Conservatism & The Cost of Equity Capital: An Information Perspective

Charles R Pryor

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CONSERVATISM & THE COST OF EQUITY CAPITAL:
AN INFORMATION PERSPECTIVE

By

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CONSERVATISM & THE COST OF EQUITY CAPITAL:
AN INFORMATION PERSPECTIVE

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The bias implied by conservatism in accounting and its impact on information risk in equity markets is the subject of considerable debate. On one hand, opponents of conservatism believe that any kind of biased information is actually misinformation and thus increases uncertainty. Perhaps most prominent among opponents of conservatism is the Financial Accounting Standards Board (FASB). The FASB contends that accounting information should be neutral—free from bias; a bias in favor of reporting either good or bad news is inconsistent with representational faithfulness and neutrality. On the other hand, proponents of conservatism point to incentives of management to manipulate financial statements by exaggerating apparent good news and/or hiding apparent bad news. Proponents argue that the bias implied by conservatism is necessary to offset the asymmetric reporting incentives of the firm’s management, and in so doing, conservatism allegedly improves information quality and reduces information risk. Finally, results of at least one recent study do not favor either position, suggesting that conservatism has no effect on information quality in equity market.
This study finds that the bias implied by conservatism (bias in favor of reporting bad news) increases information risk in equity markets and consequently the cost of equity capital. Findings further indicate that sufficiently aggressive bias also increases information risk. That is, the market’s most aggressive firms, those reporting with a bias opposite that implied by conservatism, can reduce information risk by moving toward more neutral, unbiased reporting. Furthermore, the general effects of biased reporting (increased information risk) are consistent across all levels of information asymmetry among equity investors. These findings are interpreted as supporting the position of the FASB that biased accounting information increases information risk.

Key words: conservatism, cost of equity, information risk
DEDICATION

I would like to dedicate this dissertation to my wife, Malissa, and my daughter, Malia. My work has been possible only because of their love and support.
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CHAPTER 1
INTRODUCTION

The bias implied by conservatism in accounting and its impact on information risk in equity markets is the subject of considerable debate. Opponents of conservatism argue that conservative bias has negative effects in equity markets; Proponents argue that the effects are positive (Committee, 2007). Still others argue that the benefits of conservatism in other contexts (i.e. contracting) outweigh any potentially negative effects in equity markets (Holthausen & Watts, 2001). Yet, regulatory bodies seem to disagree. The SEC asserts that the use of accounting in equity markets is of paramount importance (Cox, 2008). Because of regulators’ deference to the information needs of equity investors, the scope of this study is limited to the informational role of conservative accounting in equity markets. This study finds that the bias implied by conservatism (bias in favor of reporting bad news) increases information risk in equity markets and consequently the cost of equity capital. Findings further indicate that the market’s most aggressive firms, those reporting with a bias opposite that implied by conservatism, can reduce information risk by moving toward more neutral, unbiased reporting. Furthermore, the general effects of biased reporting are consistent across all levels of information asymmetry among equity investors. These findings are interpreted as supporting the position of the FASB that biased information increases information risk.
Accounting first emerged over a millennium ago, long predating attempts at formal regulation, and its evolution has been marked for centuries by the property of conservatism (Basu, 1997). Conservatism as a property of accounting is often described using the following admonition, “anticipate no profit but anticipate all losses.” Despite the fact that it is markets themselves that are the progenitors of conservatism, conservatism has been much maligned in recent times as having deleterious effects on the quality of information in financial reports provided to equity markets.

According to the FASB, conservative bias in financial reports is an anachronism—a throwback to a time when the balance sheet was considered the primary, if not the only financial report ("SFAC No. 2," 1980). Before the development of public equity markets, lenders were essentially the only users of financial statements, and their interests were best protected by having any measurement error in the value of assets be in favor of understatement. In this way, lenders were able to achieve reasonable assurance that the liquidation value of assets was adequate to secure the outstanding debt of the firm. Thus, conservative reporting served to reduce risk for creditors and lower a firm’s cost of debt (Ahmed, Billings, Morton, & Stanford-Harris, 2002). However, the FASB contends that this type of conservative bias in financial reports “…tends to conflict with significant [perhaps more desirable] qualitative characteristics, such as representational faithfulness, neutrality, and comparability (including consistency)” ("SFAC No. 2," 1980). Former SEC chair Arthur Levitt (1998) seems to agree, declaring that events should not be included in financial reports either before or after they occur but rather as they occur.
The FASB criticizes conservatism for introducing a negative bias into accounting numbers which should be neutral—free from bias. Presumably the FASB believes that the systematic bias in financial statements implied by conservatism fulfills the needs of only a few users of those statements. Allegedly in deference to the needs of today’s sundry users of financial statements, standard setters have spent over 40 years trying to eliminate conservative bias from financial reports, although without much success. The FASB’s position is that conservatism in financial reports should only exist as prudence in accounting measurement in an uncertain environment ("SFAC No. 2," 1980).

Others have argued that attempts to eradicate conservatism from financial reports are a mistake. LaFond and Watts (2008) suppose the FASB takes its anti-conservatism stance because it believes that conservatism reduces the usefulness of financial reports to equity investors in valuing the firm. The authors’ supposition about the FASB’s apparent preoccupation with equity investors also appears resonant in remarks by Arthur Levitt, former chair of the SEC, describing the U.S. regulatory environment as an “equity market culture” (Levitt, 1998). Apparently, the FASB is not alone in its fixation on the information needs of equity investors. Holthausen and Watts (2001) suggest that it is also the position of some accounting researchers that standard setters should favor the role of accounting in direct equity valuation when promulgating standards. In contrast, Holthausen and Watts (2001) counter that hijacking a system of accounting that evolved to meet information needs quite different than that of direct equity valuation could have disastrous consequences. Watts (2006) asserts that it could result in accounting being ignored by the market altogether. While the Securities Acts of 1933 and 1934 arose out
of concern for equity investors, there is nothing in the conceptual framework that
provides a justification for fixating on direct equity valuation when considering the
usefulness of accounting information. On the contrary, the FASB itself, in its conceptual
framework, has acknowledged numerous sources of information demand, and proclaimed
its intent to promulgate standards which precipitate information useful to all constituents
of accounting ("SFAC No. 1," 1978; "SFAC No. 5," 1984). Nevertheless, it would be
difficult to overstate the importance of equity investors as one constituency of
accounting. Indeed, in a speech addressing the Annual Conference of the International
Organization of Securities Commissions, Christopher Cox, chairman of the SEC,
explained that accounting standards must be promulgated bearing in mind that their
overarching purpose is to protect investor interest (Cox, 2008).

The FASB position seems to be that conservative bias in financial reports, while
useful to lenders, breeds information asymmetry in equity markets due to uncertainty
about the bias among relatively uninformed equity investors. However, this position
seems inconsistent with some contemporary research hypothesizing some very specific
and unique contributions made by conservatism to informational efficiency in equity
markets.

First, Ball (2001) describes the role of accounting information in an
informationally efficient system of financial reporting as one of providing an unassailable
benchmark against which to measure the quality of non-accounting (expectational)
information. He argues that verifiable accounting information and unverifiable
expectational information, if kept separate, work in a complementary fashion to increase
the informational efficiency of the total package of information available to the market. Nevertheless, Ball argues for the inclusion of anticipatory bad news into financial reports because it would not jeopardize their reliability due to the reluctance of management to include it, much less exaggerate it. However, management’s asymmetric reporting incentives make it necessary to separate the reporting of unverifiable good news from audited financial reports in order to maintain their integrity. In this way, conservatism increases informational efficiency by mitigating the effects of information asymmetry between management and equity investors.

Second, LaFond and Watts (2008) show that information asymmetry among equity investors, as measured by bid/ask spreads or PIN scores\(^1\), is positively related to conservatism even after controlling for other sources of demand for conservatism, i.e., levels of debt. However, they further show that changes in information asymmetry are antecedent to changes in conservatism—not the other way around.\(^2\) Of course, this supports the authors’ proposition that conservatism evolved as a sort of governance mechanism to reduce the dead weight losses associated with information asymmetry, and that it is effective not only in the contracting use of accounting numbers but also in valuation decisions. This finding is especially important because the FASB’s position is that conservatism precedes and exacerbates information asymmetry. If this were the case, then the LaFond and Watts study should have found that increases in information asymmetry follow increases in conservatism rather than precede them. Another recent

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\(^1\) PIN scores measure the probability that a stock trade is based on private information using abnormal order flow.

\(^2\) Lafond and Watts (2008) show that increases in information asymmetry are both antecedent to and contemporary with conservatism. The authors fail to find that increased information asymmetry follows conservatism.
study (Francis, LaFond, Olsson, & Schipper, 2004) is also inconsistent with conservatism heightening information risk. However, in contrast to LaFond and Watts (2008), the findings of Francis et al. (2004) do not suggest that conservatism reduces information risk either.

Information risk is a component of systematic risk, which is priced by market participants. Therefore, if in fact conservatism breeds information risk in equity markets by exacerbating information asymmetry, then the cost of equity capital should be increasing in conservatism. It also follows that if conservatism reduces information risk, as proposed by LaFond and Watts (2008), then the cost of equity capital should be decreasing in conservatism. However, Francis et al. (2004) did not find conservatism to be priced at all by equity market participants; that is, conservatism appeared to have no effect on information risk.

The implication of both the Ball (2001) and LaFond and Watts (2006) studies is that by mitigating the effects of information asymmetry conservatism leads to more informed—not less informed—equity-market participants. More informed market participants should lead to a lower cost of capital—lower required, equilibrium returns which increase price and hence wealth. This cost-of-capital effect should be apparent because better informed equity market participants means that information risk, an important component of overall risk, has been reduced. Nevertheless, the 2004 Francis et al. study found that conservatism had no impact on a firm’s cost of equity capital. It is the purpose of this study to help resolve this apparent tension in the conservatism literature.
This study shows that the relationship between conservatism and information risk as proxied by the firm’s cost of equity capital is not a linear one. The nonlinearity stems in part from the fact that as financial reports get increasingly conservative, their potential to contain and communicate new information is retarded. Therefore, the cost of capital is decreasing in conservatism but at a decreasing rate as conservatism gets more extreme and new information is lost. In addition, this study explains that there are numerous sources of demand for conservatism in financial reporting, i.e., contracting, taxation, litigation, and regulation. Furthermore, these other sources of demand for conservatism are largely exogenous to the demand created by information asymmetry between corporate insiders and equity investors or between informed and uninformed equity investors. It is only in the presence of information asymmetry among equity investors that the LaFond and Watts (2008) study predicts that conservatism should be priced. Consequently, two firms may be equally conservative but have very different information structures (levels of private versus public information). In that event, the firm with the least private information relative to public information (least information asymmetry) would be less likely to see a cost of capital effect attributable to its conservative reporting practice. In short, this dissertation explains the results of Francis et al. (2004), which suggest that conservatism is not priced, as being due to (1) imposing a linear form on the relationship between conservatism and the cost of equity capital and (2) omitting the level of information asymmetry among equity traders as a mitigating factor in the effect of conservatism on information risk.
This study contributes to extant discourse regarding the value of conservative financial reports in equity markets. Theory describing the value of conservatism in some contexts is relatively well developed, while its value to equity investors making decisions regarding risk and return continues to be a source of discord among regulators and researchers alike. Legislators and regulators, in particular, will be informed by this study as to the usefulness of accounting information, as impacted by the conservative implementation of existing standards, and any potential value or folly in efforts to rid financial reporting of its conservative bias.

Both sides of the debate over conservatism claim that changes in the conservative nature of accounting reports stand to significantly impact the information environment in capital markets. Both sides further claim that changes in the information environment could have dramatic economic consequences for investors. This study contributes to a fuller understanding of the effect of conservative financial reporting on the information environment in capital markets and thus aids policy makers in assessing the economic ramifications of attempts to regulate conservatism. Considering that the immutable marriage of accounting and conservatism is a product of market forces, it is easily conceivable that it serves an informational purpose overlooked by its critics. However, the emergence of large, sophisticated, public equity markets is a relatively recent phenomenon, and the exact role of conservatism in this new venue remains uncertain.
CHAPTER II
REVIEW OF THE LITERATURE

This chapter presents the literature motivating the research questions addressed by this study. The chapter begins with a discussion of the properties of accounting that make it useful as information followed by discussions of conservatism in accounting and the problems associated with information asymmetry among equity traders. Finally, the chapter ends with a discussion of the pricing of information asymmetry (information risk) and presentation of research hypotheses.

ACCOUNTING AS INFORMATION

Historically, parties to the firm and even the broader society have exhibited vociferous demand for information whenever they felt harmed by the lack of it. The expression of that demand has come in the form of sometimes palpable political pressure like that antecedent to the Securities Acts of 1933 and 1934 and more recently, the Sarbanes-Oxley Act of 2002. In other words, in a broad sense, demand for financial information begets accounting; accounting is an activity that serves society through the provision of information. Simply put, the informational role of accounting reports is to make their users better informed which leads to better resource allocation decisions, which in turn lead to greater profits. But what properties of accounting make it
informative or useful? *Useful* accounting information has been defined by the FASB in terms of two primary attributes—relevance and reliability.

For information to be relevant, among other things, it must be *timely*. That is, information must be available to decision makers while it still has the capacity to influence their decisions. However, if relevance—including the attribute of timeliness—were pursued to the exclusion of reliability, the resulting accounting information would cease to be useful. That is, timeliness cannot make unreliable information relevant.

For information to be reliable, among other things, it must be *verifiable* ("SFAC No. 2," 1980). That is, the effects of economic events may only be reported in the financial statements when their outcomes are reasonably foreseeable, measurable, and ex post, independently observable. Both the proponents and opponents of conservatism agree that timeliness and verifiability are desirable properties of accounting information. The difference in their positions lays in whether or not there should be different standards of verifiability for good and bad news (asymmetric verifiability) before allowing the news to be included in financial reports. This asymmetric verifiability provides the definition of conservatism used in this study.

**Timeliness as a Property of High Quality Information**

All stakeholders in the firm have an interest in timeliness. The timely reporting of economic news is directly related to the quality of information reported whether the news is good or bad.
Timeliness of Good News

Timely reporting of good news is important in a variety of user contexts. For example, timeliness is important in structuring compensation contracts because of the limited tenure of managers. Shareholders will still be around long after the manager is gone. In fact, according to a Booz Allen Hamilton study of 2,500 of the world’s largest companies, the average tenure of CEOs in 2001 was only 4.6 years (Lucier, Spiegel, & Schuyt, 2002). Now consider that positive net present value projects under consideration by the manager at any point in time typically have negative net cash flows and a negative effect on income in the earliest years of the project. Nevertheless, if the project has a positive net present value then, by definition, it increases shareholder wealth over the life of the project. A manager should certainly take such a project and be compensated for the resulting increase in shareholder wealth for which he/she is responsible. However, a positive net present value project with early negative income effects may be rejected near the end of the manager’s tenure without timely information about its full economic effects. Absent adequate timeliness, earnings-based compensation would be lower in the early years of the project and the manager would not be around to benefit from the project in later years. If the manager rejects opportunities to increase shareholder wealth because gains are not reported in a timely fashion then the contracting efficiency of accounting earnings is impaired (Watts, 2003a, part 1).

The timely reporting of gains is also important to the parties of debt contracts. Timeliness in reporting good news can help firms avoid unnecessarily triggering debt covenants that would transfer control of the firm to creditors. Obviously, creditors are
interested in earning a return on the capital they provide which may become less likely in
the event that decision rights are transferred from the firm’s professional managers; yet,
renegotiations of debt covenants are costly, particularly in the instance of public debt
where there are a large number of debt holders (Leuz, 2001).

Also, excessive dividend restrictions could lead to a reduction in shareholder
wealth by reducing liquidity. This problem occurs when shareholders have better
alternative investments than the firm but must forego those investments because debt
covenants restrict the distribution of earnings. Again, failure to report economic gains in
a timely fashion can reduce wealth which impairs the contracting efficiency of
accounting (Watts, 2003a, part 1).

There are still other contexts in which the timely reporting of gains is important.
Stockholders benefit from the timely reporting of economic gains so that those gains may
be incorporated into the pricing decision when shares pass to successive generations of
stockholders (capital gains). Like debt holders, suppliers and employees enjoy greater
assurances regarding the firm’s liquidity and solvency with timely information regarding
gains. Finally, information regarding economic gains is important to the governmental
entities that tax those gains.

Timeliness of Bad News

The arguments for the timely reporting of bad news parallel those for the timely
reporting of good news. For example, timeliness regarding losses is important in
compensation contracts so as to avoid the unintentional transfer of wealth from
shareholders to managers through excessive earnings-based compensation. Again, the limited tenure of managers facilitates understanding the need for timeliness in earnings-based compensation arrangements. Consider an existing project that has become a negative net present value proposition. If accounting standards do not require the timely reporting of losses then managers can spread the negative income effect of the negative net present value project out over the life of the project, potentially extending it into the reign of his/her successor. In this way, the incumbent manager increases his/her earnings-based compensation. In contrast, when the full economic effect of the loss is incorporated in earnings in a timely manner, the manager does not benefit from continuing the project; it will be terminated which increases shareholder wealth (Ball, 2001).

The timely reporting of losses is also important in debt contracts because timely information regarding negative shocks to the market value of assets prevents liquidating dividends (Smith & Warner, 1979). A liquidating dividend would occur if debt covenant restrictions on retained earnings were not triggered due to a lack of timeliness in reporting losses and managers were able to transfer dividends to shareholders to a point where the liquidation value of the firm’s remaining assets was less than the face value of its debt.

