although *NEGFE* captures a different aspect of bad news, it may be subject to greater measurement errors than *NEGSURP*. *NEGFE* is constructed by comparing reported GAAP earnings to earnings forecasted by analysts. Since analysts usually do not forecast GAAP earnings, *NEGFE* likely overstates the extent of bad news in general. Hence, the loss of significance of the coefficient on *OFFER* may also be attributed to the greater measurement error of *NEGFE*.

Since the findings above provide no evidence for a main effect of conservatism on the disclosure of non-GAAP earnings, RQ2 is no longer meaningful. Nevertheless, I substitute contracting cost variables for *C_SCORE* in equation (3) to see if the use of non-GAAP earnings is related to expected equity and debt contracting costs. Reported results in Table 5 show a positive coefficient on *Contract_Eq* in columns 1, 4 and 5, suggesting that a positive relation between equity contracting cost and the propensity to disclose non-GAAP earnings may exist.[32] However, the positive relation is sensitive to the definitions of CEO compensation.

[32] Note that the positive coefficient on *OFFER* becomes insignificant at conventional levels. Further analyses (not reported) indicate that the significance in the models reported in Panels A-C of Table 4 likely occurs because *C_SCORE* and *LOGTA* combine to effectively control for size and other factors, which allows the importance of *OFFER* to be apparent; *Contract_Eq* is not effective in controlling for these other factors, and thus *OFFER* is no longer significant.

Taken together, the results of the regression analyses lend partial support for an increasing effect of valuation concerns related to stock offerings, but do not present sufficient evidence for a main or modifying effect of conservatism on the disclosure of non-GAAP earnings. If a significant portion of companies report non-GAAP earnings to better inform investors of transitory components of earnings, one would expect a greater use of non-GAAP earnings among firms that produce more transitory items – that is, those reporting conservatively by recognizing losses timely. However, increased use of non-GAAP earnings cannot be observed even among companies with conservative reporting and with managers who are faced with incentives that particularly enhance their concerns about valuation of the company's stock, casting doubt on the claim that non-GAAP earnings are used to inform investors of transitory items.

At the first glance, the lack of support for a higher propensity to use non-GAAP earnings among companies that are predisposed to producing transitory losses does not seem to reconcile with the findings in prior literature that markets generally find non-GAAP earnings more useful and that analysts make adjustments to the non-GAAP earnings reported by managers. In a research report on the use pro forma earnings, analysts at Bear Stearn explain that some items that occur frequently may still be excluded from reported results by analysts because these items are not considered important for the purpose of equity valuation and as a result, analysts do not try to predict these items.[33] If managers and analysts share the same view of these items, non-GAAP adjustments made by managers can then contain some non-transitory items even if managers truthfully report the non-GAAP numbers that they think are most useful for

[33] Pro Forma Earnings: A Critical Perspective – An Industry-by-Industry Assessment of Pro Forma Earnings Reporting. September 2002. Global Equity Research, Bear, Stearn & Co. Inc.

valuation. In fact, the SEC seems to concur that non-GAAP measures excluding recurring items can still be useful. In a recent update on the use of non-GAAP measures, the Commission essentially permits the exclusion of non-transitory items in calculating non-GAAP measures, as long as companies do not describe such items as nonrecurring, infrequent, or unusual.[34] In other words, what the SEC strives to deter is the use of non-GAAP earnings that masks recurring items as nonrecurring and not the use of non-GAAP earnings that exclude recurring items.

4.4 Additional Tests

4.4.1 Evidence of Timely Loss Recognition

As discussed in Chapter 3, *ACCCON* is an additional variable that should identify the periods in which timely loss recognition is particularly evident. I first repeat the main regression analyses using a sample in which *C_SCORE* and *ACCCON* produce consistent classification.[35] Results based on this reduced sample of 515 firm years are reported in Panel A of Table 6 and closely resemble those reported in Panel C of Table 4. Panel B summarizes the results using *ACCCON* as the measure of conservatism instead of *C_SCORE* in the main regressions based on the full sample of 1,014 firm years. Again, results show an increased propensity to report non-GAAP earnings around equity offerings, and the increased propensity is even more pronounced in the models in which only upward non-GAAP earnings adjustments are regarded as the disclosure of non-

[34] See the answers to Question 102.03 of Compliance and Disclosure Interpretations (http://www.sec.gov/divisions/corpfin/guidance/nongaapinterp.htm).

[35] That is, only firm years in the highest (lowest) decile of *C_SCORE* with *ACCCON*=1(0) are retained in the reduced sample.

GAAP earnings (DV=*UPPRF*) . I find no evidence of a greater use of non-GAAP earnings when financial reporting is conservative. In fact, the marginally significantly negative coefficient on *ACCCON_OFFER* suggests that, conditioned on a high propensity to access equity markets, companies with more transitory losses from conservative reporting are *less* likely to report upward non-GAAP earnings adjustments.

4.4.2 Alternative Measure of Conditional Conservatism

Two additional firm-year measures of conditional conservatism are used to substitute for *C_SCORE* to see if results are affected. The first measure used is the Conservatism Ratio (CR) recently developed by Callen, Hope, and Segal (2010). Callen et al. built upon the Vuolteenaho model (2002) to decompose the news in stock returns into earnings news and discount rate news. *CR*, the conservatism ratio, is then calculated as the ratio of the unexpected current period earnings news to total earnings news for both current and future periods. Given the occurrence of bad (good) news (proxied by negative (positive) stock return), a larger (smaller) *CR* indicates more conservative reporting as bad (good) news is incorporated in earnings more (less) timely. [36] Details about the estimation of *CR* are also included in Appendix 2.

The second measure used is the negative cumulative nonoperating accruals (*NOPACC*).[37] Based on the notion that the amount of cumulative income before

[36] Callen et al. argue that CR is not subject to some of criticisms of the estimation of the Basu model. However, interpreting a negative CR can be difficult. As discussed by Callen et al., a negative CR can be caused by either overly aggressive or conservative accounting. Consequently, they exclude the negative CRs from their analysis.

[37] *NOPACC* is measured as (-1)*cumulative nonoperating accruals, scaled by beginning total assets. Cumulative nonoperating accruals are calculated as: net income + depreciation - cash flows from

depreciation and amortization should converge to the amount of cumulative cash flow from operations in a steady state, Givoly and Hayn (2000) show that, consistent with increased conservatism over time, cumulative nonoperating accruals exhibit a progressively downward pattern. They argue that cumulative nonoperating accruals consist of items such as changes of estimates, restructuring charges, or asset write-downs. Thus, the magnitude of cumulative nonoperating accruals likely reflects the degree of timely recognition of losses.

Results based on *CR* and *NOPACC* are presented in Panel A and B of Table 7, respectively. Although neither of the two measures is highly correlated with the *C_SCORE*, inferences for main variables based on the two measures are not substantially different from those based on the *C_SCORE*. [38] The coefficient on *OFFER* is significantly positive in both Panel A and B when considering only disclosures of non-GAAP earnings that exceeds GAAP results, indicating that upward non-GAAP adjustments are more likely to be made by offering firms. On the other hand, the significance of the positive coefficient either substantially decreases or completely disappears in the models with *PRF* as the dependent variable. This contrast suggests the existence of an "asymmetry" in the use of non-GAAP earnings, as the increased propensity to report non-GAAP earnings around stock offerings can only be observed for

---

operations - (ΔAccounts Receivable + ΔInventories +ΔPrepaid Expenses- ΔAccounts Payable-ΔTaxes Payable).

[38] The Spearman (Pearson) correlation coefficient between *C_SCORE* and *CR* in the reduced sample of 601 observations is -.113 (.074) with a p-value of .005 (.071). The Spearman (Pearson) correlation coefficient between *C_SCORE* and *NOPACC* in the reduced sample of 506 observations is -.081 (-.023) with a p-value of .068 (.601).

upward non-GAAP earnings adjustments. In addition, in Panel B of Table 7, the coefficient on *COMP_OWN* is significantly negative regardless of how disclosure is measured, implying that managers may become more reluctant to report non-GAAP earnings as their ownership increases.[39] This is also observed, albeit of a lower significance, when conservatism is proxied by *ACCCON*.

4.4.3 Alternative Definition of Non-GAAP Earnings

I repeat all the regression analyses reported in Table 4 – 7 by replacing the dependent variables with those that include the disclosure of EBIT/EBITDA as non-GAAP earnings. In theory, items excluded from net income to calculate EBIT/EBITDA are likely recurring, and therefore results based on the alternative dependent variables should be similar or weaker.[40] On the other hand, some companies exclude items other than interest, taxes, and depreciation and amortization costs and report an "adjusted EBITDA". If those additional exclusions pertain to transitory items resulting from timely loss recognition, then using alternative dependent variables may arrive at different conclusions about the effect of conservatism and valuation incentives.

The main conclusions from these analyses (results not tabulated) concerning the predictions of H1 and H2 are unaffected by the use of the alternative dependent variables. Specifically, the coefficient on *OFFER* is significantly positive in almost all models

[39] The significantly negative coefficient is consistent with the finding of Nagar et al. (2003), who document a negative effect of insider ownership on the frequency of management forecasts.

[40] For companies that consistently report EBIT/EBITDA in every fiscal quarter, using these alternative dependent variables in the models will likely add more noise to the models.

based on the full sample.[41] In addition, even in the reduced samples where alternative control variables *INST* or *NEGFE* are used, the significance of the positive coefficient on *OFFER* is not completely subsumed by these proxies for the information demand from sophisticated investors. Furthermore, the coefficient on *C_SCORE* (as well as *CR* and *NOPACC*) is positive and becomes significant at 10% or lower in some models. Overall, results regarding increased propensity to report non-GAAP earnings around equity offerings are even stronger when including EBIT/EBITDA as non-GAAP metrics. The stronger results, combined with the significantly positive coefficient on *C_SCORE*, are surprising, as researchers do not always view EBIT/EBITDA as pro forma earnings (Bhattacharya et al. 2003).

4.4.4 Alternative Measurement Windows of Equity Offerings

I also repeat the regression analyses and vary the window in which equity offering activities are measured. Specifically, I examine the following windows: the four quarters prior to the fiscal year end, the two and four quarters following the fiscal year end, and a ten-quarter window consisting of the eight (two) quarters prior to (following) the fiscal year end. The inferences concerning the main variables are similar for three of the four alternative windows, although the results (not reported) are generally weaker.[42]

[41] The only exception occurs when *ACCCON* is used as the measure of conditional conservatism.

[42] I find no increased propensity to disclose non-GAAP earnings around equity offerings when the measurement window of offering activity is restricted to the two quarters following the year end.

Chapter 5 Conclusions

The use of non-GAAP earnings has been controversial. Whether such alternative earnings metrics are motivated by managerial opportunism or a genuine desire to enhance earnings informativeness remains largely unanswered. Although a number of prior studies report evidence consistent with management opportunism, others suggest that investors are not misled and that non-GAAP earnings information can be useful. In this paper, I approach the question concerning the motive underlying the disclosure of non-GAAP earnings from yet another angle. Specifically, I first examine whether the use of non-GAAP earnings is more prevalent when the costs of investor misinterpretation of earnings components are high, such as in the cases of equity offerings or when managers' wealth is more sensitive to changes in stock price. Then I test whether, in the presence of strong concerns about equity valuation, the disclosure of non-GAAP earnings is more likely to be observed among companies that report conservatively, as timely loss recognition results in transitory losses. Finally, I investigate whether conditional conservatism alone, in the absence of strong valuation concerns, plays any role in the disclosure of non-GAAP earnings.

The main findings of my paper are as follows. First, the disclosure of non-GAAP earnings is more prevalent around the time of equity offerings, although this finding is notably weakened or completely subsumed when controlling for the level of institutional ownership and the tendency to meet or beat analyst forecast. On the other hand, results in the paper do not provide sufficient support for a significant association between the disclosure of non-GAAP earnings and proxies for the sensitivity of CEO's wealth to changes in stock price. Finally, conservatism itself has no main effect on the disclosure of

non-GAAP earnings. These results are robust to the use of an alternative definition of non-GAAP earnings and alternative measures of conditional conservatism developed in prior studies, such as C_SCORE (Khan and Watts 2009), Conservatism Ratio (Callen et al. 2010), and the amount of negative cumulative nonoperating accruals (Givoly and Hayn 2001). Overall, findings in my paper do not support the conjecture that non-GAAP earnings are used to inform investors of transitory earnings components resulting from timely loss recognition.

The main contribution of this paper is to extend the literature on the disclosure of non-GAAP earnings, by providing evidence that casts doubt on the conjecture that non-GAAP earnings are used to inform investors of transitory items. This paper also adds to the growing body of literature on accounting conservatism by exploring the relation between conservatism and voluntary disclosure. This paper is subject to a number of limitations. For example, because the study samples only the companies that are the most and the least conservative companies in the Compustat universe, I am unable to rule out the possibility that a main effect of conservatism may be observed in the groups with only moderate levels of conservatism (i.e. a non-linear main effect). Also, the compensation variables in my study do not include the fair value of outstanding stock options and the fair value on the grant date. Future studies can re-examine whether the compensation structure is associated with the decision to report non-GAAP earnings. Finally, the data used in my study do not allow for additional analyses that focus exclusively on the disclosure of EBIT/EBITDA. Whether the EBIT/EBITDA is also used in a manner similar to other non-GAAP earnings remains an empirical question for future research.

References

Ahmed, A. S., B. K. Billings, R. M. Morton, M. Harris-Stanford. 2002. The role of accounting conservatism in mitigating bondholder-shareholder conflicts over dividend policy and in reducing debt costs. *The Accounting Review* 77(4): 867 – 890.

----------, and S. Duellman. 2007. Accounting conservatism and board of director characteristics: An empirical analysis. *Journal of Accounting & Economics* 43: 411 – 437.

----------, R. M. Morton, and T. F. Schaefer. 2000. Accounting conservatism and the valuation of accounting numbers: Evidence of the Feltham-Ohlson (1996) model. *Journal of Accounting, Auditing, and Finance* 15(3): 271 - 292.

Ball, R., S. P. Kothari, and V. Nikolaev. 2009. Econometrics of the Basu asymmetric timeliness coefficient and accounting conservatism. Working Paper. University of Chicago and Massachusetts Institute of Technology.

---------, A. Robin, and G. Sadka. 2008. Is financial reporting shaped by equity markets or by debt markets? An international study of timeliness and conservatism. *Review of Accounting Studies* 13: 168 – 205.

---------, and L. Shivakumar. 2005. Earnings quality in UK private firms: comparative loss recognition timeliness. *Journal of Accounting & Economics* 39: 83 – 128.

Basu, S. 1997. The conservatism principle and the asymmetric timeliness of earnings. *Journal of Accounting & Economics* 24: 3 – 37.

Beatty, A., J. Weber, and J. J. Yu. 2008. Conservatism and debt. *Journal of Accounting & Economics* 45: 154 – 174.

Beaver, W. H., and S. G. Ryan. 2005. Conditional and unconditional conservatism: Concept and modeling. *Review of Accounting Studies* 10: 269 – 309.

Bhattacharya, N., E. L. Black, T. E. Christensen, and C. R. Larson. 2003. Assessing the relative informativeness and permanence of pro forma earnings and GAAP operating earnings. *Journal of Accounting & Economics* 36: 285 – 319.

----------, and R. D. Mergenthaler. 2004. Empirical evidence on recent trends in pro forma reporting. *Accounting Horizons* 18(1): 27 – 43.

Black, D. E., and T. E. Christensen. 2009. US managers' use of 'pro forma' adjustments to meet strategic earnings targets. *Journal of Business Finance & Accounting* 36(3) & (4): 297 – 326.

Botosan, C. A. 1997. Disclosure level of the cost of equity capital. *The Accounting Review* 72(3): 323 – 349.

----------, and M. S. Harris. 2000. Motivations for a change in disclosure frequency and its consequences: An examination of voluntary quarterly segment disclosures. *Journal of Accounting Research* 38(2): 329 – 353.

----------, and M. A. Plumlee. 2002. A re-examination of disclosure level and the expected cost of equity capital. *Journal of Accounting Research* 40(1): 21 – 40.

Bowen, R. M., A. K. Davis, and D. A. Matsumoto. 2005. Emphasis on pro forma versus GAAP earnings in quarterly press releases: Determinants, SEC intervention, and market reactions. *The Accounting Review* 80(4): 1011 – 1038.

Bradshaw, M. T., and R. G. Sloan. 2002. GAAP versus the Street: An empirical assessment of two alternative definitions of earnings. *Journal of Accounting Research* 40(1): 41 – 66.

Brown, N. C., T. E. Christensen, W. B. Elliott. 2009. Strategic timing of pro forma earnings announcements. Working Paper. University of Southern California, Brigham Young University, University of Urbana-Champaign, and University of Iowa.

Brown, L. D., and K. Sivakumar. 2003. Comparing the value relevance of two operating income measures. *Review of Accounting Studies* 8: 561 – 572.

Callen, J. L., O. Hope, and D. Segal. 2010. The Pricing of Conservative Accounting and the Measurement of Conservatism at the Firm-Year Level. *Review of Accounting Studies* 15: 145 - 178.

Chuk, E., D. Matsumoto, and G. Miller. 2008. Assessing methods of identifying management forecasts: CIG vs. Hand-Collection. Working Paper. University of Washington.

Dietrich, J. R., K. A. Muller, and E. J. Riedl. 2007. Asymmetric timeliness test of accounting conservatism. *Review of Accounting Studies* 12: 95 – 124.

Elliott, W. B. 2006. Are investors influenced by pro forma emphasis and reconciliations in earnings announcements? *The Accounting Review* 81(1): 81 – 133.

Entwistle, G. M., G. D. Feltham, and C. Mbagwu. 2006. Financial reporting regulation and the reporting of pro forma earnings. *Accounting Horizons* 20(1): 39 – 55.

Fama, E. F. and K. R. French. 1997. Industry costs of equity. *Journal of Financial Economics*, 43: 153-193.

Feltham, G. A., and J. A. Ohlson. 1995. Valuation and clean surplus accounting for operating and financial activities. *Contemporary Accounting Research* 11(2): 689 – 731.

Financial Standards Accounting Board. 1980. Statement of Financial Accounting Concepts No. 2: Qualitative Characteristics of Accounting Information.

Francis, J., and K. Schipper. 1999. Have financial statements lost their relevance? J*ournal of Accounting Research* 37(2): 319 – 352.

Francis, J., R. LaFond, P. M. Olsson, and K. Schipper. 2004. Cost of equity and earnings attributes. *The Accounting Review* 79(4): 967 – 1010.

----------, D. Nanda, and P. Olsson. 2008. Voluntary disclosure, earnings quality, and cost of capial. *Journal of Accounting Research* 46(1): 53 – 99.

Frankel, R., M. McNichols, and G. P. Wilson. 1995. Discretionary disclosure and external financing. *The Accounting Review* 70(1): 135 – 150.

Frederickson, J. R., and J. Miller. 2004. Disclosures on analysts' and nonprofessional investors' equity valuation judgments. *The Accounting Review* 79(3): 667 – 686.

Givoly, D., and C. Hayn. 2000. The changing time-series properties of earnings, cash flows and accruals: Has financial reporting become more conservative? *Journal of Accounting & Economics* 29: 287 – 320.

----------, and A. Natarajan. 2007. Measuring accounting conservatism. *The Accounting Review* 82(1): 667 – 686.

Graham, J. R., C. R. Harvey, and S. Rajgopal. 2005. The economic implications of corporate financial reporting. *Journal of Accounting & Economics* 40: 3 – 73.

Gu, Z., and T. Chen. 2004. Analysts' treatment of nonrecurring items in street earnings. *Journal of Accounting & Economics* 38: 129 – 170.

Guay, W., and R. Verrecchia. 2007. Conservative disclosure. Working Paper. University of Pennsylvania.

----------. 2008. Discussion of an economic framework for conservative accounting and Bushman and Piotroski (2006). *Journal of Accounting & Economics* 42: 149 – 165.

Healy, P. M., and K. G. Palepu. 1993. The effect of firms' financial disclosure strategies on stock prices. *Accounting Horizons* 7(1): 1 – 11.