Potential investors also need the timely incorporation of losses into their information set when making asset pricing decisions. Without timely information regarding losses, potential investors may overvalue the firm and unintentionally transfer wealth to the firm’s current stockholders. Timely reporting of losses also improves
corporate governance by providing a precocious signal when management actions result in poor outcomes that warrant investigation (Ball, 2001). Finally, like other debt holders, suppliers need liquidity and solvency information, provided by the timely incorporation of losses, in making credit decisions.

It should be apparent that all stakeholders in the firm have an economic interest in timely information regarding the firm’s financial position and changes in it. Simply put, timeliness makes information more relevant and thus of higher quality. However, timeliness alone cannot make unreliable (unverifiable) information relevant.

**Verifiability as a Property of High-Quality Information**

Enhanced timeliness is certainly central to the marginal information contribution of accrual accounting. In fact, an accrual is a construct designed to remedy the problems of timeliness and negative serial correlation associated with the use of cash flows as a performance measure (Dechow, 1994). However, while accruals contain useful information about the firm’s future cash flows (Kim & Kross, 2005), they are nevertheless essentially predictions about the future and thus require estimation and raise reliability concerns. Consider the potential consequences of introducing such subjectivity into accounting numbers.

The firm’s management, in possession of superior information about the firm and its cash flows relative to outsiders, may use accruals to signal their private information and thereby reduce information asymmetry. However, they may also use accruals to opportunistically manipulate accounting numbers for private gain which reduces the
reliability of accounting information and increases information risk. Accounting
counts like verifiability are designed to constrain management’s ability to
opportunistically create misinformation. Absent information asymmetry, such constraints
would be unnecessary, but since information asymmetry exists, consumers of accounting
information place considerable value on its reliability (verifiability) (Dechow, 1994; R.
A. Lambert, 2001).

Verifiability is often cited as essential in contracting because a contract must be
based on verifiable cash flows to be enforceable. In addition, unverifiable information
that is timely might otherwise be useful in setting stock price or evaluating performance
(compensation contracts) if it were not noisy or biased, but information asymmetry
coupled with misaligned incentives make inclusion of such unverifiable information in
contracts unworkable (Watts, 2003a, part 1). Consequently, Generally Accepted
Accounting Principles have evolved to reflect a necessary tradeoff between the properties
of relevance and reliability.

Asymmetric Verifiability

Timeliness and verifiability are both important properties of useful financial
information; however, financial reports may also be characterized as exhibiting an
asymmetric verifiability requirement for good and bad news i.e., conservatism.
Conservatism is believed to exist because of asymmetric payoffs to contracting parties
and the propensity of individuals, when faced with alternative courses of action, to chose
those actions most closely aligned with their self-interest. Add to that the fact that the
most superior information set regarding the firm’s future cash flows resides with the firm’s management (Myers, 1977) and the fact that the accounting reports prepared by management require considerable estimation. The result is that both opportunity and inclination exist to profit from the exploitation of private information (Jensen & Meckling, 1976; R. A. Lambert, 2001).

Therefore, the usefulness of accounting as information is diminished by the extent to which it is open to opportunistic manipulation. Conservative reporting seeks to redress the problem. By imposing an asymmetric verifiability requirement for the recognition of good and bad news, conservatism allegedly reduces the ability and inclination of management to opportunistically manipulate accounting numbers which in turn reduces the potential for exploiting private information at the expense of those who are less informed.

**CONSERVATISM**

Conservatism, sometimes referred to in the literature as conditional conservatism, is defined by Basu (1997) as differential verifiability requirements for recognizing good and bad news in financial reports; the income effects of bad news are recognized earlier and more fully than the income effects of good news. Recognition of incomplete, income-increasing events must be delayed until the income effect is reasonably predictable and independently verifiable, whereas the effects of income-decreasing events must be anticipated. The direction of the asymmetry stems from its use as a
countervailing force to management’s reporting incentives which are to manipulate accounting numbers in the opposite direction.

Existence of Conservatism

According to Basu (1997), accounting has tended toward a conservative bias for many centuries and other extant academic research supports its continued existence in the financial reports of firms listed in the U.S. and around the world. For example, a study by Hayn (1995) regressed returns on earnings for positive and negative earnings firms separately. She found that the earnings response coefficient (ERC) (i.e., coefficient on earnings) was higher for the sample of positive earnings, or good news, firms. This finding is consistent with a conservative income statement. The higher ERC suggests that when good news is reported in earnings, it is not fully reported. The full magnitude of the positive shock to the firm’s future cash flows evident in contemporaneous returns will be fully reflected in reported earnings over time closer to the actual realization of cash, when it is more verifiable. Therefore, since the reported earnings number only partially reflects good news, a larger multiple is required to explain returns than is the case for bad news which is more fully reflected in earnings in the same period as the shock.

Basu (1997) employs a reverse regression of earnings on returns and finds that bad news, as measured by negative returns, is captured in earnings more quickly and more fully than good news measured by positive returns. Basu uses an indicator variable to disaggregate positive and negative returns. In the reverse regression, the slope
The coefficient for negative returns is larger than the coefficient for positive returns meaning accounting income is more responsive to bad news than good news. The Basu study, like Hayn (1995) supports the existence of conservatism in the income statements of U.S. firms. In addition, (Ball, Kothari, & Robin, 2000) find conservatism in the financial reports of 19 out of the 25 countries studied consistent with widespread demand for conservative financial reporting. Not only is there strong evidence for the existence of conservatism, despite apparent efforts by the FASB to expunge it from financial reports, the level of conservatism has been increasing in the U.S. over the last few decades (Givoly & Hayn, 2000; Holthausen & Watts, 2001). There seems to be little doubt about the existence of conservatism in financial reporting, but why does it exist?

**Demand for Conservatism**

Numerous sources of demand for conservatism have been described in accounting literature. They include contracting, litigation, taxation, and regulation. This section examines each of these four sources of demand. (This discussion heavily relies on Watts, 2003a.)

*Contracting*

Because the use of accounting numbers in contracting predates the other sources of demand for conservative reporting, it is probably responsible for the incipience of conservatism. The use of accounting in debt and compensation contracts is well known. In debt contracts, information asymmetry exists between managers and lenders. In
compensation contracts, information asymmetry exists between managers and shareholders. Conservatism makes accounting more useful in these contracting contexts by making it less subject to opportunistic manipulation by managers; bad news which managers may be reluctant to include is readily incorporated into the contractual numbers while the incorporation of good news is delayed until its income effect becomes more certain.

In the case of debt contracts, conservatism is used in two ways to remedy information asymmetry. First, in making the loan decision, potential lenders are interested in a conservative measure of the firm’s value at the time of the initial loan decision to facilitate the assessment of default risk. Secondly, they are interested in conservative earnings and a conservative balance sheet to facilitate continual judgments about the extent to which their loans are secured. They want a contractual trigger to prevent unintended wealth transfers or the incurrence of excessive risk. The trigger must be “pulled” in a timely fashion before the liquidation value of the firm falls below the face value of the notes. This timeliness would prevent liquidating dividends and also excessively risky acquisitions that might otherwise be undertaken out of desperation to save the firm (Myers, 1977; Smith & Warner, 1979). This is why debt covenants often restrict a portion of retained earnings from being distributed as dividends. Although Leuz (2001) suggests that there is no apparent reason why lenders would not be equally interested in timely information regarding potentially offsetting gains, the reason is that they are most interested in the lower bound of net assets because no matter what the value of the firm, lenders do not have a share in firm value above the face value of its debt at
the time of a liquidating distribution of firm assets. This argument provides the rational for why intangible assets are normally not included in the calculation of net assets in debt covenants. Their values are not verifiable; in fact, in liquidation many intangibles have no value at all (Holthausen & Watts, 2001). Again, in the case of debt contracts, conservatism is used to remedy information asymmetry between managers and lenders.

In the case of earnings-based compensation contracts, conservatism is used to remedy information asymmetry between managers and shareholders. Of course, management is likely to have better information about the firm’s set of investment opportunities and hence potential future cash flows than shareholders or even board members (Smith Jr. & Watts, 1992). In this event, earnings-based compensation gives managers the incentive to bias estimates of future cash upward to maximize the value of their compensation packages. The earnings number is, after all, a point estimate of economic income with a probability distribution of its own. The result is that when future cash is less than predicted, biased or opportunistic estimates can be hard to distinguish from estimates that were high merely by chance. Asymmetric verifiability standards for the recognition of good and bad news also provide an early impetus for the board to investigate a manager’s actions when performance is poor. They may not get such an opportunity absent asymmetric recognition standards because of the reporting incentives of managers. Therefore, conservatively reporting accounting earnings may reduce the likelihood of unintentionally transferring wealth to managers through excessive earnings-based compensation.
Litigation

Besides contracting, litigation by shareholders is another source of demand for conservatism. While shareholders have long been protected under the Securities Acts of 1933 and 1934, shareholder litigation was relatively rare until 1966 when Rule 23 of the Federal Rules of Civil Procedure changed the rules regarding class action lawsuits (Kothari, Lys, Smith, & Watts, 1988). Consequently, 1966 marks a change in the litigation environment for managers and auditors alike. The level of litigation risk in years since has been variable. For example, in 1995, the Public Securities Litigation Reform Act eliminated joint and several liability for auditors. The Act essentially stated that auditors could no longer be sued just for having deep pockets but must be culpable in any losses due to misinformation if they were to be named as defendants. As a result, audit quality and by inference earnings quality, as proxied by discretionary accruals, declined after 1995 (Lee & Mande, 2003). Kothari et al. (1988) demarcated most of the 20th century into time periods characterized as having similar litigation risk for U.S. firms. Basu (1997) uses these historic periods, previously characterized by Kothari et al. (1988) as periods of either high or low litigation risk, to show that earnings seem to be more sensitive to bad news than to good news only in periods of high litigation risk. But why respond to changes in litigation risk with conservatism?

It seems plausible that shareholders who sell their holdings at too low a price because of valuation errors heightened by understatements of earnings would be just as likely to seek relief from the judiciary as shareholders who buy at too high a price or hold their shares too long because of overstatements. However, while it may be plausible, it
seems inconsistent with reality. Kellogg (1984) states that shareholder litigation where the plaintiffs allege overstatements of earnings and net assets outnumbers cases where the plaintiffs allege understatements by 13 to 1. This phenomenon creates an asymmetric loss function with respect to litigation and encourages conservatism as a means of reducing litigation risk thus increasing firm value. Conservatism stands to reduce litigation risk, not only by lowering the probability of being sued, but also by lowering the size of damage awards. It has been suggested that the size of damage awards in shareholder litigation is an increasing function of the levels of reported income and net worth. Consequently, in an apparent effort to reduce litigation losses, firms in the oil industry facing substantial litigation risks have been shown to use accounting accruals to report lower values of net income (Hall & Stammerjohan, 1997).

Although, Basu (1997) finds that litigation risk is related to the level of conservatism in recent decades, litigation offers an incomplete explanation for the existence and usefulness of conservatism because conservatism predates litigation by centuries.

**Taxation**

Corporate income taxes also offer a partial explanation for conservatism in financial reporting. In 1909, the U.S. Congress passed the Corporate Income Tax Act which taxed corporate income at the rate of 1 percent of income above $5,000. From that time to the present there has been some form of corporate income tax generating a significant portion of annual federal revenue. Of course, payment of taxes reduces firm
value by transferring income from the shareholder to the government (Watts, 2003a, part 1).

“Overall, … evidence suggests the existence of implicit pressure to conform tax accounting methods to those used for financial reporting purposes” (Guenther, Maydew, & Nutter, 1997). Guenther et al. (1997) showed that when firms were required to switch from cash basis to accrual basis accounting for tax purposes their financial reporting became more conservative; that is, accruals were used to defer the recognition of income. The implicit link between book and tax incomes gives firms the incentive to recognize losses earlier and gains later in order to reduce the present value of the taxes paid, thus increasing firm value (Watts, 2003a, part 1).

While the relationship between book and taxable incomes may motivate a downward bias in financial reporting in some instances, in other instances it does not. In recent years the financial press has been replete with cases of fraudulent overstatements in financial reports speaking to the fact that other considerations sometimes trump tax considerations in the implementation of accounting standards.

**Regulation**

Regulators serve as another source of conservative financial reports because there are asymmetric political costs associated with under versus overstating net assets. When accounting failures occur, regulators are likely to face much less criticism if reporting
standards effectuate a conservative bias in the reporting of net asset values (Watts, 2003a, part 1).

Political heat after the market crash of 1929 resulted in the Securities Acts. Political heat after the rash of recent highly publicized accounting scandals led to SAB 101 and Sarbanes-Oxley. Yet, such political and regulatory reprisals for under-valuations do not exist. In spite of asymmetric political costs, the FASB, perhaps alone among regulatory entities, appears to favor neutrality rather than a conservative bias so regulation may not be a good explanation for the existence or the usefulness of conservatism.

Contracting, litigation, taxation, and regulation all offer partial explanations for the existence of conservatism in financial reports. Still, recent studies are expanding the theory describing the demand for conservatism. These studies posit that information asymmetry in equity markets creates another context in which conservative reporting adds to the value of the firm (Ball, 2001; LaFond and Watts 2008). This is accomplished through a reduction in the level of information risk born by relatively less informed traders.

**THE PROBLEM WITH INFORMATION ASYMMETRY**

Anytime one party to a contract has an information advantage over other parties to the contract information asymmetry is said to exist, and where there is information asymmetry, there is often a concomitant potential to exploit it. The firm may be thought of as a nexus of contracts where information asymmetry flourishes. Hence, information
asymmetry may lead to a loss of wealth among parties contracting with or through the firm.

For example, consider how deterioration of the information environment might engender dead-weight losses. According to Jensen and Meckling (1976), agency costs include bonding costs, monitoring costs, and a residual loss of which a part is dead weight loss. If a 100% owner/manager sought to sell some percentage of his/her equity in the firm to outside investors, then those potential investors would value the firm by discounting the firm’s expected future cash flows to their present value using their required rate of return. Of course the required rate of return would be based on the investors’ perception of risk in assessing the timing and magnitude of future cash flows. Higher information risk, a component of total risk, would mandate a higher discount rate and thus a lower price paid for the firm’s equity. The actual future net cash flows of the firm represent real wealth generated by the firm, but higher information risk would result in those future cash flows having a lower present value. In other words, the owner/manager would receive a lower price for the firm’s equity because of information asymmetry inherent in the agency setting, since it equates to information risk. The result is dead-weight loss or lost shareholder wealth that accrues to no one because the same situation arises for each successive generation of shareholders when divesting themselves of the firm’s equity.³

Increased information risk due to information asymmetry may also lead to dead-weight losses through underinvestment since higher equilibrium returns would mean the rejection of otherwise positive net present value projects. In addition to dead-weight

³ Of course, this argument assumes the firm to be a perpetual going concern.
losses, agency relationships and the associated information asymmetry create other wealth penalties, i.e., monitoring and bonding costs. In a variety of ways, information asymmetry creates risk that has significant economic consequences. Real increases in wealth generated by the firm have less value because information asymmetry and the potential to exploit it heighten information risk.

**PRICING INFORMATION ASYMMETRY**

Investors use information to construct investment portfolios choosing from among assets with varying degrees of risk. At the lower extreme are risk-free assets for which an investor is only compensated for time, the holding period, since by definition, the return is known for risk-free assets. In order to earn higher rates of return, the investor must bear some risk by holding risky assets. In exchange, the investor expects to be compensated. The risk associated with these risky assets derives from the fact that their actual future returns are unknown.

The actual return to be earned has a probability distribution and investors set price as well as determine portfolio weighting based on estimates of the parameters of the asset’s return distribution—namely the expected return (mean) and the standard deviation or spread of the return distribution (precision). However, it is not the total risk associated with a particular asset that is priced (Sharpe, 1964). Investors are not required to hold idiosyncratic risk because idiosyncratic risk can be reduced through diversification. Therefore, investors cannot expect to be compensated for it. It is only systematic risk, risk that cannot be diversified, that should be priced.
Consequently, early Capital Asset Pricing Models (CAPM) held that market risk (\(\beta\)) was the only risk that was priced (Amihud & Mendelson, 1989). However, evidence uncovered by Fama and French (1992) and others suggested that other risk factors also affect market returns. Subsequent scholarship suggests that one of those factors is information risk (Easley, Hvidkjaer, & O'Hara, 2002; Easley & O'Hara, 2004). Incomplete or otherwise imperfect information contributes to uncertainty regarding the parameters of the return distribution and thereby increases risk and the cost of capital.

Note that both sides of the conservatism debate agree that information asymmetry equates to information risk. The debate is over conservatism’s impact on that information asymmetry. Does the biased reporting implied by conservatism increase or decrease the information risk caused by information asymmetry?

Equity investors are faced with information asymmetry in at least two contexts. First, information asymmetry exists between the firm’s managers and its investors because of the agency setting. That is, firm insiders are in possession of private information not held by investors. Second, when firm insiders disclose private information to only a few select investors, information asymmetry is extended beyond insiders and exists among the firm’s equity investors.

**Private Information Held by Insiders**

The circumstance that gives rise to information asymmetry in a manager/shareholder context is the agency relationship created by the separation of ownership and control of the firm. The agent (manager) is in possession of the most
complete and precise information set regarding the future cash flows of the firm (Myers, 1977) which can lead to dysfunctional behavior on the part of the manager since his/her interest is in maximizing personal utility which is likely incongruent with the interest of the principal (shareholder)—namely, maximizing profit (Jensen & Meckling, 1976). Although dysfunctional and inefficient from a societal perspective, such an outcome is nonetheless consistent with rational choice theory which predicts that rational people exhibit a predilection for actions that maximize their own utility when choosing among alternatives (Watts, 2003, part 2). While the pursuit of self-interest is in fact what enables free markets to work their magic in directing the flow of resources through the economy to those uses most valued by society, it can also lead to the less laudable result of unintended, unmerited wealth transfers.

Today’s compensation contracts are often based on accounting earnings or stock prices which can create tension between the interests of managers and shareholders. Because of the nature of the agency relationship and the limited liability and tenure of the manager (agent), he/she has an incentive to inflate positive cash flow projections and to understate negative cash flow projections during his tenure. The resulting misinformation is meant to increase the value of his/her compensation contract by opportunistically transferring wealth from shareholders to himself/herself (LaFond & Watts, 2006).

Due to the considerable discretion required in implementation, accounting may afford just such an opportunity. Accounting numbers, which are of course produced by management, are meant to provide information about managerial performance and thus
impact the manager’s welfare. These same numbers are also meant to assist investors in their resource allocation decisions by informing them about firm performance. But of course, the manager has little incentive to disclose information regarding losses as it could be detrimental to his/her personal welfare. Nonetheless, loss information is important to shareholders as well as other consumers of accounting information. Likewise, managers have an incentive to exaggerate good news in order to maximize personal welfare which also contributes to undermining the usefulness of accounting. Therefore, the informational efficiency of accounting is vulnerable to compromise because of the asymmetric reporting incentives of managers. Note that it is uncertainty that increases information risk; that is; all managers need not act opportunistically for information asymmetry to increase risk.

The problems associated with misaligned incentives in an agency setting lie at the very crux of why accounting and independent audits exist. If agent managers could be trusted to act in the interest of the principals they represent, then independent audits would be a waste of resources which would not be tolerated, much less demanded, by the market. The very same incentive problems are also responsible for the value placed on verifiability and conservatism as properties or constraints of accounting (R. A. Lambert, 2001). Asymmetric standards of verifiability for gains and losses before inclusion in financial reports would seem to offer one means of fettering opportunistic reporting by management, thereby improving the quality of information in accounting. Lambert, Leuz, and Verrecchia (2007) put it this way, "When there are agency problems between firms and managers, the quality of the firm’s accounting and information system …
affects the magnitude of these agency problems...." Absent conservatism, accounting numbers may be significantly biased and result in poor contracting and allocative efficiency (Watts, 2003a, part 1).

According to Ball (2001) the optimal solution to management’s information advantage includes the separation of verifiable, audited financial information from management’s expectational information, like earnings expectations, to the greatest extent possible. Yet, the principle is not universally applicable to all expectational information. Due to the direction of managements reporting incentives, bad news would be an exception. That is, expectations regarding losses would be included in accounting earnings under Ball’s scenario because managers do not have an incentive to include bad news at all, much less exaggerate it. The extirpation of unverifiable “good news” information from accounting reports would make the credibility of those reports relatively unassailable as there would be little distinction between the recognition of income and its realization in cash. Accounting reports would then produce information consistent with their comparative advantage in the country’s financial reporting system. Namely, accounting earnings would provide a reliable ex post benchmark against which to judge the quality of expectational information disclosed by management ex ante. In other words, sufficiently conservative accounting reports would provide a “settling up” that would discipline the disclosure of expectational information by management making those disclosures of higher quality. The result would be a system of financial reporting and disclosure where informational efficiency was enhanced due to the complementary
nature of conservative accounting reports and separately reported expectational information.

While Ball’s argument is persuasive, it fails to address the potential loss of new information otherwise provided by less conservative accounting. A 1968 study by Ball and Brown marks the beginning of a substantial body of literature measuring the usefulness of accounting information via its impact on investor behavior. The Ball and Brown (1968) study showed that while most of the information in accounting reports is superseded by other information sources, accounting does contain new information not impounded in price until the release of financial reports. In Ball and Brown (1968) and subsequent scholarship, price changes immediately following earnings announcements are inferred to be indicative of the level of new information contained in accounting numbers—information unavailable within the financial reporting system prior to the release of accounting reports.

One function of accounting is to convey information that faithfully represents the economic effects of business activity during a given period (Schipper & Vincent, 2003 Supplement). Yet, most of that information is superseded by other information sources. However, the aforementioned literature has shown, using short window studies of market reactions to earnings announcements, that accounting also contains some degree new information.

It is conceivable that conservatism may result in the loss of new information from accounting reports. Accounting reports are considered conservative if they are more responsive to bad news than to good news. This means that, in cross sectional
comparisons, financial reports may be characterized as more conservative 1) if they are more anticipatory of bad news or 2) if they are less anticipatory of good news. Conservatism implies a greater skepticism about apparent good news potentially delaying the release of *new* information.

Therefore, conservatism in financial reports may indeed enhance the informational efficiency of the overall financial reporting system as Ball predicts. However, if sufficiently conservative accounting curbs the dissemination of new information otherwise contributed by financial reports, then conservatism may be said to decrease the cost of capital by reducing information risk but at a decreasing rate. That is, in terms of informational efficiency, there are diminishing returns to increasingly conservative financial reports. Therefore my first hypotheses (in alternative form) regarding conservatism and its value to equity traders are as follows:

**H1a:** As the level of conservatism in accounting reports increases, information risk in equity markets decreases.

**H1b:** As the level of conservatism in accounting reports increases, information risk in equity markets decreases at a decreasing rate.

In comparisons across firms, the reporting bias implied by conservative accounting may result from either increasing the responsiveness of accounting to bad news or decreasing its responsiveness to good news. Consequently, there are two informational
dimensions underlying and driving any measure of the bias. In the case of bad news, increasingly conservative accounting reports contain more information as apparent bad news is anticipated to a greater extent. In contrast, in the case of good news, more conservative accounting reports contain less information as recognition of apparent good news is decreasing.

In the case of bad news, conservatism is expected to decrease the cost of capital because it results in a greater quantity of timely and reliable information about the firm’s future cash flows. However, the cost of capital may decrease at a decreasing rate because as anticipation of bad news becomes sufficiently extreme information is not sufficiently reliable to be useful. Sufficiently unreliable news is noise in the total set of information signals available tending to increase information risk. While management’s reporting incentives generally preclude the reporting of low quality bad news, phenomena such as “the big bath” do allow for the possibility. Therefore, I posit the following.

**H1c:** As the level of conservatism in reporting bad news increases, information risk in equity markets decreases.

**H1d:** As the level of conservatism in reporting bad news increases, information risk in equity markets decreases at a decreasing rate.
All sides of the conservatism debate favor the inclusion of greater quantities of high-quality news in accounting. Further, there seems to be consensus that anticipatory bad news generally does not result in degradation of the information environment. However, as previously described, a conservative bias may also result from being less anticipatory of apparent good news. If, as Ball (2001) suggests, conservative reporting reduces information asymmetry and even increases informational efficiency via complementarities with separate and distinct expectational information, investors should have more confidence in their predictions about future cash. Therefore, in the case of good news, conservatism is expected to decrease the cost of capital by providing a high-quality benchmark which disciplines the release of interim expectational information making the expectational information of similarly high quality. Nevertheless, the cost of capital may decrease at a decreasing rate because as anticipation of apparent good news becomes increasingly restricted, the potential for accounting to contain any new information is jeopardized. Therefore, I posit the following.

**H1e:** As the level of conservatism in reporting good news increases, information risk in equity markets decreases.

**H1f:** As the level of conservatism in reporting good news increases, information risk in equity markets decreases at a decreasing rate.
Managers and other corporate insiders, such as directors, may elect to exploit private information directly or indirectly through insider trading activities. While there are legal proscriptions against insider trading, continually emerging new cases provide evidence that criminal sanctions are an imperfect solution to avarice. Conservatism in accounting reports may offer one means of mitigating the problems arising from information asymmetry and asymmetric reporting incentives. Unfortunately, the impairment of informational efficiency in equity markets caused by information asymmetry goes further than just the asymmetry that exists between insiders and other parties to the firm. Corporate insiders can extend the detrimental effects of information asymmetry even further through selective disclosure. When managers or other insiders share their private information with favored groups of investors, it creates information asymmetry among equity market participants.

**Private Information Extended Beyond Insiders**

The range of parties in possession of private information advantages is not limited to corporate insiders but also includes parties to whom private information is selectively disclosed like institutional investors and analysts (Easley & O'Hara, 2004). Concern over deliberately created information asymmetry via selective disclosure prompted the SEC to adopt a new rule, Regulation FD (Fair Disclosure) to attempt to dissuade equity market participants from trading on information advantages, a practice the SEC characterizes as tantamount to insider trading.
Regulation FD

The final rule on Regulation FD states:

“…we [the SEC] have become increasingly concerned about the selective disclosure of material information by issuers. As reflected in recent publicized reports, many [emphasis added] issuers are disclosing important nonpublic information, such as advance warnings of earnings results, to securities analysts or selected institutional investors or both, before making full disclosure of the same information to the general public. Where this has happened, those who were privy to the information beforehand were able to make a profit or avoid a loss at the expense of those kept in the dark.” (Regulation FD, "Selective Disclosure and Insider Trading," 2000)

For many reasons including reputation and stock price-based compensation, managers may be inclined to treat their private information as a commodity to be traded to analyst in exchange for favorable reports on the firm. Analysts may be inclined to play along either for profit or for fear of being excluded as a recipient of advanced information in the future. Additionally, institutional investors who own large blocks of stock often are in possession of sufficient resources to more closely monitor and exert influence over professional managers which may result in private information gains.

An article in The Economist (October 28, "Shining Light on the Markets," 2000) parrots concerns of the SEC in alleging that Wall Street has a long history of trading on relatively private information to benefit an informed few insiders. Among these insiders are asset managers who are worried that Regulation FD will strangle their supply of profiTable, advance information from corporate managers. Trading on private information results in informed investors profiting at the expense of uninformed
investors, not through skill or diligence but through relatively unencumbered access to corporate insiders. The uninformed investor with access to only public information is also fully aware of the handicap at which he/she trades as evidenced by a tide of clarion calls received by the SEC for the formal prohibition of selective disclosure.

Regulation FD is the SEC’s response. The new rule requires that when material information is deliberately disclosed to any of the traditional information intermediaries, like analysts, public disclosure must be simultaneous. A further requirement is that when material information is accidentally disclosed to such intermediaries then public disclosure must *promptly* follow. This new rule took effect October 23, 2000 and represents the SEC’s attempt to bolster the integrity of our equity markets by offering a remedy for the problems associated with information asymmetry among equity investors. Conservative accounting may offer a means to further remedy these problems.

*Pricing Selective Disclosure*

Information certainly has value. In fact, the more complete the information set that is available to investors the lower equilibrium returns will be (Barry & Brown, 1985; Coles, Loewenstein, & Suay, 1995; Merton, 1987). Information risk decreases for equity investors when firms simply increase levels of disclosure (Botosan, 1997; Botosan & Plumlee, 2002). However, information does not come without cost; it is not free. Therefore, each investor bears a cost/benefit tradeoff in information gathering. The tradeoff results in a point at which the cost of becoming any more informed through information acquisition is simply cost prohibitive. Further, that point varies depending
on the resources and holdings of any particular investor or group of investors which tends to create a subset of investors who are more informed than others (information asymmetry).

Information asymmetry affects the risk borne by uninformed traders in at least two ways. First, the private information held by more informed investors is partially revealed when they trade. The more that informed investors trade, the more readily uninformed investors can glean new information from price. For example, when high demand for a particular stock by more informed investors begins to push the equilibrium price higher, the relatively less informed investor learns that the stock may be undervalued.

Three properties of private information could increase trading volume: (1) the degree to which newly obtained private information changes expectations about returns, (2) the degree to which it changes the precision of the return distribution, and (3) the degree to which the private information is disseminated (proportion of informed to uninformed investors). Any of these attributes would cause changes in the trading patterns of informed investors. As the relatively uninformed investors infer the nature of private information, they too are able to adapt their trading patterns to reflect information in the new, informationally efficient price. Consequently, the existence of private information, when traded on, has the potential to decrease the risk born by uninformed investors and lower the firm’s cost of capital by making prices more informative (Wang, 1993). Thus, even private information is better than no information at all (Easley & O'Hara, 2004).
On the other hand, the existence of private information cannot be heralded as completely sublime, as is well known by the SEC and others. In addition to the potential to make prices more informative, private information also has less salutary effects on the risk born by the uninformed. It creates an adverse selection problem because uninformed investors, though eventually becoming informed of an asset’s informationally efficient equilibrium price, remain unable to adjust their portfolios to the optimal weights held by more informed investors. Uninformed investors, therefore, demand a risk premium for trading with more informed investors who are better able to adjust their portfolios to new information. Of course, a higher risk premium dictates a higher cost of capital for the firm. Furthermore, because uninformed investors will always tend to be among the uninformed in a multi-asset setting, the adverse selection risk is not diversifiable; it is systematic. Of the two potential effects of information asymmetry on a firm’s cost of capital, it is the latter that dominates (Easley et al., 2002; Easley & O’Hara, 2004; Plumlee & Botosan, 2007). Information asymmetry increases the cost of capital and thus reduces shareholder wealth.

One reporting alternative for reducing information asymmetry would seem to be allowing the reporting of unverifiable gains in addition to losses. That is, allow management to anticipate the economic effects of both good and bad news equally. The increased timeliness of information in accounting earnings would theoretically result in less private information and a closer approximation of economic income. On the other hand, critics charge that management’s reporting incentives make this solution
unworkable. Because of the conflicts of interests previously described, investors would have no reason to believe unverifiable gain information.

To reiterate, a lower verifiability requirement for the inclusion of bad news in financial reports does not make those reports significantly less reliable because management’s reporting incentives make them reluctant to provide such information at all; it is certainly unlikely that bad news would be exaggerated. However, this is not the case for good news. Management’s reporting incentive in the case of good news is to exaggerate it. Proponents of conservatism argue that allowing the unabated production of such noisy and biased financial information would increase information risk and consequently would come at the cost of a reduction in wealth. Therefore, excluding unverifiable good news from financial reports would decrease information risk and increase firm value (shareholder wealth) via a reduction in the cost of capital relative to a reporting regime that allows the equal anticipation of both good and bad news (neutrality).

While conservative reporting may reduce information risk and the cost of capital as predicted in my series of H1 hypotheses, cross-sectional variation in the effect should exist. One reason for this is that much of the information asymmetry between management and shareholders stems from the set of investment options facing the firm (Myers, 1977; Myers & Turnbull, 1977; Smith Jr. & Watts, 1992). Because growth opportunities vary by firm, so does the level of information asymmetry. Remember, many reasons exist for adopting conservative reporting practices including contracting, litigation, taxes, and regulation. Yet, the implication of the LaFond and Watts (2008)
study is that conservatism, in the context of equity valuation, should only affect the cost of equity capital in the presence of information asymmetry between insiders or those with whom they selectively share information and uninformed investors. It follows that conservatism should be increasingly important in reducing risk when information asymmetry is high. Consequently, my next hypothesis (in alternative form) regarding conservatism and its value to equity traders is as follows.

**H2a:** The rate at which conservative accounting reports reduce information risk in equity markets increases as the level of information asymmetry increases.

Despite the findings of the LaFond and Watts (2008) study on which H2a is based, other scholarship seems to advance the principle that more information improves the information environment and consequently reduces risk—a principle not conditioned on the nature of the information (Botosan, 1997; Botosan & Plumlee, 2002; Coles et al., 1995). Remember that the bias implied by conservatism has two informational dimensions, namely, information regarding good and bad news. Because conservatism with respect to bad news results in more information being more widely disseminated, it follows that in comparisons across firms a conservative bias driven by reporting more bad news would reduce information asymmetry and consequently the cost of equity capital. On the other hand, conservatism with respect to good news restricts the dissemination of apparent good news. Consequently, privately held good news remains private and information asymmetry persists. These relationships between conservatism,
information asymmetry, and the quantity of publicly available information lead to the following hypothesis.

**H2b:** The rate at which conservative accounting reports reduce information risk in equity markets decreases as the level of information asymmetry increases.

Note that hypotheses H2a and H2b are two alternatives of the same null hypothesis. The reason for bi-directional hypotheses is, in comparisons across firms, the effect of the bias implied by conservatism is likely dependent on what is driving the bias—conservatively reporting good news or bad news. Across firms and at high levels of information asymmetry, the bias implied by conservatism is likely to reduce information risk if it is driven by conservatively reporting apparent bad news because the result is less privately held (more public) news. On the other hand, where information asymmetry is high, the bias may increase information risk if it is driven by conservatively reporting apparent good news because the result is more privately held (less public) news. Therefore, I propose the following hypotheses.

**H2c:** The rate at which conservatively reported good news decreases information risk decreases as information asymmetry increases.

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4 The null hypothesis is that the degree to which conservative accounting reports reduce information risk is not dependent on the level of information asymmetry.
**H2d** The rate at which conservatively reported bad news decreases information risk increases as information asymmetry increases.
CHAPTER III
RESEARCH DESIGN AND METHODOLOGY

This chapter begins with a description of the sample. Next, variables and their measurement are described. The chapter concludes with a description of the models and methods used to test hypotheses.