----------. 1995. The challenges of investor communication: The case of CUC International, Inc. *Journal of Financial Economics* 38(2): 111 – 140.

----------, Hutton, A. P., and K. G. Palepu. 1999. Stock performance and intermediation changes surrounding sustained increases in disclosure. *Contemporary Accounting Research* 16(3): 485 – 520.

----------. 2001. Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature. *Journal of Accounting & Economics* 31: 405 – 440.

Heflin, F., and C. Hsu. 2008. The impact of the SEC's regulation of non-GAAP disclosures. *Journal of Accounting & Economics* 46: 349 – 365.

Hirshleifer, D., and S. H. Teoh. 2003. Limited attention, information disclosure, and financial reporting. *Journal of Accounting & Economics* 36: 337 – 386.

Hui, K. W., S. Matsunaga, and D. Morse. 2009. The impact of conservatism on management earnings forecasts. *Journal of Accounting & Economics* 47: 192 – 207.

Johnson, W. B., and W. C. Schwartz. 2005. Are investors misled by "pro forma earnings"? *Contemporary Accounting Research* 22(4): 915 – 963.

Kasznik, R., and B. Lev. 1995. To warn or not to warn: Management disclosures in the face of earnings surprise. *The Accounting Review* 70(1): 113 – 134.

Khan, M. and R. L. Watts. 2009. Estimation and empirical properties of a firm-year measure of conservatism. *Journal of Accounting & Economics* 48: 132 – 150.

Kolev, K., C. A. Marquardt, and S. E. McVay. 2008. SEC scrutiny and the evolution of non-GAAP reporting. *The Accounting Review* 83(1): 157 – 184.

Kormendi, R., and R. Lipe. 1987. Earnings innovations, earnings persistence, and stock returns. *The Journal of Business* 60(3): 323 – 345.

LaFond, R., and S. Roychowdhury. 2008. Managerial ownership and accounting conservatism. *Journal of Accounting Research* 46(1): 101 – 135.

LaFond, R., and R. L. Watts. 2008. The information role of conservatism. *The Accounting Review* 83(2): 447 – 478.

Lang, M., and R. Lundholm. 1993. Cross-sectional determinants of analyst ratings of corporate disclosures. *Journal of Accounting Research* 31(2): 246 – 271.

----------. 2000. Voluntary disclosure and equity offerings: Reducing information or hyping the stock? *Contemporary Accounting Research* 17(4): 623 – 662.

Lara, J. M. G., B. G. Osma, and F. Penalva. 2009. The economic determinants of conditional conservatism. *Journal of Business Finance & Accounting* 36(3) & (4): 336 – 372.

----------. 2010. Conditional conservatism and cost of capital. *Review of Accounting Studies* (forthcoming).

Leone, A. J., J. S. Wu, and J. L. Zimmerman. 2006. Asymmetric sensitivity of CEO compensation to stock returns. *Journal of Accounting & Economics* 42: 167 – 192.

Lev, B., S. Sarath, and T. Sougiannis. 2005. R&D reporting biases and their consequences. *Contemporary Accounting Research* 22(4): 977 – 1026.

Li, Z. 2008. Accounting conservatism and managers' forecasting behavior. PhD Dissertation. University of Minnesota.

Lipe, R. C. 1986. The information contained in the components of earnings. *Journal of Accounting Research* 24 (Supplement): 37 - 64.

Lobo, G. J., and J. Zhou. 2006. Did conservatism in financial reporting increase after the Sarbanes-Oxley Act? Initial evidence. *Accounting Horizons* 20(1): 57 – 73.

Lougee, B. A. and C. A. Marquardt. 2004. Earnings informativeness and strategic disclosure: An empirical examination of "pro forma" earnings. *The Accounting Review* 79(3): 769 – 795.

Nagar, V., D. Nanda, and P. Wysocki. 2003. Discretionary disclosure and stock-based incentives. *Journal of Accounting & Economics* 34: 283 – 309.

Marques, A. 2006. SEC interventions and the frequency and usefulness of non-GAAP financial measures. *Review of Accounting Studies* 11: 549 – 574.

Mason, L. 2004. The impact of accounting conservatism on the magnitude of the differential information content of cash flows and accruals. *Journal of Accounting, Auditing, and Finance* 19(3): 249 - 282.

Matsumoto, D. A. 2002. Management incentives to avoid earnings surprises. *The Accounting Review* 77(3): 483 – 514.

Miller, G. S. 2002. Earnings Performance and discretionary disclosure. *Journal of Accounting Research* 40(1): 173 – 204.

Pae, J. 2007. Unexpected accruals and conditional accounting conservatism. *Journal of Business Finance & Accounting* 34(5) & (6): 681 -704.

Penman, S. H., and X. Zhang. 2002. Accounting conservatism, the quality of earnings, and stock returns. 2002. *The Accounting Review* 77(2): 237 – 264.

Qiang, X. 2007. The effects of contracting, litigation, regulation, and tax costs on conditional and unconditional conservatism: Cross-sectional evidence at the firm level. *The Accounting Review* 82(3): 759 – 796.

Rajan, M. V., S. Reichelstein, and M. T. Soliman. 2007. Conservatism, growth, and return on investment. *Review of Accounting Studies* 12: 325 – 370.

Richardson, S., S. H. Teoh, and P. D. Wysocki. 2004. The walkdown to beatable analyst forecasts: the role of equity issuance and insider trading incentives. *Contemporary Accounting Research* 21(4): 885 – 924.

Rogers, J. L. 2008. Disclosure quality and management trading incentives. *Journal of Accounting Research* 46(5): 475 – 679.

Ryan, S. G. 2006. Identifying conditional conservatism. *European Accounting Review* 15(4): 511 – 525.

Skinner, D. J. 1994. Why firms voluntarily disclose bad news. *Journal of Accounting Research* 32(1): 38 – 60.

Verrecchia, R. E., and J. Weber. 2006. Redacted disclosure. *Journal of Accounting Research* 44(4): 791 – 814.

Vuolteenaho, T. 2002. What drives firm-level stock returns. *Journal of Finance* 57: 233 – 264.

Watts, R. L. 2003. Conservatism in accounting part I: Explanations and implications. *Accounting Horizons* 17(3): 207 – 221.

Wittenberg-Moerman, R. 2008. The role of information asymmetry and financial reporting quality in debt trading: Evidence from the secondary loan market. *Journal of Accounting & Economics* 46: 240 – 260.

Yi, H. 2007. Has Regulation G improved the information quality of non-GAAP earnings disclosures? Working Paper. University of Oklahoma.

Zhang, J. 2008. The contracting benefits of accounting conservatism to lenders and borrowers. *Journal of Accounting & Economics* 45: 27 – 54.

Appendix 1: Commonly Used Disclosure Measures

Below I briefly describe several measures of company-level disclosure that have been used in prior literature.

- *Analysts' ratings of disclosure quality*: Following Lang and Lundholm (1993), many studies use the disclosure score issued by the former Association of Investment Management and Research (AIMR) as a general proxy for the level of disclosure (for example, Lang and Lundholm 1996; Sengupta 1998; Healy, Hutton, and Palepu 1999; Botosan and Plumlee 2002).[43] The AIMR disclosure scores were produced by financial analysts who evaluate the quality of information in mandatory disclosures within companies' annual and quarterly reports, as well as other published communication and investors relations (Lang and Lundholm 1993). The AIMR reports provided not only a score for each of the three subcategories of information disclosed by companies but also a composite score for the overall quality of disclosure. Such ratings offer a more comprehensive measure of disclosure as they are determined by analysts who specialized in each particular industry after considering various aspects and venues of disclosure. However, these scores were only available for industries and companies covered by financial analysts, and AIMR stopped providing such rankings after fiscal year 1996. Also, because these scores were based on the judgments of financial analysts, they were unavoidably subject to possible known and unknown biases.
- *Management Forecasts*: The vast majority of the literature chooses the number of

[43] The Association of Investment Management Research is now known as the CFA Institute, preceded by the Financial Analyst Federation (FAF). The disclosure scores used in Lang and Lundholm's study are from the Reports of Financial Analyst Federation Corporate Information Committee (FAF Reports).

management earnings forecasts as the measure of voluntary disclosure.[44] Management earnings forecasts contain a rich set of information, as they not only come in different forms but also often include detailed explanations for the predicted performance. The recent creation of machine readable earnings guidance data further accelerates the development of literature on management earnings forecasts by enabling researchers to conduct more powerful tests of the effects of changes in regulatory environment on voluntary disclosure behavior (Chuk et al. 2008).

- *Self-constructed measures*: Some researchers construct their own measures of disclosure to overcome the drawbacks of the AIMR scores. For example, Botosan (1997) and Francis et al. (2008) construct a disclosure index based on the information provided by companies in their annual reports, such as discussions about historical results, key financial and non-financial information, and forward-looking information. Although their papers examine the content of mandatory reports, their indexes essentially measure the level of voluntary disclosure as the decision regarding the quality and quantity of information to be included in those sections of annual reports is, to some extent, discretionary.
- *Other venues of disclosure*: Other researchers investigate voluntary disclosure by analyzing firm-initiated communications via various open or closed channels (such as conference calls). For example, Lang and Lundholm (2000) and Miller (2002) both collect public disclosure data from news retrieval services to study whether their sample companies change the level of voluntary disclosure under circumstances of interest.

[44] Hirst et al. (2008) provide a most recent review of the management earnings forecast literature. They build their review based on a framework that characterizes research on management earnings forecasts by forecast antecedents, characteristics, and consequences.

- *Market-based measure*: Given the assumption of efficient markets, disclosure of additional information supposedly reduces the information risk. Therefore, changes in market measures such as price or trading volume around the release of disclosures are sometimes used as indications for changes in disclosure (for example, Rogers 2008)[45].

[45] Market measures are not appropriate for my study due to the concern that unsophisticated investors may not fully understand and adjust their assessments for the effects of conservatism.