SAMPLE DESCRIPTION

The returns data used in this study come from the CRSP monthly files. The accounting data come from the Compustat research and current files. The sample used for hypothesis testing in this study includes firm years 1996 through 2005. However, for any year $t$, where $t$ equals years 1996 through 2005, some variable measures require a 10-year rolling window of data beginning with year $t-9$ and ending with year $t$. Therefore, the sum of data used in the study relates to years 1987 through 2005. This time-series requirement is the most significant data restriction imposed by this study. Table 1 shows the attrition of the sample resulting from the extended time-series requirement as well as further data restrictions.
Table 1

Schedule of Attrition for Sample Data

<table>
<thead>
<tr>
<th>Terminal Year of Each 10-Year Window of Data</th>
<th>Firm Years</th>
<th>Distinct Firms</th>
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<tbody>
<tr>
<td>1996</td>
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<td></td>
</tr>
<tr>
<td>2005</td>
<td>5,359</td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>56,456</td>
<td></td>
</tr>
<tr>
<td>Obs with both 15-month returns and earnings before extraordinary items in terminal year</td>
<td>1,668</td>
<td>3,506</td>
</tr>
<tr>
<td>Obs with all 10 years of data ending in terminal year including at least 2 years of negative returns and at least 2 years of positive returns</td>
<td>1,178</td>
<td></td>
</tr>
<tr>
<td>Obs remaining after requiring values for Beta, Size, Book-to-Market Ratio, and Bid/Ask Spreads*</td>
<td>1,178</td>
<td></td>
</tr>
</tbody>
</table>

*Any tests requiring further restrictions are described in the relevant section.
There are 56,456 firm years (13,200 unique firms) over the period 1996 through 2005 with both returns and earnings data. However, for a firm to be included in year $t$, both returns and earnings data must be available for the ten consecutive years ending in year $t$. In addition, at least two years of negative returns and at least 2 years of positive returns must be included in the ten year window. These restrictions result in 17,469 firm years (3,506 unique firms) for which conservatism can be measured. Finally, requiring data for all control variables necessary for the study reduces the sample to 12,794 firm years representing 2,617 unique firms.

Although use of the research files in Compustat helps to mitigate concerns of survivorship bias in the sample, the requirement imposed by this study for a sustained time-series of data in both CRSP and Compustat undoubtedly results in a sample with a disproportionate number of large firms which may limit generalizability and hence external validity. Although limited generalizability is a potential limitation of this study, the sample used is nonetheless of considerable economic importance as it represents a sizable segment of the economy. Table 2 describes the sample as a percentage of the total market capitalization of all firms in the CRSP universe. On average, the sample represents nearly a fifth of the total market value of publicly traded U.S. firms.
Table 2

Sample Market Capitalization as a Percentage of Total Market Capitalization

<table>
<thead>
<tr>
<th>Year</th>
<th>Percent of Total Market Capitalization</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td>25.20</td>
</tr>
<tr>
<td>1997</td>
<td>19.85</td>
</tr>
<tr>
<td>1998</td>
<td>19.51</td>
</tr>
<tr>
<td>1999</td>
<td>16.84</td>
</tr>
<tr>
<td>2000</td>
<td>11.21</td>
</tr>
<tr>
<td>2001</td>
<td>13.65</td>
</tr>
<tr>
<td>2002</td>
<td>16.68</td>
</tr>
<tr>
<td>2003</td>
<td>19.46</td>
</tr>
<tr>
<td>2004</td>
<td>18.66</td>
</tr>
<tr>
<td>2005</td>
<td>18.74</td>
</tr>
<tr>
<td>Mean %</td>
<td>17.98</td>
</tr>
</tbody>
</table>

VARIABLE MEASUREMENT

The following section describes the measurement of variables used in subsequent hypothesis testing.

Conservatism

While several measures of accounting conservatism can be found in contemporary scholarship, this study relies on coefficients from the Basu (1997) regression primarily in the interest of preserving comparability with the Francis et al. (2004) study since one explicit goal of this study is to explain the apparent lack of importance of conservatism among equity investors reported by the authors. In addition, the Basu regression
continues to be, perhaps, the most used measure of conservatism in accounting
scholarship of the last decade. Equation (1) shows the Basu regression model from
which conservatism measures are subsequently derived.

\[ EARN_{it} = \alpha_0 + \alpha_1 NEG_{it} + \beta_0 R_{it} + \beta_1 (R_{it} \times NEG_{it}) + \epsilon_{it} \]  

(1)

where: \( EARN_{it} \) = Earnings before extraordinary items for firm \( i \) in year \( t \) divided by the market value of firm \( i \) at the end of year \( t-1 \).

\( R_{it} \) = the 15-month cumulative return for firm \( i \) beginning with the start of fiscal year \( t \) and ending 3 months after the end of fiscal year \( t \).

\( NEG_{it} \) = A dummy variable coded 1 if the 15-month cumulative return for firm \( i \) ending 3 months after the end of fiscal year \( t \) was negative.

The dependent variable in Equation (1) for any firm \( i \) in any year \( t \), is earnings before extraordinary items (EARN) in year \( t \) divided by the market value of the firm’s equity at the end of year \( t-1 \). With respect to independent variables, Equation (1) relies on firm-specific returns to measure news about the firm available in equity markets during the accounting period. Returns (\( R \)) are measured as the 15-month cumulative return for firm \( i \) beginning at the start of year \( t \) and ending 3 months after the end of fiscal year \( t \). The rationale behind the use of returns as a proxy for news is that all economically significant news about the firm gets impounded into its stock price; therefore, price changes (returns) indicate the quantity and nature of any new news. An indicator variable called \( NEG \) is coded 1 if the firm’s return was negative and 0 otherwise and is used to disaggregate good news from bad news (positive vs. negative returns). To obtain a firm
and year-specific measure of conservatism, Equation (1) is run for each firm using a 10-year rolling window of firm-specific returns and earnings data. At least 2 years and no more than 8 years of negative returns are required in each 10-year window for a firm to be included in any given firm year. In other words, at least 2 years (out of 10) of both good and bad news regarding the firm’s future cash flows are required in order to estimate the differential responsiveness of accounting to news depending on its nature. In this way, the responsiveness of accounting earnings (EARN) to the good and bad news available to the market may be captured separately. Table 3 reports mean values and other descriptive statistics for parameter estimates from the Equation (1) regression which was run for each firm and each year (a total of 12,798 times).

The magnitude of the coefficient on positive returns ($\beta_0$) relates the degree to which new good news was impounded in accounting earnings. Likewise, the degree to which bad news available to the market was impounded in earnings is measured by ($\beta_0 + \beta_1$) where ($\beta_1$) is the incremental responsiveness of earnings to bad news. In the presence of conservatism ($\beta_1$) is expected to be positive. In other words, an asymmetric verifiability requirement for good and bad news will make accounting earnings more responsive to bad news than to good news. This differential responsiveness is the bias implied by conservatism referred to earlier in this paper. Bad news will be captured more fully and completely in accounting earnings than good news will be captured.
Table 3
Descriptive Statistics for the Parameter Estimates from 12,794 Basu Regressions

\[ EARN_{it} = \alpha_0 + \alpha_1NEG_{it} + \beta_0R_{it} + \beta_1(R_{it}*NEG_{it}) + \varepsilon_{it} \] (Eq. 1)

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Std Dev</th>
<th>25th Percentile</th>
<th>Median</th>
<th>75th Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earn</td>
<td>0.029</td>
<td>0.178</td>
<td>0.021</td>
<td>0.057</td>
<td>0.085</td>
</tr>
<tr>
<td>(\alpha_0)</td>
<td>0.042</td>
<td>0.134</td>
<td>0.023</td>
<td>0.059</td>
<td>0.085</td>
</tr>
<tr>
<td>(\alpha_1)</td>
<td>-0.002</td>
<td>0.309</td>
<td>-0.039</td>
<td>0.000</td>
<td>0.042</td>
</tr>
<tr>
<td>(\beta_0)</td>
<td>0.037</td>
<td>0.290</td>
<td>-0.011</td>
<td>0.027</td>
<td>0.074</td>
</tr>
<tr>
<td>(\beta_1)</td>
<td>0.033</td>
<td>0.956</td>
<td>-0.110</td>
<td>0.033</td>
<td>0.193</td>
</tr>
</tbody>
</table>

\(EARN_{it}\) = Earnings before extraordinary items for firm \(i\) for year \(t\) divided by the market value for firm \(i\) at the beginning of year \(t\).
\(R_{it}\) = the 15-month cumulative return for firm \(i\) ending 3 months after the end of fiscal year \(t\).
\(NEG_{it}\) = A dummy variable coded 1 if the 15-month cumulative return for firm \(i\) ending 3 months after the end of fiscal year \(t\) was negative.

However, rather than the incremental responsiveness of earnings to bad news, the primary measure of conservatism used in this study is the relative responsiveness of earnings to bad versus good news. That is, conservatism is measured as shown in Equation (2) where \(\beta_0\) and \(\beta_1\) obtained from the Equation (1) regressions are as previously defined (firm and year subscripts omitted). Note that values of conservatism equal to one reflect no bias. Values greater than one reflect a conservative bias and values less than one reflect an aggressive bias.
\[ \text{CONS RATIO} = \left[ (\beta_0 + \beta_1) \div \beta_0 \right] \]  

where: \( \beta_0 \) = the responsiveness of accounting earnings to good news available in equity markets as captured by firm-specific regressions shown in Equation (1)  

\( \beta_1 \) = the incremental responsiveness of accounting earnings to bad news available in equity markets as captured by firm-specific regressions shown in Equation (1)  

\( \beta_0 + \beta_1 \) = the responsiveness of accounting earnings to bad news available in equity markets as captured by firm-specific regressions shown in Equation (1)  

Following Francis et al. (2004), in order to mitigate the effect of extreme observations the conservatism measure obtained from Equation (2) (CONS RATIO), is ranked by deciles where higher decile scores indicate greater conservatism; then the decile scores (CONS) are used in subsequent hypothesis tests rather than the raw conservatism scores obtained from Equation (2). Because H1 predicts that the cost of capital is decreasing in conservatism but at a decreasing rate, the decile ranks of conservatism obtained from Equation (2) are squared and this square term (CONS^2) is also included in hypotheses tests.\(^5\)

The primary measure of conservatism used in this study, the annual decile ranks of Equation (2), simultaneously considers the responsiveness of accounting to good and bad news. Joint tests of this nature may mask the true information effect of conservative financial reporting if its effect is dependent on the nature of the news being reported.

\(^5\) The nature of ordinal data generally prohibits multiplication in its analysis. However, this is principally because of uncertainty about the intervals between variable values in the case of ordinal data. That is, multiplication may result in products for which order is unknown. The potential problem does not exist in this study because I am multiplying each decile rank of conservatism by itself and the monotonicity of the data is preserved.
Therefore, the primary measure of conservatism, the relative responsiveness of earnings to bad versus good news, is supplemented in this study by examining accounting’s responsiveness to good and bad news independently.

The coefficient ($\beta_0$) from the Equation (1) regression is used to measure the responsiveness of accounting to good news only. In comparing conservatism ($CONS$) across firms, accounting earnings are more conservative if they capture less of the good news in the market by moving recognition of income closer to the realization of cash. Stated differently, a greater fraction of good news captured contemporaneously by accounting earnings is indicative of more aggressive and, therefore, less conservative reporting. In contrast, the coefficients ($\beta_0 + \beta_1$) from the Equation (1) regression capture the responsiveness of accounting to bad news only. Larger values of the sum of these two coefficients are interpreted to be indicative of greater conservatism with respect to reporting bad news. That is, a greater fraction of bad news captured contemporaneously by accounting earnings is indicative of more conservative reporting.

Therefore, to simplify interpretation when measuring conservatism with respect to good and bad news separately ($\beta_0$) will be multiplied by negative one in order to reverse code it. After reverse coding, larger values of ($\beta_0$) are interpreted to be indicative of greater conservatism in reporting good news. The variable name used for the reverse coded values of ($\beta_0$) is $GNEWS$; greater values of $GNEWS$ indicate greater conservatism with respect to good news. $BNEWS$ ($\beta_0 + \beta_1$) is used in a similar way for bad news; greater values of $BNEWS$ indicate greater conservatism with respect to bad news. ($\beta_0$) is not reverse coded in the sum ($\beta_0 + \beta_1$). Decile ranks are used for all measures of
conservatism to eliminate the effect of extreme values of conservatism. $GNEWS_2$ and $BNEWS_2$ are the squares of $GNEWS$ and $BNEWS$ respectively.

Cost of Equity

Information asymmetry exists in equity markets when some traders are in possession of an information set superior to the information set possessed by other traders. Traders who are privy to private information about the firm are in possession of public information signals as well as some private information signals not widely known. The information set belonging to less informed traders is limited to those information signals that are publicly known. The consequence of this information asymmetry among equity market participants is that less informed investors suffer greater information risk when trading with more informed investors. Because less informed traders always tend to be among the less informed, the information risk engendered by information asymmetry tends to be systematic risk which should be priced. That is, the ex ante cost of equity capital—expected returns—should reflect systematic risk. It follows that if conservative reporting choices can be used to mitigate the harmful effects of information asymmetry and reduce information risk then such choices should be met with a lower cost of capital (COC) in equity markets. Therefore, the ex ante cost of equity capital is used, in this study, to proxy for the systematic information risk faced by equity market participants.

This approach suffers from two potential problems. First, the ex ante cost of equity capital measures the information risk faced by market participants with some error.
because it reflects the entire equity risk premium including all dimensions of systematic risk, not just information risk. As a remedial measure, this study uses control variables, from capital asset pricing theory known to be associated with systematic (priced) risk, to extract the portion of the ex ante cost of capital not associated with information risk. The second problem is that the actual ex ante cost of capital is unobservable in equity markets. Therefore, any study of this kind must rely on a proxy for the actual ex ante cost of equity capital. The proxy used in this study is the capital asset pricing model’s prediction of the cost of equity. Hypotheses are tested using ordinary least squares regressions where the firm and year-specific cost of equity capital serves as the dependent variable.

Because this study seeks to extend Francis et al. (2004), it should be noted that the proxy used in this study for the ex ante cost of capital is different than the proxy used by Francis et al. for primary tests of hypotheses. Francis et al. computed a proxy for the ex ante cost of equity capital using analysts’ forecast data from Value Line. 6 Fundamentally, the cost of capital was determined to be the discount rate necessary, in a present value calculation to equate the Value Line analyst’s future target price for a stock to its current price. However, Francis et al. also determined that the pattern of inferences in their study was robust to the use of realized return data and several alternative estimates of the ex ante cost of equity capital.

The years covered by the Francis et al. study are different than those covered by this study. However, the two studies have the years 1996 through 2001 in common.

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6 The cost of capital estimate used in this study is primarily one of convenience. I do not have access to Value Line or other forward looking data that would make direct comparisons with the Francis et al. study possible.
Computing the weighted average costs of capital from the Francis et al. study for years 1996 through 2001, using the number of firms in the sample each year for weighting, yields a mean cost of capital of 15.2%. The mean cost of capital for the same years in this study’s sample is 14.9%. Applying the same computational approach, the median cost of capital in the Francis et al. study and this study are 14.2% and 13.9% respectively. Similarly, the 25th and 75th percentiles of the cost of capital used by Francis et al. for years 1996 through 2001 yields 9.9% and 19.1% respectively. Equivalent values for the cost of capital used in this study are 5.6% and 23.5% respectively. The distributions of the CAPM based cost of capital estimates and the Value Line based cost of capital estimates are very similar. They both have an extremely similar central tendency with the CAPM based distribution having a slightly greater spread. Because Francis et al. inferences did not change when using realized return data and because of the similarity in the distributional properties of the cost of capital for the two studies, direct comparisons between the two studies can be reasonably made.

The cost of equity capital used in this study was computed using the capital asset pricing model and ten years of monthly returns data as follows. First, predictions of the monthly cost of equity were computed. For example, for the month of January 1996, monthly returns data covering the period beginning January 1987 through December 1995 were used in a firm specific CAPM regression. The resulting parameter estimates and actual market returns from January 1996 were used to get a predicted value of the firm-specific cost of capital estimate for January 1996. Next, the process was repeated for each month of the fiscal year. Finally, to annualize the data, the predicted costs of
capital for each month of the fiscal year were summed to arrive at a cumulative 12-month ex ante cost of equity capital for each firm and each fiscal year.\(^7\)

**Information Asymmetry**

In addition to the variables required for testing H1, tests of H2 further require a firm-specific measure of the level of information asymmetry among equity investors. This study measures information asymmetry using bid/ask spreads. Market makers sell stocks at a higher price (ask price) than the price for which they buy stocks (bid price). The differential, known as the bid/ask spread, reflects the market maker’s need to cover transaction costs as well as a fee for providing liquidity; however, the differential also reflects the risk to the market maker of trading with parties in possession of a superior information set regarding the firm. Greater information risk imposed on the market maker by this information asymmetry results in greater bid/ask spreads. Therefore, larger values of the bid/ask spread are interpreted as being indicative of greater information asymmetry.

Daily, closing ask prices and daily, closing bid prices were obtained from CRSP for each firm in the sample. The firm-specific, daily bid/ask spread was computed by subtracting the closing bid price from the closing ask price. The data were annualized by

\(^7\) Note that the Basu measure of returns described in the previous section is very different because it represents actual ex post monthly returns at a point in time. The estimated cost of equity capital is an ex ante measure. Rather than actual returns, it is an estimate of future returns based on ten years of historical return data.
computing the arithmetic mean of daily bid/ask spreads for all trading days of the firm’s fiscal year.

**Control Variables**

Several variables known from capital asset pricing theory to be associated with risk are used as controls to help isolate the effect of conservative reporting on information risk and consequently the firm’s cost of equity capital. These control variables include the firm’s CAPM beta, size, and book-to-market ratio.

The firm’s beta ($BETA$) is measured using the Capital Asset Pricing Model and ten years of monthly returns data ending in each terminal year 1996 through 2005. A minimum of 24 months of returns data from each 10 year period is required to estimate ($BETA$).

The size of the firm is also used as a measure of risk associated with investment in the firm. Size ($SIZE$) is measured as the natural log of the market value of equity at the end of year $t-1$. Market values are obtained from Compustat for years 1995 through 2004. Note that all logarithms in this study are natural logs.

A third risk proxy used in this study to test primary hypotheses is the lagged value of the firm’s book-to-market ratio ($BTK$). $BTK$ is measured as the log of the firm’s book-to-market ratio at time $t-1$. Again, accounting data is obtained from Compustat for the years 1995 through 2004.

Panel A of Table 4 reports descriptive statistics for the full sample. For purposes of description, CONSRATIO is reported in Panel A of Table 4 which represents raw
values of conservatism calculated using the quotient illustrated by Equation (2) where these raw values have been winsorized to the 1st and 99th percentiles. To eliminate concerns about the effect of outliers, decile ranks (CONS) of this measure are used in subsequent hypothesis testing. The mean (median) value of conservatism for this study’s sample is .244 (.484). Although the magnitude of conservatism reported in Table 4 is smaller than those reported in prior studies using cross-sectional regressions (Basu, 1997; Givoly & Hayn, 2000), results are comparable with Francis et al. (2004) which also employs firm-specific regressions.

Beta coefficients, from the CAPM, less than one indicate firms or portfolios that are less risky than an equal weighted market portfolio which would have a beta coefficient equal to one. Likewise, beta coefficients, from the CAPM model, greater than one indicate firms or portfolios that are more risky than the market as a whole. Table 4, Panel A shows the mean (median) value of BETA for the full sample to be .842 (.820). This is consistent with data restrictions described earlier resulting in a bias toward larger, more stable firms as size and risk tend to be negatively correlated.

Table 4, Panel B shows the results of t-tests regarding whether very conservative firms differ from non-conservative firms on other measures of risk used in subsequent hypothesis testing. The results in Panel B were obtained by characterizing firms as high conservatism or low conservatism firms using the pooled sample median (.484) of raw conservatism scores calculated using Equation (2). Highly conservative firms do not differ from less conservative firms in BETA, SIZE, or BTK. However, highly

\[^{8}\text{Before winsorizing, the mean value of conservatism is 189.21 consistent with the presence of conservatism among U.S. firms and also consistent with Table 3.}\]
conservative firms do differ in their cost of capital. These results suggest that conservatism may be related to information quality/risk and that information risk is a dimension of total risk not captured by \( BETA \), \( SIZE \), and \( BTK \).

Table 5 shows univariate correlations between key variables used in subsequent hypothesis testing. The top half of the diagonal shows Pearson correlations, while the bottom half of the diagonal shows Spearman correlations. Note that conservatism (CONS) appears uncorrelated with a firm’s cost of equity capital; however, the correlation coefficient only measures the strength of the linear relationship between variables. This study posits that while there is a relationship between conservatism and the cost of equity capital—it is not a linear one.
Table 4

Panel A: Descriptive Statistics for the Full Sample (12,794 firm years)

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Std Dev</th>
<th>25\textsuperscript{th} Percentile</th>
<th>Median</th>
<th>75\textsuperscript{th} Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>BETA</td>
<td>0.842</td>
<td>0.476</td>
<td>0.498</td>
<td>0.820</td>
<td>1.152</td>
</tr>
<tr>
<td>SIZE</td>
<td>6.000</td>
<td>2.018</td>
<td>4.515</td>
<td>6.091</td>
<td>7.544</td>
</tr>
<tr>
<td>BTK</td>
<td>-0.610</td>
<td>0.737</td>
<td>-0.986</td>
<td>-0.567</td>
<td>-0.177</td>
</tr>
<tr>
<td>CONSRAATIO</td>
<td>0.244</td>
<td>36.170</td>
<td>-2.345</td>
<td>0.484</td>
<td>3.731</td>
</tr>
<tr>
<td>CONS</td>
<td>5.500</td>
<td>2.870</td>
<td>3.000</td>
<td>6.000</td>
<td>8.000</td>
</tr>
<tr>
<td>EARN</td>
<td>0.029</td>
<td>0.178</td>
<td>0.021</td>
<td>0.058</td>
<td>0.086</td>
</tr>
</tbody>
</table>

Panel B: Tests for Differences in Means for High versus Low Conservatism Firms
(High Conservatism firms are those above the 50\textsuperscript{th} percentile of CONS)

<table>
<thead>
<tr>
<th></th>
<th>Mean - High Conservatism</th>
<th>Mean - Low Conservatism</th>
<th>Difference</th>
<th>t-stat</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>COC</td>
<td>15.213</td>
<td>14.410</td>
<td>.803</td>
<td>2.77</td>
<td>.006***</td>
</tr>
<tr>
<td>BETA</td>
<td>0.837</td>
<td>0.846</td>
<td>-.009</td>
<td>-1.12</td>
<td>.263</td>
</tr>
<tr>
<td>SIZE</td>
<td>6.024</td>
<td>5.970</td>
<td>-.054</td>
<td>1.49</td>
<td>.136</td>
</tr>
<tr>
<td>BTK</td>
<td>-0.612</td>
<td>-0.608</td>
<td>-.004</td>
<td>-3.00</td>
<td>.763</td>
</tr>
<tr>
<td>EARN</td>
<td>0.035</td>
<td>0.023</td>
<td>.012</td>
<td>3.97</td>
<td>&lt;.001***</td>
</tr>
</tbody>
</table>

* significant at the $\alpha = .10$ level of significance  
** significant at the $\alpha = .05$ level of significance  
*** significant at the $\alpha = .01$ level of significance

$COC$ = cost of equity capital measured as the predicted cost of capital from the capital asset pricing model using 10 years of monthly returns data where at least 24 months were required for a prediction to be included

$BETA$ = the capital asset pricing model beta obtained using 10 years of monthly data where is least 24 months of data was required to estimate $BETA$

$SIZE$ = the log of the one year lagged market value of equity

$BTK$ = log of the firm’s lagged book-to-market ratio

$CONSRAATIO$ = ratio of parameter estimates as shown in model (2) where Conservatism = $[BETA_0 + BETA_1]/\beta_0]$. Note that $\beta_0$ and $BETA_1$ come from the Basu regression shown in model (1)

$CONS$ = the decile ranks of $CONSRAATIO$

$EARN$ = earnings before extraordinary items divided by the beginning of year market value of equity
Table 5

Univariate Correlations for the Full Sample (12,794 firm-years) Pearson and Spearman Correlations are Above and Below the Diagonal Respectively

<table>
<thead>
<tr>
<th></th>
<th>EARN</th>
<th>COC</th>
<th>CONSRATIO</th>
<th>CONS</th>
<th>BETA</th>
<th>SIZE</th>
<th>BTK</th>
</tr>
</thead>
<tbody>
<tr>
<td>EARN</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COC</td>
<td>.143</td>
<td>&lt;.001***</td>
<td>.007</td>
<td>.016</td>
<td>-.005</td>
<td>-.012</td>
<td>-.215</td>
</tr>
<tr>
<td>CONSRATIO</td>
<td>.018</td>
<td>.090*</td>
<td>.994</td>
<td>&lt;.001***</td>
<td>-.015</td>
<td>.014</td>
<td>.003</td>
</tr>
<tr>
<td>CONS</td>
<td>.019</td>
<td>.029**</td>
<td>.004</td>
<td>.994</td>
<td>-.019</td>
<td>.243</td>
<td>-.143</td>
</tr>
<tr>
<td>BETA</td>
<td>-.127</td>
<td>&lt;.001***</td>
<td>.156</td>
<td>-.016</td>
<td>.248</td>
<td>-.403</td>
<td></td>
</tr>
<tr>
<td>SIZE</td>
<td>.063</td>
<td>&lt;.001***</td>
<td>.025</td>
<td>.011</td>
<td>.131</td>
<td>&lt;.001***</td>
<td>-.431</td>
</tr>
<tr>
<td>BTK</td>
<td>.096</td>
<td>&lt;.001***</td>
<td>-.238</td>
<td>-.003</td>
<td>-.159</td>
<td>&lt;.001***</td>
<td></td>
</tr>
</tbody>
</table>

* significant at the α = .10 level of significance
** significant at the α = .05 level of significance
*** significant at the α = .01 level of significance

COC = cost of equity capital measured as the predicted cost of capital from the capital asset pricing model using 10 years of monthly returns data where at least 24 months were required for a prediction to be included.

BETA = the capital asset pricing model beta obtained using 10 years of monthly data where is least 24 months of data was required to estimate BETA.

SIZE = the log of the one year lagged market value of equity.

BTK = log of the firm’s lagged book-to-market ratio.

CONSRATIO = ratio of parameter estimates as shown in model (2) where Conservatism = [(β0 + β1) ÷ β0]. Note that β0 and β1 come from the Basu regression shown in model (1).

CONS = the decile ranks of CONSRATIO.

EARN = earnings before extraordinary items divided by the beginning of year market value of equity.
DESCRIPTION OF HYPOTHESES TESTS

H1a predicts that information risk and consequently the cost of equity capital is decreasing in conservatism while H1b predicts that it is decreasing at a decreasing rate. These predictions are tested using Equation (3).

\[
COC_{it} = \lambda_0 + \lambda_1 BETA_{it} + \lambda_2 SIZE_{it} + \lambda_3 BTK_{it} + \lambda_4 CONS_{it} + \lambda_5 CONS2_{it} + \epsilon_{it} \tag{3}
\]

where: \(COC\) = cost of equity capital measured as the predicted cost of capital from the capital asset pricing model using 10 years of monthly returns data where at least 24 months were required for a prediction to be included

\(BETA\) = the capital asset pricing model beta obtained using 10 years of monthly data where at least 24 months of data was required to estimate \(BETA\)

\(SIZE\) = the log of the one year lagged market value of equity

\(BTK\) = log of the firm’s lagged book-to-market ratio

\(CONS\) = the decile ranks of the ratio of parameter estimates shown in Equation (2) where Conservatism = \([(\beta_0 + \beta_1) - \beta_0]\). Note that \(\beta_0\) and \(\beta_1\) come from the Basu regression shown in Equation (1)

\(CONS2\) = the square of \(CONS\)

The coefficient on \(CONS\) (\(\lambda_4\)) reflects the principal effect of conservatism on information risk. If conservatism reduces information risk and consequently the cost of equity capital as predicted by H1a then the coefficient (\(\lambda_4\)) is expected to be negative. The negative coefficient would be interpreted to mean that, on average, increases in conservatism result in decreases in information risk and are therefore met with decreases in the cost of equity capital. H1b further predicts that information risk decreases at a decreasing rate. This is due, in part, to extremes of conservatism putting in jeopardy the
potential for accounting earnings to contain any new good news previously unavailable to the market. Therefore, \((\lambda_5)\) is expected to be positive. Stated differently, a coefficient on the squared conservatism term which is opposite in sign from the coefficient on the linear term will be interpreted to mean that the effect of conservatism on information risk is diminishing as the level of conservatism becomes increasingly extreme.

Next, the degree of conservatism employed in reporting good and bad news are evaluated separately. The ratio measure of conservatism \([(\beta_0 + \beta_1) \div \beta_0]\) obtained from the Basu regression, shown by Equation (1), simultaneously evaluates the effects of conservatively reporting good and bad news (bias). That is, the ratio relates how conservative the reporting of bad news is by using the degree of conservatism in reporting good news as a benchmark. Holding \((\beta_1)\) constant, firms with smaller values of \((\beta_0)\) are considered more conservative because they are more conservative (less aggressive) in the reporting of good news. Likewise, holding \((\beta_0)\) constant, firms with larger values of \((\beta_1)\) are considered more conservative because they are more conservative (more aggressive) in the reporting of bad news. Because conservatism with respect to bad news results from providing more information and conservatism with respect to good news results from providing less information, it is certainly plausible that conservatism with respect to good and bad news may be priced differently. Therefore, Equation (4) is used to disaggregate the potentially different pricing effects of conservatively reported good and bad news.
COC_{it} = \theta_0 + \theta_1BETA_{it} + \theta_2SIZE_{it} + \theta_3BTK_{it} + \theta_4GNEWS_{it} + \theta_5GNEWS2_{it} + \theta_6BNEWS_{it} \\
+ \theta_7BNEWS2_{it} + \epsilon_{it} \quad (4)

where:  
COC = cost of equity capital measured as the predicted cost of capital from the capital asset pricing model using 10 years of monthly returns data where at least 24 months were required for a prediction to be included

BETA = the capital asset pricing model beta obtained using 10 years of monthly data where is least 24 months of data was required to estimate BETA

SIZE = the log of the one year lagged market value of equity

BTK = log of the firm’s lagged book-to-market ratio

GNEWS = the yearly decile ranks of the parameter estimates on positive returns (\beta_0) from the Equation (1) Basu regressions where (\beta_0) reflects the degree to which accounting earnings captures good news in the market. The decile ranks have been reverse coded so that larger values reflect greater conservatism.

GNEWS2 = The square of GNEWS

BNEWS = the yearly decile ranks of the sum of the parameter estimates (\beta_0 + \beta_1) from the Equation (1) Basu regressions which reflects the degree to which accounting earnings captures bad news in the market. Larger values of the decile ranks reflect greater conservatism.

BNEWS2 = The square of BNEWS

Consistent with H1a, the cost of capital is expected to be lower for firms that report more conservatively regardless of the nature of the news. Consequently, H1c predicts that increasing conservatism in the reporting of apparent bad news reduces information risk. Likewise H1e predicts that increasing conservatism in the reporting of apparent good news reduces information risk. Consequently, the coefficients from Equation (4) on good news (\theta_4) and bad news (\theta_6) are expected to be negative. Further, because the effect of conservatism on information risk is predicted to diminish as it
moves toward the extreme, the coefficients on the squared terms of good and bad news, $(\theta_5)$ and $(\theta_7)$ respectively, are expected to be positive. Tests of the H1 series of hypotheses reveal the global effect of conservatism on information risk without considering potential cross-sectional differences in the effect due to differing levels of information asymmetry across firms.

LaFond and Watts (2008) suggests and consequently H2a predicts that the rate at which conservatism reduces information risk is increasing as information asymmetry among equity traders increases primarily because of the effect of conservatism on information quality. However, other scholarship suggests and consequently H2b predicts that the rate at which conservatism reduces information risk is decreasing in information asymmetry because of the effect of conservatism on information quantity.

In testing these hypotheses, this study, like LaFond and Watts (2008), uses bid/ask spreads as its measure of information asymmetry.\(^9\) To validate their use as a measure of information asymmetry, the cost of capital was regressed on bid/ask spreads, along with the CAPM beta, size, and book-to-market ratio (not shown). The coefficient on bid/ask spreads is significantly positive (t-stat = 3.56) indicating that as information asymmetry increases, risk also increases as does the cost of equity capital. In tests of H2, the decile ranks of bid/ask spreads are used to stratify the sample into information asymmetry deciles and running annual cross-sectional regressions on each decile which would result in approximately 30 firm-year observations per regression. In addition, the time-series data requirements already result in a sample of relatively large, survivor firms which may limit generalizability. The additional data requirement of PIN scores exacerbates this problem because firms with PIN scores are significantly larger and have a lower cost of capital relative to the rest of the sample (significant at $\alpha = .001$).

\(^9\) LaFond and Watts (2008) also use PIN scores to proxy for information asymmetry. However, the methodology used in this study does not lend itself to the use of PIN scores. The use of PIN scores coupled with the other data requirements of this study would result in a sample of 2,973 firm years representing only 1,025 unique firms. Tests of H2 require partitioning the sample into information asymmetry deciles and running annual cross-sectional regressions on each decile which would result in approximately 30 firm-year observations per regression. In addition, the time-series data requirements already result in a sample of relatively large, survivor firms which may limit generalizability. The additional data requirement of PIN scores exacerbates this problem because firms with PIN scores are significantly larger and have a lower cost of capital relative to the rest of the sample (significant at $\alpha = .001$).
asymmetry deciles where the tenth decile represents the highest level of information asymmetry.

I simultaneously test H2a and H2b by running regressions on each information asymmetry decile separately as shown in Equation (3). Next, plots are used to check for trends in the effect of conservatism on information risk predicted by H2a and H2b. Note that because the effect of conservatism on information risk is predicted to be curvilinear, the rate of the change in the cost of capital due to conservatism is not simply the coefficient on its linear term but rather the partial derivative of Equation (3) with respect to conservatism. H2a and H2b predict differences in this partial derivative between high and low information asymmetry firms. The partial derivative of Equation (3) with respect to conservatism is given by \[ \lambda_4 + (2\lambda_5 \ast CONS) \].

Lastly, the significance of trends in the effect of conservatism on information risk is tested using regressions as shown by Equation (5). H2a predicts that the rate at which conservatism reduces information risk increases as information asymmetry among equity traders increases. In other words, the partial derivative of Equation (3) with respect to conservatism should be negative and increasing in magnitude as information asymmetry increases. Therefore, H2a predicts that plots of the partial derivative across information asymmetry deciles will be downward sloping and that \( (\omega_1) \) in Equation (5) will be negative. In contrast, H2b predicts that the rate at which conservatism reduces information risk decreases as information asymmetry among equity traders increases. In other words, the partial derivative of Equation (3) with respect to conservatism should be negative but decreasing in magnitude as information asymmetry increases. Therefore,
H2b predicts that plots of the partial derivative across information asymmetry deciles will be upward sloping and that \((\omega_1)\) in Equation (5) will be positive.\(^{10}\)

\[
P_D_{CONS} = \omega_0 + \omega_1IA_{DECILE} + \varepsilon
\]

where: \(PD_{CONS}\) = for each information asymmetry decile, the partial derivative of cross-sectional regressions shown by Equation (3) with respect to conservatism calculated as 
\([\lambda_4 + (2 * \lambda_5 * CONS)]\)

\(IA_{DECILE}\) = the decile rank of information asymmetry where information asymmetry is measured using bid/ask spreads. Decile 10 represents the highest level of information asymmetry.