Appendix 2: Estimating C_SCORE and CR

Estimating C_SCORE

The C_SCORE measure is devised by Khan and Watts (KW) based on the idea that the level of conservatism, as measured by Basu's asymmetric timeliness of earnings, tends to vary with the size, growth opportunities, and leverage of a company. A C_SCORE is essentially a linear combination of the value of size, market-to-book ratio, and leverage of a company in a certain period. The following three equations are obtained from Khan and Watts (2009) directly. These equations are estimated cross-sectionally for each year.

$$X_{i,t} = \beta_{1,t} + \beta_{2,t}D_{i,t} + \beta_{3,i,t}R_{i,t} + \beta_{4,i,t}D_{i,t}R_{i,t} + e_{i,t} \qquad \text{KW(1)}$$

$$C\_SCORE \equiv \beta_{4,i,t} = \lambda_{1,t} + \lambda_{2,t}Size_{i,t} + \lambda_{3,t}M/B_{i,t} + \lambda_{4,t}Lev_{i,t} \qquad \text{KW(3)}$$

$$\begin{aligned} X_{i,t} = {} & \beta_1 + \beta_2 D_{i,t} + R_{i,t}(\mu_1 + \mu_2 Size_{i,t} + \mu_3 M/B_{i,t} + \mu_4 Lev_{i,t}) \\ & + D_{i,t}R_{i,t}(\lambda_1 + \lambda_2 Size_{i,t} + \lambda_3 M/B_{i,t} + \lambda_4 Lev_{i,t}) \\ & + (\delta_1 Size_i + \delta_2 M/B_i + \delta_3 Lev_i + \delta_4 D_i Size_i + \delta_5 D_i M/B_i + \delta_6 D_i Lev_i) + \varepsilon_{i,t} \end{aligned} \qquad \text{KW(4)}$$

Equation (1) denotes the model specified in the Basu (1997) study. $X_{i,t}$ is the earnings of firm i in year t. $R_{i,t}$ is the cumulative 12-month return for firm i for year t and $D_{i,t}$, is a bad news proxy that takes on the value of one when the company's cumulative return is negative. In a typical differential timeliness regression, the coefficient on $D_{i,t}R_{i,t}$ is regarded as the measure of asymmetric timeliness, or conditional conservatism. Because the demand for conservatism has been shown to vary with size, market-to-book ratio, and leverage, conceptually the measure of conditional conservatism should vary

with these three characteristics. Hence, Khan and Watts express C_SCORE as a linear combination of size, market-to-book ratio, and leverage and then substitute this linear combination in equation (3) for the coefficient on $D_{i,t}R_{i,t}$,. Equation (4) represents the fully expanded equation (1) after the substitution. Once the coefficient estimates are obtained from equation (4), they will be plugged back into equation (3) to calculate the value of C_SCORE for each firm year.

Estimating the Conservatism Ratio (CR)

To calculate the CR, Callen, Hope, and Segal (2010, CHS) first estimate the following VAR system by industry with three state variables, log stock return (r_t), log of one plus ROE (roe_t), and the log book-to-market ratio (bm_t)[46].

$$r_t = \alpha_1 r_{t-1} + \alpha_2 roe_{t-1} + \alpha_3 bm_{t-1} + \eta_{1t} \quad \text{CHS(6a)}$$

$$roe_t = \beta_1 r_{t-1} + \beta_2 roe_{t-1} + \beta_3 bm_{t-1} + \eta_{2t} \quad \text{CHS(6b)}$$

$$bm_t = \delta_1 r_{t-1} + \delta_2 roe_{t-1} + \delta_3 bm_{t-1} + \eta_{4t} \quad \text{CHS(6c)}$$

The earnings news (Ne_t) can then be derived as:

$$Ne_t = \Delta E_t \sum_{j=0}^{\infty} \rho^j (roe_{t+j} - i_t) = E_t \sum_{j=0}^{\infty} \rho^j (roe_{t+j} - i_t) - E_{t-1} \sum_{j=0}^{\infty} \rho^j (roe_{t+j} - i_t)$$
$$= e2`(I - \rho A)^{-1} \eta_{i,t} \quad \text{CHS(10)}$$

where A represents the VAR coefficient matrix and ρ is a constant discount rate term and i_t is the logarithm of one plus the risk free rate in period t[47]. The CR is then calculated as:

[46] Industry classifications are based on the definitions in Fama-French (1997)

[47] Callen et al. use the annualized three month Treasury bill rate as the risk-free rate in their estimation.

$$CR_t = \eta_{2t}/Ne_t$$

Ne_t represents the total earnings news that will be reflected in earnings of current and future periods whereas η_{2t} is the unexpected earnings news that is reflected in current period's reported earnings. Hence, given the occurrence of bad (good) news, a higher (lower) CR indicates greater conservatism.

Table 1 Sample Distribution
Panel A. Frequency of Disclosure of Non-GAAP Earnings by Industry

Industry	Number of Firm Years	Percent of Sample	Percent of Compustat	% of Firms Using Non-EBIT(DA) Non-GAAP Earnings	% of Firms Using Any Non-GAAP Earnings
Aircraft	3	0.3	0.4	-	-
Apparel	23	2.3	0.8	17.4	21.7
Automobiles and Trucks	13	1.3	1.0	7.7	23.1
Banking	19	1.9	8.9	42.1	47.4
Beer and Liquor	6	0.6	0.3	66.7	66.7
Business Services	55	5.4	3.9	30.9	49.1
Business Supplies	19	1.9	0.7	52.6	79.0
Candy and Soda	6	0.6	0.2	16.7	50.0
Chemicals	34	3.4	1.5	38.2	58.8
Coal	2	0.2	0.3	-	100.0
Communication	34	3.4	3.1	29.4	76.5
Computer Hardware	24	2.4	1.4	62.5	62.5
Computer Software	34	3.4	6.9	32.4	50.0
Construction	4	0.4	0.7	25.0	25.0
Construction Materials	21	2.1	1.2	42.9	42.9
Consumer Goods	15	1.5	0.9	26.7	26.7
Electrical Equipment	24	2.4	1.1	25.0	25.0
Electronic Equipment	70	6.9	4.7	22.9	31.4
Entertainment	17	1.7	1.2	47.1	82.4
Fabricated Products	3	0.3	0.2	-	-
Food Products	25	2.5	1.1	36.0	40.0
Healthcare	15	1.5	1.1	33.3	53.3
Insurance	27	2.7	2.4	33.3	40.7
Machinery	47	4.6	2.1	23.4	34.0
Measuring & Control Equip.	17	1.7	1.4	47.1	58.8
Medical Equipment	31	3.1	2.6	58.1	61.3
Mining	11	1.1	2.9	27.3	45.5
Other	11	1.1	2.3	36.4	72.7
Personal Services	5	0.5	0.8	80.0	80.0
Petroleum and Natural Gas	27	2.7	5.2	40.7	63.0
Pharmaceutical Products	65	6.4	5.9	53.9	53.9
Printing and Publishing	12	1.2	0.6	58.3	66.7
Real Estate	13	1.3	1.0	15.4	23.1
Recreation	10	1.0	0.5	20.0	20.0
Restaraunts, Hotels, Motels	38	3.8	1.1	29.0	44.7
Retail	81	8.0	3.1	37.0	46.9
Rubber and Plastic Products	10	1.0	0.6	20.0	20.0
Shipbuilding, Railroad	4	0.4	0.1	-	-
Shipping Containers	3	0.3	0.2	66.7	100.0
Steel Works Etc	12	1.2	1.0	33.3	41.7
Trading	32	3.2	15.0	31.3	34.4
Transportation	18	1.8	2.3	33.3	38.9
Utilities	3	0.3	3.0	-	-
Wholesale	71	7.0	2.3	12.7	29.6
Total[1]	1,014	100.0	97.7	33.5	45.6

Table 1 Continued

Panel B. Frequency of Disclosure of Non-GAAP Earnings by Year[2]

Dependent Variable[3]	*NPRF*					*NPRF_EB*				
Number of Quarters	2004	2005	2006	2007	Overall	2004	2005	2006	2007	Overall
0	200	175	152	146	674	165	145	127	115	552
	72.5 %	68.4 %	60.3 %	63.5 %	66.5 %	59.8 %	56.6 %	50.4 %	50.0 %	54.4 %
1	27	30	19	18	94	24	25	15	17	81
	9.8 %	11.7 %	7.5 %	7.8 %	9.3 %	8.7 %	9.8 %	6.0 %	7.4 %	8.0 %
2	12	17	10	11	50	14	16	10	9	49
	4.4 %	6.6 %	4.0 %	4.8 %	4.9 %	5.1 %	6.3 %	4.0 %	3.9 %	4.8 %
3	6	11	10	15	42	5	8	9	15	37
	2.2 %	4.3 %	4.0 %	6.5 %	4.1 %	1.8 %	3.1 %	3.6 %	6.5 %	3.6 %
4	31	23	61	40	154	68	62	91	74	295
	11.2 %	9.0 %	24.2 %	17.4 %	15.2 %	24.6 %	24.2 %	36.1 %	32.2 %	29.1 %
Total	276	256	252	230	1,014	276	256	252	230	1,014

Dependent Variable[3]	*UPNPRF*					*UPNPRF_EB*				
Number of Quarters	2004	2005	2006	2007	Overall	2004	2005	2006	2007	Overall
0	215	191	162	151	719	179	157	138	122	596
	77.9 %	74.6 %	64.3 %	65.7 %	70.9 %	64.9 %	61.3 %	54.8 %	53.0 %	58.8 %
1	26	30	21	23	100	25	26	16	18	85
	9.4 %	11.7 %	8.3 %	10.0 %	9.9 %	9.1 %	10.2 %	6.4 %	7.8 %	8.4 %
2	8	15	18	16	57	14	15	17	15	61
	2.9 %	5.9 %	7.1 %	7.0 %	5.6 %	5.1 %	5.9 %	6.8 %	6.5 %	6.0 %
3	13	11	17	15	56	20	17	25	22	84
	4.7 %	4.3 %	6.8 %	6.5 %	5.5 %	7.3 %	6.6 %	9.9 %	9.6 %	8.3 %
4	14	9	34	25	82	38	41	56	53	188
	5.1 %	3.5 %	13.5 %	10.9 %	8.1 %	13.8 %	16.0 %	22.2 %	23.0 %	18.5 %
Total	276	256	252	230	1,014	276	256	252	230	1,014

Note:

1. Industry classification is based on the 49 industry definitions from the website of Kenneth R. French. Total percentage of Compustat does not add up to 100% because several industries are excluded from the table. None of the sample companies operates in the Agriculture sector (.26% of Compustat), Defense (.14%), Precious Metal (1.69%), Textiles (.17%), and Tobacco Products (.1%).

2. Numbers in integer represent the number of companies that do not disclose non-GAAP earnings in any quarters (number of quarters = 0) or disclose non-GAAP earnings in one to four quarters of that year. Percentage is calculated by dividing each number by the number of observations of the year (i.e. the column total).

3. *NPRF* is the number of quarters of a year in which a company discloses non-GAAP earnings which is not a variation of EBIT or EBITDA. *NPRF*_EB measures the number of quarters of a year in which a company discloses any non-GAAP earnings, including all variations of EBIT and EBITDA. *UPNPRF* is the number of quarters which non-GAAP earnings that are not EBIT or EBITDA are reported. *UPNPRF_EB* is the number of quarters in which a company discloses any non-GAAP earnings that exceed the comparable reported GAAP measure, including all variations of EBIT and EBITDA.

Table 2 Descriptive Statistics and Variable Correlations
Panel A. Descriptive Statistics (N=1,014)

Variable	Mean	Std Dev	Q1	Median	Q3
C_SCORE	0.13	0.14	0.02	0.12	0.22
OFFER	0.29	0.45	0.00	0.00	1.00
COMP_STKBASE	0.29	0.34	0.00	0.10	0.58
COMP_UNEXOPT	3.24	8.41	0.02	0.74	2.95
COMP_OWN	0.08	0.13	0.01	0.02	0.09
IND	0.31	0.46	0.00	0.00	1.00
LOGTA	6.36	2.26	4.39	6.47	8.15
PRF	0.34	0.47	0.00	0.00	1.00
PRF_EB	0.46	0.50	0.00	0.00	1.00
NPRF	0.93	1.50	0.00	0.00	1.00
NPRF_EB	1.45	1.78	0.00	0.00	4.00
UPPRF	0.29	0.45	0.00	0.00	1.00
UPPRF_EB	0.41	0.49	0.00	0.00	1.00
NUPPRF	0.70	1.28	0.00	0.00	1.00
NUPPRF_EB	1.19	1.62	0.00	0.00	3.00
ACCCON	0.11	0.31	0.00	0.00	0.00

Note:
C_SCORE is a firm-year measure of conditional conservatism, or differential timeliness of earnings, devised by Khan and Watts (2009). *OFFER* equals one if a company receives proceeds from sale of stock (change in Compustat SSTKY since previous quarter) that is greater than one percent of beginning market value in a eight-quarter window surrounding the end of a fiscal year and zero otherwise. The eight quarters include the six quarters before and the two quarters after the fiscal year end. *COMP_STKBASE* is the percentage of CEO's stock-based compensation, with the stock-based compensation calculated as the sum of the value of restricted stock granted and value realized from stock option exercises. Total compensation is the sum of salary, bonus, long-term incentive (or non-equity incentive) payout, change in pension value, all other compensation, and stock-based compensation. *COMP_UNEXOPT* is the sum of value of CEO's unexercised exercisable and unexercisable stock options, scaled by the value of total compensation. *COMP_OWN* is CEO's stock ownership (percent). All compensation data are collected from annual proxy statements. *LOGTA* is the natural logarithm of the value of total assets (Compustat AT). *IND* is an indicator variable coded as one for high-tech or service companies. Following Francis and Schipper (1999), companies with the following three-digit SIC code are classified as high-tech companies: 283, 357, 360-368, 481, 737, and 873. Service industries consist of four-digit SIC code 7000-8999. *PRF* is a dummy variable coded as one if a company discloses non-GAAP earnings that are not a variation of EBIT or EBITDA in one or more quarters of the year, and zero otherwise. *PRF_EB* is a dummy variable coded as one if a company discloses non-GAAP earnings in one or more quarters of the year, and zero otherwise. *NPRF* is the number of quarters of a year in which a company discloses non-GAAP earnings that are not a variation of EBIT or EBITDA. *NPRF_EB* is the number of quarters of a year in which a company discloses non-GAAP earnings. *UPPRF* is an indicator variable coded as one if a company discloses non-GAAP earnings, which are not a variation of EBIT or EBITDA, above the comparable reported GAAP measure, and zero otherwise. *UPPRF_EB* is an indicator variable coded as one if a company discloses non-GAAP earnings that exceed the comparable reported GAAP measure, and zero otherwise. *ACCCON* equals one if a company has negative discretionary accruals in the fiscal year while the annual market-adjusted return is negative in the corresponding year but non-negative in the previous year, and zero otherwise. Discretionary accruals are estimated using the modified Jones model.

All continuous variables, except *C_SCORE*, are winsorized at 1 and 99 percent.

Table 2 Continued
Panel B. Pearson (Upper Diagonal) and Spearman (Lower Diagonal) Correlation Coefficients (N=1,014)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. C_SCORE		**0.102**	**-0.389**	**-0.171**	**0.287**	**-0.445**	**-0.083**	**-0.221**	**-0.125**	**-0.270**	**-0.119**	**-0.214**	**-0.118**	**-0.246**	**-0.091**	-0.021
2. OFFER	**0.093**		**-0.066**	-0.054	0.021	**-0.223**	**0.072**	-0.030	-0.022	-0.026	-0.021	-0.026	-0.016	-0.021	-0.015	-0.047
3. COMP_STKBASE	**-0.408**	-0.052		0.008	**-0.282**	**0.472**	-0.016	**0.207**	**0.140**	**0.223**	**0.144**	**0.177**	**0.114**	**0.185**	**0.109**	-0.023
4. COMP_UNEXOPT	**-0.439**	-0.040	**0.238**		-0.040	**0.084**	**0.067**	0.031	0.032	0.048	0.031	0.019	0.009	0.038	0.019	0.010
5. COMP_OWN	**0.428**	**0.065**	**-0.372**	**-0.189**		**-0.371**	-0.032	**-0.200**	**-0.196**	**-0.178**	**-0.173**	**-0.179**	**-0.167**	**-0.150**	**-0.147**	-0.021
6. LOGTA	**-0.506**	**-0.227**	**0.490**	**0.347**	**-0.576**		**-0.143**	**0.372**	**0.324**	**0.414**	**0.340**	**0.334**	**0.284**	**0.331**	**0.267**	0.027
7. IND	**-0.078**	**0.072**	-0.034	**0.074**	0.034	**-0.140**		0.060	**0.067**	**0.098**	**0.083**	**0.065**	**0.075**	**0.122**	**0.101**	-0.012
8. PRF	**-0.239**	-0.030	**0.208**	**0.190**	**-0.246**	**0.369**	0.060		**0.778**	**0.868**	**0.633**	**0.863**	**0.663**	**0.752**	**0.505**	0.018
9. PRF_EB	**-0.141**	-0.022	**0.134**	**0.136**	**-0.227**	**0.324**	**0.067**	**0.778**		**0.676**	**0.892**	**0.683**	**0.899**	**0.593**	**0.802**	0.022
10. NPRF	**-0.270**	-0.030	**0.221**	**0.209**	**-0.252**	**0.401**	**0.079**	**0.976**	**0.759**		**0.715**	**0.817**	**0.623**	**0.890**	**0.583**	0.023
11. NPRF_EB	**-0.138**	-0.022	**0.142**	**0.140**	**-0.217**	**0.343**	**0.080**	**0.704**	**0.956**	**0.733**		**0.610**	**0.873**	**0.645**	**0.923**	0.025
12. UPPRF	**-0.225**	-0.026	**0.183**	**0.143**	**-0.213**	**0.334**	**0.065**	**0.863**	**0.683**	**0.871**	**0.650**		**0.765**	**0.858**	**0.590**	0.019
13. UPPRF_EB	**-0.126**	-0.016	**0.112**	**0.085**	**-0.181**	**0.287**	**0.075**	**0.663**	**0.899**	**0.667**	**0.902**	**0.765**		**0.656**	**0.883**	0.021
14. NUPPRF	**-0.245**	-0.024	**0.189**	**0.155**	**-0.212**	**0.345**	**0.087**	**0.852**	**0.673**	**0.888**	**0.668**	**0.982**	**0.751**		**0.674**	0.006
15. NUPPRF_EB	**-0.112**	-0.016	**0.112**	**0.085**	**-0.167**	**0.286**	**0.092**	**0.588**	**0.868**	**0.617**	**0.925**	**0.682**	**0.960**	**0.706**		0.015
16. ACCCON	-0.007	-0.047	-0.028	-0.002	0.007	0.029	-0.012	0.018	0.022	0.021	0.025	0.019	0.021	0.014	0.018	

Note: See Panel A for variable definitions. Pearson (Spearman) correlation coefficients are shown above (below) the diagonal, with corresponding p-value reported in parentheses below each coefficient. Numbers in **BOLD** are significant at the 5% level.

Table 3 The Relation Between Conditional Conservatism and the Contracting Demand
Panel A. Descriptive Statistics (N=1,014)

	Statistics									
	Mean		Std Dev		Q1		Median		Q3	
Variable	Sample	Qiang	Sample	Qiang	Sample	Qiang	Sample	Qiang	Sample	Qiang
C_INDEX	0.34	-	8.39	-	0.02	-	0.06	-	0.15	-
Contract_Eq	0.69	0.65	0.14	0.15	0.60	0.56	0.71	0.68	0.80	0.76
Contract_Dbt	0.94	0.76	0.18	0.27	1.00	0.63	1.00	0.86	1.00	0.99
LIT	-0.14	-0.18	1.09	0.67	-1.01	-0.69	0.04	-0.16	0.68	0.27
REG	0.40	0.62	0.49	0.49	0.00	0.00	0.00	1.00	1.00	1.00
TAX	0.74	0.77	0.89	0.31	0.46	0.58	0.86	0.85	1.00	0.99

Note: *C_INDEX* is the amount of estimated reserves assuming capitalization of research and development expenditures (Compustat XRD), advertising expense (Compustat XAD), and LIFO reserve (Compustat LIFR) (Penman and Zhang 2002). The three items are assumed to be capitalized and amortized, using the sum of number's digit method over a period of five years for R&D and two years for advertising expense. Each of the three items is deflated by net operating asset, as defined in Penman and Zhang (2002). *Contract_Eq* is the measure of equity contracting cost, proxied by the percentage of independent directors of the board. *Contract_Dbt* is the measure of debt contracting cost, measured as the percentage of private debt (Compustat DN+DCLO+DLTO) to total debt (Compustat DN+DD+DLTO+DCLO). *LIT* is the first factor derived using a principal component analysis based on five variables: equity beta, share turnover, market value, return skewness, and annual returns (see Qiang 2007 for detailed estimation). *REG* is an indicator variable coded as one if the amount of sales (Compustat SALE) divided by industry average sales (classified based on 2-digit SIC) is in the top quartile of all Compustat firms, and zero otherwise. *TAX* is the coefficient from the regression of income tax (Compustat TXT-TXDI) on tax expense (Compustat TXT), both scaled by beginning total asset (Compustat AT) using time-series data from current and previous nine years. *C_SCORE* is as defined in Panel A of Table 2.