As previously described, differences in conservatism across firms may be driven by the reporting of good news or the reporting of bad news. If one firm is measured by Equation (2) as more conservative than another, it may be because the firm is more conservative in the degree to which it reports good news (less news) or because it is more conservative in the degree to which it reports bad news (more news). The rate at which conservatism reduces information risk, especially at higher levels of information asymmetry, may be driven by its impact on the ex ante ratio of private to public information—the quantity of information made public via conservatism.

\(^{10}\) As an alternative to regressions (5), (6), and (7), an incremental R\(^2\) test was used but not reported. The test used Equation (3) as the reduced model and added two variables to arrive at the full model. The two variables were the interactions of bid/ask spreads with CONS and CONS\(^2\). F-test found the increase in R\(^2\) to be significant. However, the coefficients on the interaction terms were not significant. This is likely due to very high muticollinearity among variables. Variance Inflation Factors for the interaction terms were 92 and 55. The resulting awkward interpretation of results caused me to favor the research design shown in the study.
If cross-sectional differences in the conservatism induced bias measured by Equation (2) are driven by how good news is reported, greater conservatism decreases the quantity of information in accounting. Therefore, H2c predicts that the rate at which conservatively reported good news decreases information risk decreases as information asymmetry increases. If cross-sectional differences in the conservatism bias measured by Equation (2) are driven by how bad news is reported, greater conservatism increases the quantity of information in accounting. Therefore, H2d predicts that the rate at which conservatively reported bad news decreases information risk increases as information asymmetry increases.

H2c and H2d are tested simultaneously by running cross-sectional regressions on each information asymmetry decile as shown in Equation (4). Next, plots are used to check for trends in the partial derivatives of Equation (4) with respect to good news and bad news as predicted by H2c and H2d respectively. Finally, regressions shown by Equations (6) and (7) are used to test the significance of the trend. H2c predicts that the rate at which conservatively reported good news decreases information risk decreases as information asymmetry increases because the result is that the private information giving rise to information asymmetry persists in being private as does the opportunity to exploit it. Therefore, H2c predicts that plots of the partial derivative of Equation (4) with respect to good news \((GNEWS)\) across information asymmetry deciles will be upward sloping and that \((\gamma_1)\) in Equation (6) will be positive. Likewise, H2d predicts that plots of the partial derivative of Equation (4) with respect to bad news \((BNEWS)\) across information
asymmetry deciles will be downward sloping and that \((v_1)\) from Equation (7) will be negative.

\[
PD_{GNEWS} = \gamma_0 + \gamma_1IA_{DECILE} + \varepsilon
\]

\[
PD_{BNEWS} = \nu_0 + \nu_1IA_{DECILE} + \varepsilon
\]

where: \(PD_{GNEWS}\) = for each information asymmetry decile, the partial derivative of cross-sectional regressions shown by Equation (4) with respect to good news conservatism calculated as \([\theta_\delta + (2 * \theta_\delta)]\)

\(PD_{BNEWS}\) = for each information asymmetry decile, the partial derivative of cross-sectional regressions shown by Equation (4) with respect to bad news conservatism calculated as \([\theta_\varepsilon + (2 * \theta_\varepsilon)]\)

\(IA_{DECILE}\) = the decile rank of information asymmetry where information asymmetry is measured using bid/ask spreads. Decile 10 represents the highest level of information asymmetry.

To summarize, H1 level hypotheses are tested using annual, cross-sectional regressions of the ex ante cost of equity capital on various control variables known to be associated with risk, decile ranks of conservatism, and squared decile ranks of conservatism. The sign of the coefficient on conservatism will reflect the overarching effect of conservatism on information risk. The squared term is included because it is hypothesized that the effect of conservatism on information risk is different at different values of conservatism.

H2 level hypotheses are tested using the same regressions as those used to test H1, but the regressions are run separately for each quantile rank of information asymmetry. By allowing different coefficients on conservatism and its squared value at
each level of information asymmetry, the effect of conservatism on information risk can be compared across information asymmetry deciles.
CHAPTER IV
RESULTS

This chapter begins by presenting the results of primary hypotheses tests. Tests results are followed with a supplemental analysis describing the optimal level of conservatism in the equity market environment.

RESULTS OF TESTING H1 HYPOTHESES

Hypothesis H1a predicts that information risk in equity markets decreases with increases in accounting conservatism because of the ability of conservatism to mitigate the potentially harmful effects of information asymmetry among traders. Hypothesis H1b further predicts that the beneficial information effect of conservatism in not linear but rather diminishes as conservatism moves toward the extreme. In other words, information risk decreases as accounting conservatism increases—but at a decreasing rate. Results of these hypotheses tests are shown in Table 6, Figure 1, Table 7, and Figure 2 using the ex ante cost of equity capital to proxy for information risk.

Table 6 shows the mean cost of equity capital for portfolios formed to have equal levels of systematic risk, using Beta coefficients from the Capital Asset Pricing Model, but increasing levels of conservatism in accounting reports. Portfolios were formed using
the following procedure for each year of the sample under study. First, each year of the sample was partitioned into risk based quintiles using firm-specific CAPM Beta coefficients where the fifth quintile represented the greatest systematic risk (largest CAPM Beta). Second, each risk quintile was partitioned into conservatism based deciles where the tenth decile represented the most conservative firms. Finally, all equivalent decile ranks of conservatism were combined to form portfolios. Each portfolio has approximately equal levels of systematic risk because one fifth of each portfolio comes from each of the five quintiles of systematic risk.

Table 6 shows the pattern in the cost of capital due to increasing levels of conservatism. Firms in the first portfolio, representing the least conservative firms, have an average ex ante cost of equity capital equal to 17.27%. Moving through increasingly conservative portfolios to the fifth conservatism portfolio results in a monotonic decrease in the average ex ante cost of equity capital. This result is consistent with H1a. In addition, moving from the fifth through the tenth conservatism portfolios results in a nearly monotonic increase in the average cost of equity with the ninth portfolio being the only exception. This result is consistent with H1b which predicts that improvements in the information environment due to conservatism diminish as conservatism approaches its extreme. In fact, Table 6 further shows that there is some bliss point, or optimal level, of conservatism after which increasing conservatism is damaging to the information environment resulting in a higher cost of equity. Figure 1 is a graphical representation of Table 6 showing that information risk, as proxied by the mean cost of equity capital, decreases in conservatism but at a decreasing rate until reaching an optimal level of
conservatism after which information risk appears to increase with increasing conservatism. The optimal level of conservatism is discussed further in supplementary analysis. Figure 1 also shows the upper and lower bounds of a 95% confidence interval for the mean cost of equity for each conservatism portfolio.

Table 6

<table>
<thead>
<tr>
<th>Conservatism Decile</th>
<th>Portfolio Mean CAPM Beta</th>
<th>Portfolio Mean Cost of Equity</th>
<th>Std Error of The Portfolio Mean Cost of Equity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.85</td>
<td>17.27%</td>
<td>0.4719</td>
</tr>
<tr>
<td>2</td>
<td>0.84</td>
<td>15.67%</td>
<td>0.4695</td>
</tr>
<tr>
<td>3</td>
<td>0.84</td>
<td>14.65%</td>
<td>0.4597</td>
</tr>
<tr>
<td>4</td>
<td>0.84</td>
<td>12.59%</td>
<td>0.4575</td>
</tr>
<tr>
<td>5</td>
<td>0.84</td>
<td>12.56%</td>
<td>0.4492</td>
</tr>
<tr>
<td>6</td>
<td>0.84</td>
<td>13.36%</td>
<td>0.4332</td>
</tr>
<tr>
<td>7</td>
<td>0.84</td>
<td>14.42%</td>
<td>0.4478</td>
</tr>
<tr>
<td>8</td>
<td>0.84</td>
<td>15.47%</td>
<td>0.4404</td>
</tr>
<tr>
<td>9</td>
<td>0.84</td>
<td>15.40%</td>
<td>0.4584</td>
</tr>
<tr>
<td>10</td>
<td>0.85</td>
<td>16.88%</td>
<td>0.4804</td>
</tr>
</tbody>
</table>

*Portfolios are formed so that they have equal levels of risk as measured by the CAPM Beta coefficient but each successive portfolio is on average more conservative than the last*
Figure 1

The Mean Cost of Equity Capital for each Decile Rank of Conservatism After Controlling for Systematic Risk Using the Firm’s CAPM Beta

In further testing, Table 7, Panel A presents the results of the Equation (3) regression, while Panel B reports the results of the Equation (4) regression. In order to mitigate concerns regarding time-series dependencies in the data, Table 7 reports the results of annual, cross-sectional regressions using the time-series means of parameter estimates and standard errors. Inferences are robust to the use of Fama-Macbeth (1973) and Newey-West (1987) standard error correction methods.

Panel A presents the results of three regressions where the first two are modifications of Equation (3). First, a base model is shown where the implied cost of
equity is regressed on three variables known from capital asset pricing theory to be associated with risk (the CAPM Beta, size, and the book-to-market ratio). The CAPM beta coefficient has been used as a measure of market risk since the 1960s. The base model regression shows that risk, as proxied by the cost of equity, is increasing ($\lambda_1 = 2.7324$, t-statistic = 4.61) in BETA from the CAPM. The base model further shows that the cost of equity is a decreasing function of size ($\lambda_2 = -0.6541$, t-statistic = -4.35). This is thought to be due to the fact that larger firms generally tend to be large because they have proven records of survival. Also, to the extent that larger firms are more diversified, they also tend to be more stable. Both of these results are consistent with the Francis et al. (2004) study. One difference in the Francis et al. sample and the sample under study is the sign of the coefficient on the book-to-market ratio (BTK), which is negative ($\lambda_3 = -5.0927$, t-statistic = -12.59) in the sample under study. Either outcome can be supported by prior scholarship. While some finance studies have found a positive correlation between book-to-market ratios and realized returns, studies in behavioral finance have found negative correlations between those ratios and expected or ex ante returns.

Next, Panel A shows the results of adding conservatism to the base model. The coefficient on conservatism reflects the strength of any linear relationship between the ex ante cost of equity and the decile rank of conservatism. The coefficient is not significantly different from zero ($\lambda_4 = 0.0281$, t-statistic = 0.30) which is consistent with Francis et al. (2004). Results of this regression imply that conservatism is unimportant to equity investors as it does not appear to be priced. However, this result may also be
observed if the relationship between conservatism and information risk is not linear in nature.

Lastly, Panel A shows the results of the full model (3) regression which includes the quadratic term on conservatism in addition to its linear term. Inclusion of the quadratic term allows the modeling of a curved relationship between information risk and accounting conservatism. The coefficient on conservatism is significantly negative ($\lambda_4 = -2.0547$, t-statistic = -4.96) in Equation (3) which supports H1a. Namely, information risk, measured using the ex ante cost of equity, decreases with increases in accounting conservatism. In addition, results of the Equation (3) regression support H1b. The coefficient on the quadratic term of conservatism is opposite in sign from the coefficient on conservatism ($\lambda_5 = 0.1894$, t-statistic = 5.16). The positive sign means that while the cost of equity is decreasing in conservatism, it is doing so at a decreasing rate.

This study defines conservatism as an asymmetric verifiability requirement for the inclusion of good and bad news in accounting reports. Stated differently, conservatism is a bias in the reporting of good and bad news that depends on the nature of the news. The ratio measure of conservatism used in Equation (3) shows that the bias is priced. However, the ratio, or bias, has two informational dimensions when used in comparisons across firms. That is, the ratio shown by Equation (2) and used in Equation (3), evaluates a firm as more conservative if its accounting reports reflect either less of the contemporaneous good news or more of the contemporaneous bad news available in the market.
Table 7, Panel B uses Equation (4) to evaluate these two dimensions of conservatism separately and determine whether both dimensions drive the pricing of conservatism equally. The responsiveness of accounting to good news is measured using decile ranks of the denominator in Equation (2). However, the ranks are reverse coded to reflect the fact that increasing values of the denominator indicate more aggressive reporting of good news. The reverse coding makes interpretation consistent with conservative reporting of bad news. That is, larger values of GNEWS indicate greater conservatism with respect to the reporting of good news. The responsiveness of accounting to bad news is measured using decile ranks of the numerator in Equation (2). Larger values of BNEWS indicate greater conservatism with respect to the reporting of bad news.

When Equation (4) is modified by omitting the quadratic terms for good and bad news conservatism, neither of the linear terms is significant. This result is the same whether the cost of equity is regressed on good and bad news independently (as shown in Panel B) or in conjunction with one another. When quadratic terms are included, as is shown in Equation (4), both dimensions of conservatism seem to be priced. The coefficient on BNEWS is significantly negative ($\theta_6 = -0.7723$, t-statistic = -1.85) which implies that the cost of equity is decreasing as conservatism in the reporting of bad news increases which supports H1c. Also, the positive coefficient on the quadratic term BNEWS$^2$ ($\theta_7 = 0.0692$, t-statistic = 1.86) shows that the cost of equity is decreasing at a decreasing rate which supports H1d. Likewise, the coefficient on GNEWS is significantly negative ($\theta_4 = -2.6826$, t-statistic = -6.34) which implies that the cost of
equity is decreasing as conservatism in the reporting of good news increases which supports H1e. In addition, the positive coefficient on the quadratic term GNEWS2 ($\theta_5 = 0.2502$, t-statistic = 6.63) shows that the cost of equity is decreasing at a decreasing rate which supports H1f.

Figure 2 graphically displays the effects of both dimensions of conservatism as well as the two taken together. Using decile ranks of each conservatism measure makes it easy to show their effects by multiplying the decile rank of conservatism and its square by their respective coefficients. All three measures of conservatism exhibit the same curvilinear pattern, again supporting H1a, H1b, H1c, H1d, H1e, and H1f. Conservatively reporting either type of news, good or bad, has the same effect as the ratio measure which captures bias. That is, it appears inconsequential whether conservatively biased reporting (CONS), as measured by Equation (2), stems from being more conservative than other firms with respect to good news (GNEWS) or with respect to bad news (BNEWS); the effect is to decrease information risk at a decreasing rate to some optimal point after which information risk increases.
Table 7
Panel A: Results of Annual Cross-Sectional Regressions of the Ex Ante Cost of Equity on Risk Proxies and Accounting Conservatism

\[ COC_{it} = \lambda_0 + \lambda_1 BETA_{it} + \lambda_2 SIZE_{it} + \lambda_3 BTK_{it} + \lambda_4 CONS_{it} + \lambda_5 CONS_2_{it} + \epsilon_{it} \]  
(Eq. 3)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Estimate</th>
<th>t-stat</th>
<th>Parameter</th>
<th>Estimate</th>
<th>t-stat</th>
<th>Parameter</th>
<th>Estimate</th>
<th>t-stat</th>
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<td>14.19***</td>
<td>12.9272</td>
<td>12.23***</td>
<td>17.1664</td>
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<tr>
<td>(\lambda_1)</td>
<td>2.7324</td>
<td>4.61***</td>
<td>2.7359</td>
<td>4.62***</td>
<td>2.6670</td>
<td>4.54***</td>
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<tr>
<td>(\lambda_2)</td>
<td>-0.6541</td>
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<td>(\lambda_3)</td>
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<td>0.0281</td>
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</tbody>
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Adj R² = .31

n = 12,794

Global F-statistic = 262.3*** 196.9*** 166.4***

* significant at the \(\alpha = .10\) level of significance

** significant at the \(\alpha = .05\) level of significance

*** significant at the \(\alpha = .01\) level of significance

\(COC\) = cost of equity capital measured as the predicted cost of capital from the capital asset pricing model using 10 years of monthly returns data where at least 24 months were required for a prediction to be included.

\(BETA\) = the capital asset pricing model beta obtained using 10 years of monthly data where is least 24 months of data was required to estimate \(BETA\).

\(SIZE\) = the log of the one year lagged market value of equity.

\(BTK\) = log of the firm’s lagged book-to-market ratio.

\(GNEWS\) = the yearly decile ranks of the parameter estimates on positive returns (\(\beta_0\)) from the model (1) Basu regressions where (\(\beta_0\)) reflects the degree to which accounting earnings captures good news in the market. The decile ranks have been reverse coded so that larger values reflect greater conservatism.

\(GNEWS_2\) = The square of GNEWS.

\(BNEWS\) = the yearly decile ranks of the sum of the parameter estimates (\(\beta_0 + \beta_1\)) from the model (1) Basu regressions which reflects the degree to which accounting earnings captures bad news in the market. Larger values of the decile ranks reflect greater conservatism.