Table 3 Continued
Panel B. Firm-Year Regression of Conservatism Measures on Proxies for Demand for Conservatism

	Dependent Variable			
	C_SCORE		*C_INDEX*	
Variable	**Coefficient**	**t-stat**	**Coefficient**	**t-stat**
Intercept	0.183	7.10 ***	1.017	0.23
Contract_Eq	-0.038	-1.23	-0.688	0.35
Contract_Dbt	0.021	1.39	0.218	0.57
LIT	-0.038	-8.54 ***	0.190	0.33
REG	-0.099	-8.71 ***	-0.573	0.31
TAX	-0.014	-2.46 **	-0.206	0.48
C_INDEX	-0.001	-9.86 ***		
Adjusted R^2	0.34		0.00	
N	1,014		1,014	
Number of Clusters	610		610	

Note: Reported results are based on pooled OLS regressions with errors clustered at the firm level.

***, **,* indicate significance at 1%, 5%, and 10%, respectively.

Table 3 Continued
Panel C. Regression of Conservatism Measures on Proxies for Demand for Conservatism Based On the Larger Sample

	Dependent Variable			
	C_SCORE		*C_INDEX*	
Variable	**Coefficient**	**t-stat**	**Coefficient**	**t-stat**
Intercept	0.151	9.63 ***	0.536	1.11
Contract_Eq	-0.035	-2.52 **	-0.229	-0.70
Contract_Dbt	0.037	3.39 ***	0.075	0.56
LIT	-0.019	-9.12 ***	0.070	1.33
REG	-0.055	-12.66 ***	-0.217	-1.12
TAX	-0.014	-2.85 ***	-0.174	-0.71
C_INDEX	-0.0005	-6.32 ***		
Adjusted R^2	0.18		0.00	
N	2,676		2,676	
Number of Clusters	1,214		1,214	

Note: Reported results are based on pooled OLS regressions with errors clustered at the firm level.

***, **,* indicate significance at 1%, 5%, and 10%, respectively.

Table 4 Logistic Regression of Disclosure of Non-GAAP Earnings on C_SCORE and Valuation Focus Proxies
Panel A. Existence of Non-GAAP Earnings Disclosure (N=1,014)

	Dependent Variable					
	PRF			*UPPRF*		
	Compensation Measure (*COMP_*)			Compensation Measure (*COMP_*)		
Variable	***STKBASE***	***UNEXOPT***	***OWN***	***STKBASE***	***UNEXOPT***	***OWN***
Intercept	-3.545 ***	-3.652 ***	-3.456 ***	-3.509 ***	-3.512 ***	-3.398 ***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
C_SCORE	-0.734	-0.326	0.075	-0.872	-0.780	-0.117
	(0.499)	(0.707)	(0.933)	(0.439)	(0.359)	(0.895)
OFFER	0.569 **	0.598 **	0.549 **	0.539 **	0.560 **	0.514 **
	(0.026)	(0.020)	(0.034)	(0.033)	(0.027)	(0.042)
COMP	-0.020	-0.008	-1.078	-0.079	-0.015	-0.539
	(0.945)	(0.405)	(0.389)	(0.796)	(0.161)	(0.670)
C_SCORE_OFFER	-2.146	-2.193 *	-1.955	-2.067	-2.207 *	-1.921
	(0.104)	(0.091)	(0.140)	(0.125)	(0.096)	(0.162)
C_SCORE_COMP	1.922	0.057	-2.349	1.220	0.110	-4.912
	(0.343)	(0.404)	(0.724)	(0.570)	(0.104)	(0.508)
LOGTA	0.398 ***	0.413 ***	0.391 ***	0.366 ***	0.369 ***	0.351 ***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
IND	0.597 ***	0.600 ***	0.576 ***	0.586 ***	0.588 ***	0.557 ***
	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.003)
Pseudo R²	0.157	0.156	0.159	0.131	0.132	0.134

Note: See Panel A of Table 2 for variable definitions. Binomial logistic regressions are estimated. Reported p-values (in parentheses) based on Wald χ^2 statistics are adjusted for correlation due to firms appearing in the sample in more than one year by clustering standard errors at the firm level. The number of observations is 1,014 and the number of clusters is 610 in all specifications.

***, **,* indicate significance at 1%, 5%, and 10%, respectively.

Table 4 Continued
Panel B. Number of Quarters of Non-GAAP Earnings Disclosure (N=1,014)

	Dependent Variable					
	NPRF			*NUPPRF*		
	Compensation Measure (*COMP_*)			Compensation Measure (*COMP_*)		
Variable	***STKBASE***	***UNEXOPT***	***OWN***	***STKBASE***	***UNEXOPT***	***OWN***
Intercept 1-4	N/R	N/R	N/R	N/R	N/R	N/R
C_SCORE	-0.801	-0.580	-0.039	-1.259	-1.289	-0.380
	(0.454)	(0.484)	(0.963)	(0.264)	(0.121)	(0.654)
OFFER	0.653 ***	0.672 ***	0.640 ***	0.501 **	0.509 **	0.484 **
	(0.007)	(0.006)	(0.009)	(0.040)	(0.038)	(0.049)
COMP	-0.026	-0.009	-0.211	-0.057	-0.016	0.449
	(0.929)	(0.337)	(0.869)	(0.853)	(0.157)	(0.747)
C_SCORE_OFFER	-2.473 *	-2.519 **	-2.353 *	-1.802	-1.835	-1.675
	(0.052)	(0.044)	(0.069)	(0.189)	(0.170)	(0.233)
C_SCORE_COMP	1.478	0.093	-4.508	1.180	0.142 *	-8.599
	(0.456)	(0.188)	(0.519)	(0.577)	(0.077)	(0.278)
LOGTA	0.440 ***	0.449 ***	0.437 ***	0.356 ***	0.357 ***	0.349 ***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
IND	0.741 ***	0.742 ***	0.720 ***	0.716 ***	0.716 ***	0.681 ***
	(<.0001)	(<.0001)	(0.000)	(0.000)	(0.000)	(0.000)
Pseudo R^2	0.194	0.194	0.195	0.145	0.147	0.148

Note: See Panel A of Table 2 for variable definitions. Ordered logistic regressions are estimated. For brevity the four intercepts are omitted from tabulations. Reported p-values (in parentheses) based on Wald χ^2 statistics are adjusted for correlation due to firms appearing in the sample in more than one year by clustering standard errors at the firm level. The number of observations is 1,014 and the number of clusters is 610 in all specifications.

***, **,* indicate significance at 1%, 5%, and 10%, respectively.

Table 4 Continued
Panel C. Existence of Non-GAAP Earnings Disclosure, Including Additional Control Variables *FOLLOW* and *NEGSURP* (N=1,014)

	Dependent Variable					
	PRF			***UPPRF***		
	Compensation Measure (*COMP_*)			**Compensation Measure (*COMP_*)**		
Variable	***STKBASE***	***UNEXOPT***	***OWN***	***STKBASE***	***UNEXOPT***	***OWN***
Intercept	-3.932 ***	-4.044 ***	-3.860 ***	-3.983 ***	-4.005 ***	-3.885 ***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
C_SCORE	-0.966	-0.594	-0.201	-1.138	-1.087	-0.396
	(0.413)	(0.551)	(0.843)	(0.340)	(0.263)	(0.691)
OFFER	0.528 **	0.563 **	0.504 *	0.489 *	0.520 **	0.461 *
	(0.043)	(0.030)	(0.056)	(0.060)	(0.045)	(0.078)
COMP	0.018	-0.008	-1.120	-0.037	-0.015	-0.566
	(0.951)	(0.416)	(0.386)	(0.903)	(0.155)	(0.665)
C_SCORE_OFFER	-1.879	-1.939	-1.662	-1.750	-1.903	-1.581
	(0.164)	(0.141)	(0.224)	(0.214)	(0.164)	(0.273)
C_SCORE_COMP	2.028	0.070	-2.589	1.324	0.121 *	-5.321
	(0.316)	(0.326)	(0.707)	(0.538)	(0.077)	(0.486)
LOGTA	0.366 ***	0.385 ***	0.367 ***	0.326 ***	0.334 ***	0.317 ***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
IND	0.513 ***	0.516 ***	0.499 ***	0.482 **	0.483 **	0.458 **
	(0.007)	(0.007)	(0.009)	(0.013)	(0.013)	(0.018)
FOLLOW	0.012	0.012	0.011	0.015	0.014	0.014
	(0.300)	(0.316)	(0.377)	(0.184)	(0.198)	(0.223)
NEGSURP	0.712 ***	0.712 ***	0.721 ***	0.865 ***	0.873 ***	0.875 ***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
Pseudo R^2	0.174	0.173	0.177	0.155	0.157	0.158

Note: *FOLLOW* is the number of analysts following the company in the fiscal year (zero if the company is not covered by the I/B/E/S database). *NEGSURP* is an indicator variable coded as one when, in any of the four quarters, reported GAAP earnings fall short of earnings of comparable quarter in the previous year and zero otherwise. Other variables are as defined in Panel A of Table 2. Binomial logistic regressions are estimated. Reported p-values (in parentheses) based on Wald χ^2 statistics are adjusted for correlation due to firms appearing in the sample in more than one year by clustering standard errors at the firm level. The number of observations is 1,014 and the number of clusters is 610 in all specifications.