\(BNEWS_2\) = The square of BNEWS.
Table 7 Continued
Panel B: Results of Annual Cross-Sectional Regressions of the Ex Ante Cost of Equity on Risk Proxies and Conservatism with Respect to Good and Bad News

\[
COC_{it} = \theta_0 + \theta_1 BETA_{it} + \theta_2 SIZE_{it} + \theta_3 BTK_{it} + \theta_4 GNEWS_{it} + \theta_5 GNEWS^2_{it} + \theta_6 BNEWS_{it} + \theta_7 BNEWS^2_{it} + \epsilon_{it}
\]

(Eq. 4)

<table>
<thead>
<tr>
<th>Parameter Estimate</th>
<th>t-stat</th>
<th>Parameter Estimate</th>
<th>t-stat</th>
<th>Parameter Estimate</th>
<th>t-stat</th>
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<td>12.23***</td>
<td>13.139</td>
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<td>$\theta_1$</td>
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<td>2.7377</td>
<td>4.62***</td>
<td>2.7952</td>
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<td>$\theta_2$</td>
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<td>-0.6573</td>
<td>-4.36***</td>
<td>-0.7823</td>
</tr>
<tr>
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<td>-5.0900</td>
<td>-12.57***</td>
<td>-4.8256</td>
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<td></td>
<td>0.2502</td>
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<td></td>
<td></td>
<td>0.0692</td>
<td>1.86*</td>
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</tr>
</tbody>
</table>

Adj R² = .314       

n = 12,794

Global F-statistic = 197.0*** 196.9*** 123.4***

* significant at the $\alpha = .10$ level of significance
** significant at the $\alpha = .05$ level of significance
*** significant at the $\alpha = .01$ level of significance

$COC_{it}$ = cost of equity capital measured as the predicted cost of capital from the capital asset pricing model using 10 years of monthly returns data where at least 24 months were required for a prediction to be included

$BETA_{it}$ = the capital asset pricing model beta obtained using 10 years of monthly data where is least 24 months of data was required to estimate $BETA$

$SIZE_{it}$ = the log of the one year lagged market value of equity

$BTK_{it}$ = log of the firm’s lagged book-to-market ratio

$GNEWS_{it}$ = the yearly decile ranks of the parameter estimates on positive returns ($\beta_0$) from the model (1) Basu regressions where ($\beta_0$) reflects the degree to which accounting earnings captures good news in the market. The decile ranks have been reverse coded so that larger values reflect greater conservatism.

$GNEWS^2_{it}$ = The square of $GNEWS$

$BNEWS_{it}$ = the yearly decile ranks of the sum of the parameter estimates ($\beta_0 + \beta_1$) from the model (1) Basu regressions which reflects the degree to which accounting earnings captures bad news in the market. Larger values of the decile ranks reflect greater conservatism.

$BNEWS^2_{it}$ = The square of $BNEWS$
RESULTS OF TESTING H2 HYPOTHESES

Hypothesis H2a predicts that the ability of conservatism to reduce information risk in equity markets is enhanced as information asymmetry increases due to its impact on information quality. In contrast, H2b predicts that the ability of conservatism to reduce information risk in equity markets is diminished as information asymmetry increases due to its impact on information quantity. In other words, both H2a and H2b are predicated on the assumption that the costs of equity capital is decreasing in
conservatism. However, H2a predicts that it is doing so at an increasing rate as information asymmetry increases, and H2b predicts that it is doing so at a decreasing rate as information asymmetry increases.

Results of these hypotheses tests are presented beginning with Table 8. Table 8 presents partial results of annual cross-sectional regressions, as shown by Equation (3), run for each quantile rank of information asymmetry where the greatest quantile represents the greatest level of information asymmetry. Information asymmetry is measured using bid/ask spreads where larger bid/ask spreads equate to greater information asymmetry. Both quintiles and deciles of information asymmetry are shown. Parameter estimates for CONS and CONS2 are shown and significance is indicated using the mean parameter estimate from annual cross-sectional regressions and their time-series standard error (Fama & Macbeth, 1973). The principal effect of conservatism is given by the coefficient (λ4) which is decreasing with increases in information asymmetry. However, because the global effect of conservatism on information risk is curvilinear, the rate at which information risk is decreasing in response to changes in conservatism at any given level of conservatism is given by the partial derivative of Equation (3) with respect to conservatism \[ \lambda_4 + (2\lambda_5 \cdot CONS) \] rather than a single coefficient. That is, a single coefficient is not adequate to capture the effect of conservatism on information risk. Table 8, using the first decile rank of conservatism (CONS = 1), shows the partial derivative with respect to conservatism at each information asymmetry quantile. The tabulated results show a pattern that refutes H2a and supports H2b. That is, as information asymmetry increases the rate at which conservatism is able to decrease...
information risk is decreasing. In fact, the decrease is monotonic across information asymmetry quintiles.

Figure 3 plots the rate of change in the cost of capital due to conservatism (at CONS = 1) for each information asymmetry decile. Although the decrease across deciles is not monotonic, as is the case with quintiles, the trend in the impact of conservatism is clearly toward a smaller effect across increasing information asymmetry deciles.\textsuperscript{11}

Table 9 shows the results of regression Equation (5). The regression of the partial derivative of Equation (3) with respect to conservatism (CONS = 1) on information asymmetry decile shows that the rate at which conservatism decreases information risk is decreasing in magnitude across information asymmetry deciles (ω₁ = 0.0752, t-statistic = 2.78).

Table 8, Figure 3 and Table 9 only show analysis of partial derivatives with respect to conservatism at the first decile rank of conservatism (CONS = 1) while results of H1 hypotheses tests show that conservatism is decreasing the cost of capital through the fifth decile rank of conservatism. However, the pattern of results reported using partial derivatives at the first decile rank of conservatism are the same for each decile rank of conservatism through the fifth decile (for all deciles where the cost of equity is decreasing in conservatism). For the sake of brevity, results obtained for decile ranks after the first are not shown.\textsuperscript{12}

\textsuperscript{11} Results are the same when using the coefficient on the linear term of conservatism alone rather than the partial derivative. Results are also the same using the position of the cost of equity relative to conservatism given by [λ₄ *(CONS) + λ₅ *(CONS²)].

\textsuperscript{12} As an alternative to regressions (5), (6), and (7), an incremental R\textsuperscript{2} test was used but not reported. The test used Equation (3) as the reduced model and added two variables to arrive at the full model. The two variables were the interactions of bid/ask spreads with CONS and CONS². F-test found the increase in R\textsuperscript{2} to be significant. However, the coefficients on the interaction terms were not significant. This is likely due
Table 8
Partial Derivatives With Respect to Conservatism (at CONS=1) Obtained From Annual Cross-Sectional Regressions of the Ex Ante Cost of Equity on Risk Proxies and Conservatism for Different Information Asymmetry Quantiles

\[ COC_{it} = \lambda_0 + \lambda_1 BETA_{it} + \lambda_2 SIZE_{it} + \lambda_3 BTK_{it} + \lambda_4 CONS_{it} + \lambda_5 CONS^2_{it} + \varepsilon_{it} \] (Eq. 3)

<table>
<thead>
<tr>
<th>Info. Asym. Quintile</th>
<th>( \lambda_4 )</th>
<th>( \lambda_5 )</th>
<th>Partial derivative w/r/t cons</th>
<th>Info. Asym. Decile</th>
<th>( \lambda_4 )</th>
<th>( \lambda_5 )</th>
<th>Partial derivative w/r/t cons</th>
</tr>
</thead>
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<tr>
<td>1</td>
<td>-2.4909***</td>
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<td>-2.0454</td>
<td>1</td>
<td>-2.2721***</td>
<td>0.1948***</td>
<td>-1.8824</td>
</tr>
<tr>
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<td>-2.1263***</td>
<td>0.1872***</td>
<td>-1.7519</td>
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<td>-2.3466***</td>
<td>0.2204***</td>
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<td>-2.1375</td>
</tr>
<tr>
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</tr>
<tr>
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<td>5</td>
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<td>0.1621***</td>
<td>-1.3949</td>
</tr>
<tr>
<td>6</td>
<td>-1.8520***</td>
<td>0.1690***</td>
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<td>-1.7025***</td>
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<td>0.1302**</td>
<td>-1.0915</td>
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<tr>
<td>9</td>
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<td>0.1985***</td>
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<td>0.1985***</td>
<td>-1.5873</td>
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<td>-1.5141</td>
<td>10</td>
<td>-1.3520**</td>
<td>0.1302**</td>
<td>-1.0915</td>
</tr>
</tbody>
</table>

\( n \approx 2,559 \text{ ea. Quintile} \)
\( n \approx 1,279 \text{ ea. Decile} \)

* significant at the \( \alpha = .10 \) level of significance

** significant at the \( \alpha = .05 \) level of significance

*** significant at the \( \alpha = .01 \) level of significance

\( COC \) = cost of equity capital measured as the predicted cost of capital from the capital asset pricing model using 10 years of monthly returns data where at least 24 months were required for a prediction to be included

\( BETA \) = the capital asset pricing model beta obtained using 10 years of monthly data where is least 24 months of data was required to estimate \( BETA \)

\( SIZE \) = the log of the one year lagged market value of equity

\( BTK \) = log of the firm’s lagged book-to-market ratio

\( CONS \) = the decile ranks of the ratio of parameter estimates shown in model (2) where

\( \text{Conservatism} = \left[ (\hat{\beta}_0 + \hat{\beta}_1) \div \hat{\beta}_0 \right] \).

Note that \( \hat{\beta}_0 \) and \( \hat{\beta}_1 \) come from the Basu regression shown in model (1)

\( CONS^2 \) = the square of \( CONS \)

to very high multicollinearity among variables. Variance Inflation Factors for the interaction terms were 92 and 55. The resulting awkward interpretation of results caused me to favor the research design shown in the study.
Information asymmetry in equity markets exists when one group of traders has information that another group of traders does not. The more informed group of traders is in possession of all the public information held by less informed traders, but they are also in possession of a private set of information signals unknown to the less informed group. The impact of conservatism on the ratio of private to public information likely depends on which type of news is driving differences in the conservative bias.
Table 9

Regressions of Rates of Change in the Cost of Capital With Respect to Conservatism (at CONS = 1) on Decile Ranks of Information Asymmetry

\[ PD_{CONS} = \omega_0 + \omega_1 IA\_{DECILE} + \epsilon \quad \text{(Eq. 5)} \]

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>( \omega_0 )</th>
<th>( \omega_1 )</th>
<th>Adjusted R(^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>( PD_{CONS} )</td>
<td>-1.9709***</td>
<td>0.0752***</td>
<td>.427</td>
</tr>
</tbody>
</table>

n = 10

Global F-statistic = 7.7**

* significant at the \( \alpha = .10 \) level of significance
** significant at the \( \alpha = .05 \) level of significance
*** significant at the \( \alpha = .01 \) level of significance

\( PD_{CONS} \) = for each information asymmetry decile, the partial derivative of cross-sectional regressions shown by Equation (3) with respect to conservatism calculated as \( [\lambda_4 + (2 \times \lambda_5 \times CONS)] \) where CONS = 1

\( IA\_{DECILE} \) = the decile rank of information asymmetry where information asymmetry is measured using bid/ask spreads. Decile 10 represents the highest level of information asymmetry.

If conservatively reporting good news drives higher levels of conservatism as measured by Equation (2) the result is that accounting earnings contain less information and private information persists in being private. Consequently, Hypothesis H2c predicts that the rate at which “good news” conservatism reduces information risk in equity markets is decreasing in information asymmetry.

In contrast, if conservatively reporting bad news drives higher levels of conservatism as measured by Equation (2) the result is that accounting earnings contain more information and otherwise private information may become public. Consequently, H2d predicts that the ability of conservatively reported bad news to reduce information risk in equity markets is increasing in information asymmetry.
Tests of H2c are presented in Table 10. Consistent with Table 8, information asymmetry in Table 10, is measured using quantile ranks of bid/ask spreads where larger bid/ask spread quantiles equate to greater information asymmetry. Both quintiles and deciles of information asymmetry are shown.

Table 10 presents partial results of annual cross-sectional regressions, as shown by Equation (4), run for each quantile rank of information asymmetry. Parameter estimates for GNEWS and GNEWS2 are shown and significance is indicated using the mean parameter estimate from annual cross-sectional regressions and their time-series standard error (Fama & Macbeth, 1973). The effect of conservatively reported good news on information risk is given by the partial derivative of Equation (4) with respect to GNEWS. Table 10 shows the partial derivative with respect to GNEWS at each information asymmetry quantile using the first decile rank of GNEWS. The partial derivative is given by \[ \theta_4 + (2 \times \theta_5 \times \text{GNEWS}) \]. The pattern in the partial derivatives shown in Table 10 supports H2c. That is, reporting good news more conservatively reduces information risk but it does so at a slower rate as information asymmetry increases. Using the first decile rank of “good news” conservatism (GNEWS = 1), Figure 4 graphically illustrates the effect of conservatively reporting good news on changes in the cost of equity capital as information asymmetry increases across deciles.\(^{13}\)

Table 11 shows the results of regression Equation (6). The regression of the partial derivative of Equation (4) with respect to GNEWS on information asymmetry decile shows that the rate at which “good news” conservatism decreases information risk

\(^{13}\) Results are the same when using the coefficient on the linear term of GNEWS alone rather that the partial derivative. Results are also the same using the position of the cost of equity relative to GNEWS given by \[ \theta_4 \times \text{(GNEWS)} + \theta_5 \times \text{(GNEWS)} \].
is decreasing in magnitude across information asymmetry deciles ($\gamma_1 = 0.1842$, t-stat = 5.45). Note that because the global affect of conservatively reported good news is negative (reducing risk and the cost of capital), a positive adjustment to that effect reduces its magnitude. As in prior tests, the pattern of results presented using partial derivatives at the first decile rank of GNEWS are the same for each of the decile ranks of GNEWS through the fifth decile (all decile ranks for which conservatism decreases the cost of equity). For the sake of brevity, results for decile ranks after the first are not shown.

Tests of H2d begin with Table 12 which presents partial results of annual cross-sectional regressions, as shown by Equation (4), run for each quantile rank of information asymmetry. Parameter estimates for BNEWS and BNEWS2 are shown and significance is indicated using the mean parameter estimate from annual cross-sectional regressions and their time-series standard error (Fama & Macbeth, 1973). The effect of conservatively reported bad news on information risk is given by the partial derivative of Equation (4) with respect to BNEWS. Table 10 shows the partial derivative with respect to BNEWS at each information asymmetry quantile using the first decile rank of BNEWS. The partial derivative is given by $[\theta_6 + (2 * \theta_7 * BNEWS)]$.

Results shown in Table 12 do not support H2d. Table 7, Panel B and Figure 2 show that the global effect of increasing conservatism in the reporting of bad news is to decrease information risk at a decreasing rate. However, in Table 10, regressions shown by Equation (4), often fail to pick up the effect when run separately for each information asymmetry decile. In fact the effect on information risk of conservatively reporting bad
news is not observable until reaching the seventh decile rank of information asymmetry.

No further analysis of H2d is conducted because the statistically insignificant parameter estimates are deemed uninterpretable.

Table 10
Partial Derivatives With Respect to Good News Conservatism (at GNEWS = 1) Obtained From Annual Cross-Sectional Regressions of the Ex Ante Cost of Equity on Risk Proxies and Good News Conservatism for Different Information Asymmetry Quantiles

\[ COC_{it} = \theta_0 + \theta_1BETA_{it} + \theta_2SIZE_{it} + \theta_3BTK_{it} + \theta_4GNEWS_{it} + \theta_5GNEWS^2_{it} + \theta_6BNEWS_{it} + \theta_7BNEWS^2_{it} + \varepsilon_{it} \] 
(Eq. 4)

<table>
<thead>
<tr>
<th>Info. Asym. Quintile</th>
<th>( \theta_4 )</th>
<th>( \theta_5 )</th>
<th>Partial derivative w/r/t gnws</th>
<th>Info. Asym. Decile</th>
<th>( \theta_4 )</th>
<th>( \theta_5 )</th>
<th>Partial derivative w/r/t gnws</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-3.4548***</td>
<td>0.3401***</td>
<td>-2.7745</td>
<td>1</td>
<td>-2.8324***</td>
<td>0.2778***</td>
<td>-2.27682</td>
</tr>
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<td>-1.03056</td>
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<td>0.1016*</td>
<td>-1.03056</td>
</tr>
</tbody>
</table>

n ≈ 2,559 ea. quintile  
n ≈ 1,279 ea. decile
* significant at the $\alpha = .10$ level of significance
** significant at the $\alpha = .05$ level of significance
*** significant at the $\alpha = .01$ level of significance

$COC$ = cost of equity capital measured as the predicted cost of capital from the capital asset pricing model using 10 years of monthly returns data where at least 24 months were required for a prediction to be included.

$BETA$ = the capital asset pricing model beta obtained using 10 years of monthly data where at least 24 months of data was required to estimate $BETA$.

$SIZE$ = the log of the one year lagged market value of equity.

$BTK$ = log of the firm’s lagged book-to-market ratio.

$GNEWS$ = the yearly decile ranks of the parameter estimates on positive returns ($\beta_0$) from the model (1) Basu regressions where ($\beta_0$) reflects the degree to which accounting earnings captures good news in the market. The decile ranks have been reverse coded so that larger values reflect greater conservatism.

$GNEWS2$ = The square of $GNEWS$.

$BNEWS$ = the yearly decile ranks of the sum of the parameter estimates ($\beta_0 + \beta_1$) from the model (1) Basu regressions which reflects the degree to which accounting earnings captures bad news in the market. Larger values of the decile ranks reflect greater conservatism.

$BNEWS2$ = The square of $BNEWS$. 