***, **,* indicate significance at 1%, 5%, and 10%, respectively.

Table 4 Continued
Panel D. Existence of Non-GAAP Earnings Disclosure, Including Additional Control Variables *INST* and *NEGSURP* (N=1,014)

	Dependent Variable					
	PRF			***UPPRF***		
	Compensation Measure (*COMP_*)			**Compensation Measure (*COMP_*)**		
Variable	***STKBASE***	***UNEXOPT***	***OWN***	***STKBASE***	***UNEXOPT***	***OWN***
Intercept	-4.185 ***	-4.237 ***	-4.142 ***	-4.309 ***	-4.250 ***	-4.240 ***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
C_SCORE	-0.980	-0.767	-0.358	-1.191	-1.363	-0.692
	(0.379)	(0.411)	(0.707)	(0.287)	(0.128)	(0.453)
OFFER	0.448 *	0.472 *	0.435 *	0.407	0.425 *	0.389
	(0.081)	(0.065)	(0.095)	(0.109)	(0.093)	(0.13)
COMP	-0.049	-0.011	-0.554	-0.106	-0.018	0.011
	(0.868)	(0.273)	(0.676)	(0.728)	(0.101)	(0.994)
C_SCORE_OFFER	-1.387	-1.473	-1.236	-1.200	-1.387	-1.094
	(0.302)	(0.262)	(0.368)	(0.391)	(0.306)	(0.452)
C_SCORE_COMP	1.447	0.086	-2.511	0.578	0.142 **	-4.806
	(0.478)	(0.22)	(0.706)	(0.79)	(0.033)	(0.523)
LOGTA	0.335 ***	0.338 ***	0.336 ***	0.301 ***	0.292 ***	0.295 ***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
IND	0.508 ***	0.507 ***	0.496 ***	0.483 **	0.479 **	0.464 **
	(0.008)	(0.008)	(0.009)	(0.012)	(0.013)	(0.016)
INST	1.078 ***	1.135 ***	1.006 ***	1.195 ***	1.231 ***	1.108 ***
	(0.003)	(0.002)	(0.006)	(0.002)	(0.001)	(0.003)
NEGSURP	0.757 ***	0.763 ***	0.760 ***	0.917 ***	0.931 ***	0.920 ***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
Pseudo R^2	0.183	0.183	0.184	0.165	0.168	0.166

Note: *INST* is the percentage of institutional ownership. Other variables are as defined in Panel A of Table 2 and Panel C of Table 4. Binomial logistic regressions are estimated. Reported p-values (in parentheses) based on Wald χ^2 statistics are adjusted for correlation due to firms appearing in the sample in more than one year by clustering standard errors at the firm level. Due to the availability of data on institutional ownership, the number of observations (firm clusters) is reduced to 976 (590) in all specifications.

***, **,* indicate significance at 1%, 5%, and 10%, respectively.

Table 4 Continued
Panel E. Existence of Non-GAAP Earnings Disclosure, Including Additional Control Variables *FOLLOW* and *NEGFE* (N=713)

	Dependent Variable					
	PRF			***UPPRF***		
	Compensation Measure (*COMP_*)			**Compensation Measure (*COMP_*)**		
Variable	***STKBASE***	***UNEXOPT***	***OWN***	***STKBASE***	***UNEXOPT***	***OWN***
Intercept	-3.924 ***	-3.829 ***	-3.828 ***	-4.036 ***	-3.869 ***	-3.880 ***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
C_SCORE	0.331	-0.001	-0.272	-0.300	-0.788	-0.618
	(0.797)	(0.999)	(0.798)	(0.815)	(0.420)	(0.545)
OFFER	0.436	0.433	0.421	0.342	0.346	0.320
	(0.115)	(0.118)	(0.132)	(0.215)	(0.208)	(0.245)
COMP	0.018	-0.003	-1.189	-0.060	-0.010	-0.977
	(0.953)	(0.747)	(0.407)	(0.845)	(0.398)	(0.495)
C_SCORE_OFFER	-0.564	-0.676	-0.525	-0.473	-0.745	-0.500
	(0.703)	(0.648)	(0.720)	(0.752)	(0.619)	(0.736)
C_SCORE_COMP	-0.823	0.025	6.284	-0.827	0.087	2.119
	(0.714)	(0.696)	(0.475)	(0.707)	(0.138)	(0.826)
LOGTA	0.325 ***	0.317 ***	0.320 ***	0.235 ***	0.218 ***	0.218 ***
	(<.0001)	(<.0001)	(<.0001)	(0.003)	(0.004)	(0.004)
IND	0.647 ***	0.643 ***	0.677 ***	0.551 **	0.541 **	0.557 **
	(0.003)	(0.003)	(0.002)	(0.014)	(0.016)	(0.014)
FOLLOW	0.007	0.007	0.006	0.012	0.012	0.011
	(0.601)	(0.605)	(0.662)	(0.316)	(0.334)	(0.358)
NEGFE	1.094 ***	1.090 ***	1.109 ***	1.769 ***	1.762 ***	1.781 ***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
Pseudo R^2	0.121	0.121	0.122	0.140	0.141	0.140

Note: *NEGFE* is an indicator variable coded as one if, in any quarter of the fiscal year, the last consensus analyst EPS forecast is greater than the reported GAAP diluted EPS and zero otherwise. Other variables are as defined in Panel A of Table 2 and Panel C of Table 4. Binomial logistic regressions are estimated. Reported p-values (in parentheses) based on Wald χ^2 statistics are adjusted for correlation due to firms appearing in the sample in more than one year by clustering standard errors at the firm level. Due to the availability of I/B/E/S data on analyst forecasts, the number of observations (firm clusters) is reduced to 713 (445) in all specifications.

***, **,* indicate significance at 1%, 5%, and 10%, respectively.

Table 5 Regression of Disclosure of Non-GAAP Earnings on Contracting Cost and Valuation Proxies

	Dependent Variable					
	PRF			***UPPRF***		
	Compensation Measure (*COMP_*)			**Compensation Measure (*COMP_*)**		
Variable	***STKBASE***	***UNEXOPT***	***OWN***	***STKBASE***	***UNEXOPT***	***OWN***
Intercept	-6.061 ***	-6.072 ***	-5.268 ***	-5.984 ***	-5.975 ***	-5.597 ***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
Contract_Eq	1.857 **	1.008	0.863	1.601 *	1.266 *	1.070
	(0.033)	(0.141)	(0.244)	(0.069)	(0.067)	(0.145)
Contract_Dbt	0.800	1.381	0.902	0.835	1.083	1.015
	(0.400)	(0.138)	(0.254)	(0.419)	(0.277)	(0.211)
OFFER	0.695	0.803	0.950	0.661	0.638	0.771
	(0.571)	(0.522)	(0.462)	(0.613)	(0.643)	(0.579)
COMP	0.698	0.036	-10.941	-0.204	-0.065	-6.882
	(0.698)	(0.790)	(0.358)	(0.919)	(0.746)	(0.519)
Contract_Eq_OFFER	0.639	0.744	0.669	0.338	0.348	0.326
	(0.606)	(0.547)	(0.595)	(0.785)	(0.780)	(0.797)
Contract_Dbt_OFFER	-0.872	-1.041	-1.172	-0.635	-0.620	-0.762
	(0.350)	(0.281)	(0.249)	(0.528)	(0.566)	(0.479)
Contract_Eq_COMP	-1.831	0.049	2.084	-0.767	0.006	1.066
	(0.245)	(0.494)	(0.706)	(0.621)	(0.924)	(0.854)
Contract_Dbt_COMP	0.826	-0.069	8.286	0.876	0.056	4.988
	(0.560)	(0.595)	(0.476)	(0.594)	(0.773)	(0.628)
LOGTA	0.352 ***	0.364 ***	0.346 ***	0.307 ***	0.311 ***	0.298 ***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
IND	0.460 **	0.469 **	0.474 **	0.440 **	0.446 **	0.447 **
	(0.017)	(0.014)	(0.014)	(0.026)	(0.022)	(0.024)
FOLLOW	0.018 *	0.019 *	0.017	0.023 **	0.024 **	0.021 **
	(0.088)	(0.077)	(0.111)	(0.020)	(0.016)	(0.030)
NEGSURP	0.669 ***	0.671 ***	0.683 ***	0.804 ***	0.794 ***	0.818 ***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
Pseudo R^2	0.180	0.179	0.182	0.160	0.160	0.162

Note:
Contract_Eq is the measure of equity contracting cost, proxied by the percentage of independent directors of the board. *Contract_Dbt* is the measure of debt contracting cost, measured as the percentage of private debt (Compustat DN+DCLO+DLTO) to total debt (Compustat DN+DD+DLTO+DCLO). *FOLLOW* is the number of analysts following the company in the fiscal year (zero if the company is not covered by the I/B/E/S database). *NEGSURP* is an indicator variable coded as one when, in any of the four quarters, reported GAAP earnings fall short of earnings of comparable quarter in the previous year and zero otherwise. Other variables are as defined in Panel A of Table 2 and Panel C of Table 4.

Binomial logistic regressions are estimated. Reported p-values (in parentheses) based on Wald χ^2 statistics are adjusted for correlation due to firms appearing in the sample in more than one year by clustering standard errors at the firm level. The number of observations is 1,014 and the number of clusters is 610 in all specifications.

***, **,* indicate significance at 1%, 5%, and 10%, respectively.

Table 6 Logistic Regressions Incorporating Further Evidence of Timely Loss Recognition
Panel A. Reduced Sample with Consistent Classifications (N=515)

	Dependent Variable					
	PRF			*UPPRF*		
	Compensation Measure (*COMP_*)			Compensation Measure (*COMP_*)		
Variable	***STKBASE***	***UNEXOPT***	***OWN***	***STKBASE***	***UNEXOPT***	***OWN***
Intercept	-4.426 ***	-4.424 ***	-4.290 ***	-4.481 ***	-4.298 ***	-4.221 ***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
C_SCORE	-1.325	-0.655	0.480	0.000	-1.148	0.046
	(0.576)	(0.732)	(0.812)	(1.000)	(0.561)	(0.982)
OFFER	0.658 **	0.702 **	0.657 **	0.807 ***	0.803 ***	0.753 **
	(0.025)	(0.016)	(0.026)	(0.007)	(0.007)	(0.012)
COMP	0.137	-0.008	-1.360	0.054	-0.013	-1.254
	(0.684)	(0.507)	(0.290)	(0.874)	(0.258)	(0.379)
C_SCORE_OFFER	-4.867	-5.208	-5.357	-5.390	-5.699	-5.567
	(0.146)	(0.109)	(0.110)	(0.126)	(0.110)	(0.123)
C_SCORE_COMP	3.009	0.076	-12.270	-2.304	0.132	-11.346
	(0.467)	(0.581)	(0.307)	(0.603)	(0.284)	(0.361)
LOGTA	0.426 ***	0.438 ***	0.427 ***	0.393 ***	0.378 ***	0.371 ***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
IND	0.762 ***	0.776 ***	0.792 ***	0.652 **	0.630 **	0.651 **
	(0.003)	(0.003)	(0.002)	(0.014)	(0.017)	(0.014)
FOLLOW	0.002	0.002	0.000	0.007	0.008	0.006
	(0.888)	(0.883)	(0.972)	(0.588)	(0.523)	(0.660)
NEGSURP	0.852 ***	0.835 ***	0.860 ***	0.861 ***	0.870 ***	0.888 ***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
Pseudo R²	0.172	0.171	0.174	0.158	0.160	0.161

Note: See Panel A of Table 2 and Panel C of Table 4 for variable definitions. Binomial logistic regressions are estimated. Reported p-values (in parentheses) based on Wald χ^2 statistics are adjusted for correlation due to firms appearing in the sample in more than one year by clustering standard errors at the firm level. The number of observations is 515 and the number of clusters is 355 in all specifications.

***, **,* indicate significance at 1%, 5%, and 10%, respectively

Table 6 Continued
Panel B. *ACCCON* as the Measure of Conditional Conservatism (N=1,014)

	Dependent Variable					
	PRF			***UPPRF***		
	Compensation Measure (*COMP_*)			**Compensation Measure (*COMP_*)**		
Variable	***STKBASE***	***UNEXOPT***	***OWN***	***STKBASE***	***UNEXOPT***	***OWN***
Intercept	-4.197 ***	-4.117 ***	-3.858 ***	-4.292 ***	-4.167 ***	-3.940 ***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
ACCCON	0.397	0.108	0.082	0.668 *	0.296	0.075
	(0.218)	(0.707)	(0.777)	(0.051)	(0.313)	(0.801)
OFFER	0.348 *	0.347 *	0.325 *	0.397 **	0.390 **	0.376 **
	(0.058)	(0.056)	(0.073)	(0.039)	(0.039)	(0.048)
COMP	0.331	-0.001	-1.674 *	0.270	-0.003	-1.783 *
	(0.205)	(0.886)	(0.080)	(0.327)	(0.736)	(0.096)
ACCCON_OFFER	-0.610	-0.613	-0.590	-1.515 *	-1.602 *	-1.490 *
	(0.272)	(0.305)	(0.315)	(0.051)	(0.063)	(0.068)
ACCCON_COMP	-1.020	-0.009	-0.274	-1.480 **	-0.024	2.152
	(0.128)	(0.622)	(0.905)	(0.036)	(0.401)	(0.298)
LOGTA	0.368 ***	0.373 ***	0.354 ***	0.322 ***	0.320 ***	0.306 ***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
IND	0.530 ***	0.530 ***	0.514 ***	0.500 **	0.498 **	0.472 **
	(0.006)	(0.006)	(0.008)	(0.011)	(0.011)	(0.016)
FOLLOW	0.017	0.019 *	0.016	0.022 **	0.024 **	0.021 **
	(0.112)	(0.082)	(0.139)	(0.027)	(0.018)	(0.038)
NEGSURP	0.701 ***	0.666 ***	0.695 ***	0.834 ***	0.792 ***	0.826 ***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
Pseudo R²	0.173	0.170	0.174	0.159	0.156	0.159

Note: *ACCCON* equals one if a company has negative discretionary accruals in the fiscal year while the annual market-adjusted return is negative in the corresponding year but non-negative in the previous year, and zero otherwise. Other variables are defined as in Panel A of Table 2 and Panel C of Table 4. Binomial logistic regressions are estimated. Reported p-values (in parentheses) based on Wald χ^2 statistics are adjusted for correlation due to firms appearing in the sample in more than one year by clustering standard errors at the firm level. The number of observations is 1,014 and the number of clusters is 610 in all specifications.

***, **,* indicate significance at 1%, 5%, and 10%, respectively

Table 7 Logistic Regressions Using Alternative Measures of Conservatism
Panel A. Callen et al.'s Conservatism Ratio (CR) (N=601)

	Dependent Variable					
	PRF			*UPPRF*		
	Compensation Measure (*COMP_*)			Compensation Measure (*COMP_*)		
Variable	***STKBASE***	***UNEXOPT***	***OWN***	***STKBASE***	***UNEXOPT***	***OWN***
Intercept	-4.354 ***	-4.337 ***	-4.163 ***	-4.454 ***	-4.408 ***	-4.213 ***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
CR	0.055	0.055	-0.113	0.052	0.054	-0.078
	(0.448)	(0.456)	(0.181)	(0.460)	(0.454)	(0.325)
OFFER	0.446	0.444	0.434	0.755 **	0.707 **	0.683 **
	(0.150)	(0.141)	(0.143)	(0.019)	(0.025)	(0.027)
COMP	0.519	0.004	-1.915	0.216	-0.016	-2.198
	(0.189)	(0.875)	(0.123)	(0.602)	(0.517)	(0.112)
CR_OFFER	-0.360	-0.332	-0.329	-0.763	-0.665	-0.630
	(0.515)	(0.534)	(0.531)	(0.175)	(0.233)	(0.246)
CR_COMP	-0.010	-0.022	1.750 **	0.446	0.007	1.376 **
	(0.986)	(0.565)	(0.049)	(0.422)	(0.866)	(0.045)
LOGTA	0.393 ***	0.412 ***	0.408 ***	0.358 ***	0.371 ***	0.362 ***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
IND	0.534 **	0.567 **	0.564 **	0.406 *	0.454 *	0.450 *
	(0.025)	(0.016)	(0.017)	(0.095)	(0.055)	(0.058)
FOLLOW	0.013	0.016	0.013	0.015	0.019	0.015
	(0.322)	(0.212)	(0.303)	(0.209)	(0.113)	(0.206)
NEGSURP	0.847 ***	0.797 ***	0.825 ***	1.042 ***	0.997 ***	1.038 ***
	(<.0001)	(0.0002)	(0.0001)	(<.0001)	(<.0001)	(<.0001)
Pseudo R²	0.185	0.182	0.187	0.172	0.169	0.174

Table 7 Continued
Panel B. Givoly and Hayn's Cumulative Nonoperating Accruals (NOPACC) (N=506)

	Dependent Variable					
	PRF			***UPPRF***		
	Compensation Measure (*COMP_*)			**Compensation Measure (*COMP_*)**		
Variable	***STKBASE***	***UNEXOPT***	***OWN***	***STKBASE***	***UNEXOPT***	***OWN***
Intercept	-4.211 ***	-4.400 ***	-3.703 ***	-3.781 ***	-3.919 ***	-3.030 ***
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
NOPACC	0.818	1.656	1.405	1.469	2.510	2.191
	(0.690)	(0.318)	(0.370)	(0.497)	(0.140)	(0.191)
OFFER	0.383	0.475 *	0.374	0.598 **	0.675 ***	0.582 **
	(0.148)	(0.071)	(0.154)	(0.021)	(0.009)	(0.026)
COMP	0.352	0.027 *	-3.866 **	0.313	0.017	-6.352 ***
	(0.375)	(0.071)	(0.018)	(0.440)	(0.224)	(0.000)
NOPACC_OFFER	-1.984	-2.362	-1.793	-3.193	-3.561	-3.174
	(0.392)	(0.263)	(0.423)	(0.200)	(0.129)	(0.201)
NOPACC_COMP	0.790	-0.050	-3.017	1.479	-0.039	1.815
	(0.811)	(0.782)	(0.791)	(0.658)	(0.851)	(0.877)
LOGTA	0.373 ***	0.396 ***	0.354 ***	0.228 **	0.247 ***	0.188 **
	(<.0001)	(<.0001)	(<.0001)	(0.013)	(0.005)	(0.032)
IND	0.456	0.428	0.432	0.179	0.173	0.142
	(0.120)	(0.138)	(0.143)	(0.563)	(0.568)	(0.645)
FOLLOW	0.019	0.019	0.014	0.037 **	0.037 **	0.031 **
	(0.221)	(0.205)	(0.351)	(0.012)	(0.010)	(0.033)
NEGSURP	0.357	0.390 *	0.403 *	0.411	0.428 *	0.474 *
	(0.126)	(0.095)	(0.083)	(0.103)	(0.090)	(0.057)
Pseudo R²	0.194	0.197	0.207	0.160	0.160	0.183

Note: *CR* is the conservatism ratio proposed by Callen et al. (2010). See the Appendix for how *CR* is estimated. Following Callen et al., only observations with non-negative value of *CR* are retained in the analysis. *NOPACC* is calculated as (-1)*cumulative nonoperating accruals, scaled by beginning total assets (Compustat AT). Cumulative nonoperating accruals are calculated as: net income (Compustat NI) + depreciation (Compustat DP) - cash flows from operations (Compustat OANCF) - (ΔAccounts Receivable (change in Compustat RECT) + ΔInventories (change in Compustat INVT) +ΔPrepaid Expenses (change in Compustat XPP) - ΔAccounts Payable (change in Compustat AP) -ΔTaxes Payable (change in Compustat TXP)). Other variables are as defined in Panel A of Table 2 and Panel C of Table 4. Binomial logistic regressions are estimated. Reported p-values (in parentheses) based on Wald χ^2 statistics are adjusted for correlation due to firms appearing in the sample in more than one year by clustering standard errors at the firm level. The number of observations is 601 (506) and the number of clusters is 394(300) in the models in which *CR* (*NOPACC*) is used as the measure of conditional conservatism.

***, **,* indicate significance at 1%, 5%, and 10%, respectively