---

Table 10 (Continued)
Changes in the Effect of “Good News” Conservatism (at GNEWS = 1) on the Cost of Equity Capital Across Information Asymmetry Deciles
Table 11

Regressions of Rates of Change in the Cost of Capital With Respect to “Good News” Conservatism (at GNEWS = 1) on Decile Ranks of Information Asymmetry

\[ PD_{GNEWS} = \gamma_0 + \gamma_1 IA_{DECILE} + \varepsilon \]  \hspace{1cm} (Eq. 6)

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>(\gamma_0)</th>
<th>(\gamma_1)</th>
<th>Adjusted R(^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(PD_{GNEWS})</td>
<td>-3.0090***</td>
<td>0.1842***</td>
<td>0.762</td>
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</table>

\(n = 10\)

Global F-statistic = 29.7***

* significant at the \(\alpha = .10\) level of significance
** significant at the \(\alpha = .05\) level of significance
*** significant at the \(\alpha = .01\) level of significance

\(PD_{GNEWS}\) = for each information asymmetry decile, the partial derivative of cross-sectional regressions shown by Equation (4) with respect to good news conservatism calculated as \([\theta_4 + (2 \times \theta_5 \times GNEWS)]\) where GNEWS = 1

\(IA_{DECILE}\) = the decile rank of information asymmetry where information asymmetry is measured using bid/ask spreads. Decile 10 represents the highest level of information asymmetry.
Table 12
Partial Derivatives With Respect to Bad News Conservatism (at BNEWS = 1) Obtained From Annual Cross-Sectional Regressions of the Ex Ante Cost of Equity on Risk Proxies and Bad News Conservatism for Different Information Asymmetry Quantiles

\[ COC_{it} = \theta_0 + \theta_1 BETA_{it} + \theta_2 SIZE_{it} + \theta_3 BTK_{it} + \theta_4 GNEWS_{it} + \theta_5 GNEWS^2_{it} + \theta_6 BNEWS_{it} + \theta_7 BNEWS^2_{it} + \epsilon_{it} \]  
(Eq. 4)

<table>
<thead>
<tr>
<th>Info. Asym. Quotile</th>
<th>( \theta_6 )</th>
<th>( \theta_7 )</th>
<th>Partial derivative w/r/t bnews</th>
<th>Info. Asym. Decile</th>
<th>( \theta_6 )</th>
<th>( \theta_7 )</th>
<th>Partial derivative w/r/t bnews</th>
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</thead>
<tbody>
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<td>6</td>
<td>-0.6219</td>
<td>0.0554</td>
<td>-0.5110</td>
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<td></td>
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<td></td>
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<td>-0.8981**</td>
<td>0.0853**</td>
<td>-0.7274</td>
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<td>-1.5422***</td>
<td>0.1496***</td>
<td>-1.2430</td>
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<tr>
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<td>9</td>
<td>-1.4883***</td>
<td>0.1582***</td>
<td>-1.1718</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10</td>
<td>-1.2211**</td>
<td>0.1235**</td>
<td>-0.9742</td>
</tr>
</tbody>
</table>

\( n \approx 2559 \) ea. quintile \hspace{1cm} \( n \approx 1279 \) ea. Decile

* significant at the \( \alpha = .10 \) level of significance
** significant at the \( \alpha = .05 \) level of significance
*** significant at the \( \alpha = .01 \) level of significance

\( COC \) = cost of equity capital measured as the predicted cost of capital from the capital asset pricing model using 10 years of monthly returns data where at least 24 months were required for a prediction to be included

\( BETA \) = the capital asset pricing model beta obtained using 10 years of monthly data where at least 24 months of data was required to estimate \( BETA \)

\( SIZE \) = the log of the one year lagged market value of equity

\( BTK \) = log of the firm’s lagged book-to-market ratio

\( GNEWS \) = the yearly decile ranks of the parameter estimates on positive returns (\( \beta_0 \)) from the model (1) Basu regressions where (\( \beta_0 \)) reflects the degree to which accounting earnings captures good news in the market. The decile ranks have been reverse coded so that larger values reflect greater conservatism.

\( GNEWS^2 \) = The square of GNEWS

\( BNEWS \) = the yearly decile ranks of the sum of the parameter estimates (\( \beta_0 + \beta_1 \)) from the model (1) Basu regressions which reflects the degree to which accounting earnings captures bad news in the market. Larger values of the decile ranks reflect greater conservatism.

\( BNEWS^2 \) = The square of BNEWS
SUPPLEMENTAL ANALYSIS

If conservatism in accounting reports were not priced, as suggested by Francis et al., (2004) then debate over the FASB’s desire to expunge it from accounting should become more focused. If conservatism is not priced at all then the implication is that it has no impact on information risk in equity markets. In that case, the discussion regarding the usefulness of conservative accounting can be limited to its value in contexts other than valuation.

However, this study shows that conservatism is important in the equity market environment—it is priced. Nevertheless, the results of this study, as previously described, do not imply that the FASB is wrong in its view that biased reporting is damaging to the information environment. It is important to note that comparisons of Equation (2) across firms rank the most aggressive firms in the market as being in the first decile rank of conservatism. That is, the least conservative firms, those in the first conservatism decile, are also, by definition, the most aggressive. Therefore, firms in the lowest decile ranks of conservatism are actually reporting with an aggressive bias opposite in direction from the bias implied by conservatism. Subsequently higher decile ranks of conservatism first become less aggressive, then neutral, and finally exhibit the bias implied by conservatism (favoring bad news). Stated differently, using Equation (2) to determine the degree of conservative bias in accounting results in values of conservatism that span one. It is only at a value of one that there is no bias in reporting based on the nature of the news being reported. That is, the incremental responsiveness of accounting to bad news is zero ($\beta_1 = 0$) from Equation (1), and accounting earnings
capture good and bad news equally. Values less than one indicate a bias in favor of reporting good news, and values greater than one indicate a bias in favor of reporting bad news.

In order to address the FASB’s charge that biased reporting increases information risk, we need to know the optimal level of conservatism implied by this study. The optimal level of conservatism is the level that results in the maximum possible reduction in information risk as proxied by the ex ante cost of capital. Because of the curvilinear nature of the relationship between conservatism and information risk, the optimal level of conservatism is where the partial derivative of Equation (3) with respect to conservatism is equal to zero, just before increasing levels of conservatism begin to increase information risk.

For convenience, Equation (3) is repeated in Table 13. The partial derivative of Equation (3) with respect to conservatism is calculated as \[ \lambda_4 + (2*\lambda_5 * CONS) \]. The optimal value of conservatism is obtained by substituting predicted values of (\( \lambda_4 = -2.0547 \)) and (\( \lambda_5 = 0.1894 \)) shown in Panel A of Table 7, setting the Equation equal to zero \[-0.2.547 + (2*0.1894 * CONS) = 0 \] and solving for CONS. The result (not shown in Tables) is an optimal value for CONS (decile rank of conservatism) of 5.43, the center of the fifth decile. This result is also consistent with the mean cost of capital for portfolios formed to be increasing in conservatism as reported in Table 6 and Figure 1. In order to determine whether the optimal level of conservatism is different across information asymmetry deciles, the same procedure, setting partial derivatives equal to zero and solving for CONS, is repeated using the predicted values of (\( \lambda_4 \)) and (\( \lambda_5 \)) for each
information asymmetry decile as reported in Table 8. Results are shown in Table 13. The optimal level of conservatism is consistent across increasing levels of information asymmetry. Table 13 shows that, like the overall optimum, the optimal decile rank of conservatism across information asymmetry deciles tends to be the fifth decile. In fact, the only exception is at the fourth decile of information asymmetry.

The asymmetric verifiability requirement inherent in conservatism implies a bias in favor of reporting bad news. The heart of the conservatism debate is over the effect of such a bias on the information environment. Those in favor of conservatism and the bias that it implies believe the optimal level of conservatism as measured by Equation (2) is greater than one. The FASB and others opposed to conservative bias believe the optimal level of conservatism as measured by Equation (2) equals one—no bias. The optimal decile rank of conservatism for the sample under study is the fifth decile. The mean level of conservatism in the fifth decile as given by Equation (2) is 0.10. The median level of conservatism is 0.11. The maximum level of conservatism in the fifth decile is 0.75 which still fails to reach the point of no bias, unity. Consequently, the apparent bias suggested in these descriptive statistics is toward somewhat aggressive rather than conservative reporting.

Examination of the optimal level of conservatism tends to favor the FASB position more than that of its opponents. Namely, that the bias toward reporting bad

\[ \beta_1 = 0.033 \]

Table 3 indicates the presence of conservatism among U.S. firms (mean value of \( \beta_1 = 0.033 \)). However, the central tendency of the optimal decile of conservatism (fifth decile) suggests that the optimal value of \( \beta_1 \) is negative. This result raises the question, why would firms not report using the optimal level of conservatism. The answer is given in prior discussion regarding the demand for conservatism. Namely, there are numerous contexts in which conservatism may be valuable, for example, contracting, litigation, regulation, and taxation. Other sources of demand for conservatism may motivate reporting more conservatively than is optimal in an equity market context.
news implied by conservatism increases information risk. It is a little puzzling that the optimal level of conservatism is actually not conservative at all, but rather, slightly aggressive. As far as I know, no party to the conservatism debate predicts this outcome. One possible explanation for this outcome is the nature of the sample. The extended time-series of data required by this study tends to create a survivorship bias. That is, the firms under study are relatively large, successful firms which is consistent with the mean CAPM beta coefficient of the sample being less than one (0.842). It may be that large, historically successful firms with large analyst followings have earned the right to be a little aggressive in their reporting without affecting information quality. Although this explanation raises concerns about the extent to which results of this study may be generalizable, this study must be interpreted to favor the FASB position that the bias implied by conservatism increases information risk due to uncertainty about the bias among the least informed of investors. In fact, the curvilinear pattern of pricing found in this study suggests that generally speaking, biased reporting in either direction is detrimental to the information environment.
Table 13
Optimal Levels of Conservatism (Decile Rank) at Different Levels of Information Asymmetry

\[
COC_{it} = \lambda_0 + \lambda_1 BETA_{it} + \lambda_2 SIZE_{it} + \lambda_3 BTK_{it} + \lambda_4 CONS_{it} + \lambda_5 CONS^2_{it} + \epsilon_{it} \tag{Eq. 3}
\]

<table>
<thead>
<tr>
<th>Information Asymmetry Decile</th>
<th>Partial derivative with respect to conservatism at CONS = 1</th>
<th>Optimal decile rank of conservatism</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(\lambda_4 = -2.2721)** (\lambda_5 = 0.1948)**</td>
<td>5.83</td>
</tr>
<tr>
<td>2</td>
<td>(\lambda_4 = -2.3466)** (\lambda_5 = 0.2204)**</td>
<td>5.32</td>
</tr>
<tr>
<td>3</td>
<td>(\lambda_4 = -2.6148)** (\lambda_5 = 0.2387)**</td>
<td>5.48</td>
</tr>
<tr>
<td>4</td>
<td>(\lambda_4 = -1.5042)** (\lambda_5 = 0.1230)**</td>
<td>6.11</td>
</tr>
<tr>
<td>5</td>
<td>(\lambda_4 = -1.7191)** (\lambda_5 = 0.1621)**</td>
<td>5.30</td>
</tr>
<tr>
<td>6</td>
<td>(\lambda_4 = -1.8520)** (\lambda_5 = 0.1690)**</td>
<td>5.48</td>
</tr>
<tr>
<td>7</td>
<td>(\lambda_4 = -1.7025)** (\lambda_5 = 0.1692)**</td>
<td>5.03</td>
</tr>
<tr>
<td>8</td>
<td>(\lambda_4 = -1.7468)** (\lambda_5 = 0.1541)**</td>
<td>5.67</td>
</tr>
<tr>
<td>9</td>
<td>(\lambda_4 = -1.9843)** (\lambda_5 = 0.1985)**</td>
<td>5.00</td>
</tr>
<tr>
<td>10</td>
<td>(\lambda_4 = -1.3520)** (\lambda_5 = 0.1302)**</td>
<td>5.19</td>
</tr>
</tbody>
</table>

\(n \approx 1,279\) ea. decile

* significant at the \(\alpha = .10\) level of significance
** significant at the \(\alpha = .05\) level of significance
*** significant at the \(\alpha = .01\) level of significance

\(COC\) = cost of equity capital measured as the predicted cost of capital from the capital asset pricing model using 10 years of monthly returns data where at least 24 months were required for a prediction to be included

\(BETA\) = the capital asset pricing model beta obtained using 10 years of monthly data where is least 24 months of data was required to estimate \(BETA\)

\(SIZE\) = the log of the one year lagged market value of equity

\(BTK\) = log of the firm’s lagged book-to-market ratio

\(CONS\) = the decile ranks of the ratio of parameter estimates shown in model (2) where Conservatism = \([(\beta_0 + \beta_1) + \beta_0]. Note that \(\beta_0\) and \(\beta_1\) come from the Basu regression shown in model (1)

\(CONS^2\) = the square of \(CONS\)

98
**SENSITIVITY ANALYSIS**

As a sensitivity analysis, this section presents an alternative method for testing hypotheses H2a and H2b. Rather than using separate regressions, as given by Equation (3), for each information asymmetry quantile, Equation (8) allows for testing H2a and H2b using a single regression and the full sample of 12,794 firm years. Equation (8) is as follows.

\[
COC = \phi_0 + \phi_1Y97 + \phi_2Y98 + \phi_3Y99 + \phi_4Y00 + \phi_5Y01 + \phi_6Y02 + \phi_7Y03 + \phi_8Y04 +
\phi_9Y05 + \phi_{10}BETA + \phi_{11}SIZE + \phi_{12}BTK + \phi_{13}CONS + \phi_{14}CONS2 + \phi_{15}IA + \phi_{16}(IA*CONS) + \phi_{17}(IA*CONS2) + \epsilon
\]  

(Eq. 8)

where:  
- \(Y97\) through \(Y05\) = dummy variables coded 1 if the firm-year observation occurred in year \(t\) where year \(t\) = 1997 through 2005 respectively. The variables are otherwise coded 0. The reference year is 1996 and the dummy variables are used to control for time effects.
- \(COC\) = cost of equity capital measured as the predicted cost of capital from the capital asset pricing model using 10 years of monthly returns data where at least 24 months were required for a prediction to be included.
- \(BETA\) = the capital asset pricing model beta obtained using 10 years of monthly data where is least 24 months of data was required to estimate \(BETA\).
- \(SIZE\) = the log of the one year lagged market value of equity.
- \(BTK\) = log of the firm’s lagged book-to-market ratio.
- \(CONS\) = the decile ranks of the ratio of parameter estimates shown in model (2) where Conservatism = \(\frac{[\beta_0 + \beta_1]}{\beta_0}\). Note that \(\beta_0\) and \(\beta_1\) come from the Basu regression shown in model (1).
- \(CONS2\) = the square of \(CONS\).
- \(IA\) = dummy variable coded 1 if bid/ask spread for year \(t\) is above the median bid/ask spread for year \(t\). The variable is coded 0 otherwise.
In Equation (8), dummy variables are used in a pooled regression to control for time effects, mitigating concerns regarding time series dependencies in the data. In addition, several control variables are used to control for risk not stemming from information asymmetry, consistent with previous models. A dummy variable (IA) is coded 1 if the firm and year specific level of information asymmetry is greater than the median level of information asymmetry. The dummy variable is coded 0 for firm years below the median level of information asymmetry. The dummy variable (IA) is also interacted with conservatism (CONS) and its square (CONS2) to disaggregate the effect of conservatism on information risk for high and low information asymmetry firms. The coefficients on CONS (φ₁₃) and CONS2 (φ₁₄) give the effect of conservatism on information risk for low information asymmetry firms. Likewise, the coefficients on the two interaction terms (φ₁₆) and (φ₁₇) give the effect of conservatism on information risk for high information asymmetry firms.

Table 14 presents the results of regressions using Equation (8). First, Table 14 presents a reduced form of Equation (8) that excludes the interaction terms. The reduced model shows the global effect of conservatism on information risk to be consistent with models previously presented. In other words, increasing conservatism reduces information risk (Φ₁₃ = -1.9846, t-statistic = -12.67) but at a decreasing rate (Φ₁₄ = 0.1820, t-statistic = 13.12). In addition, the reduced model also shows the effect of information asymmetry on information risk. That is, as information asymmetry increases, information risk also increases (Φ₁₅ = 0.3613, t-statistic = 1.77).
Next, Table 14 shows the results of adding only the interaction of information asymmetry (IA) with the linear term of conservatism. The interaction term is significant and positive ($\Phi_{16} = 0.1531$, t-statistic = 2.18) indicating that for high information asymmetry firms, conservatism decreases information risk but not as rapidly as it does for low information asymmetry firms. Finally, Table 14 shows the results of the full model given by Equation (8). The coefficients on both interaction terms are significant ($\Phi_{16} = 0.7172$, t-statistic = 2.29; and $\Phi_{17} = -0.0513$, t-statistic = -1.85) and represent adjustments to the coefficients for low information asymmetry firms that are opposite in direction (decreasing magnitude). The adjustments are not sufficiently large to cross zero so inferences about the effect of conservatism on risk do not change. It is only the magnitude of the effect that changes.

The rate of change in information risk due to conservatism is given by partial derivatives with respect to conservatism, as in previous testing. Partial derivatives are presented in Table 15. First, the partial derivative with respect to information asymmetry is presented showing once again that the effect of information asymmetry is to increase information risk. The partial derivatives of Equation (8) with respect to information asymmetry are positive for all but two levels of conservatism. Next, partial derivatives with respect to conservatism for low information asymmetry firms show that conservatism is reducing information risk at the first five decile ranks of conservatism, after which information risk is increased by increasing conservatism. Table 15 also reports partial derivatives with respect to conservatism for high information asymmetry firms. As is the case for low information asymmetry firms, conservatism is decreasing
the cost of capital for high information asymmetry firms through the fifth conservatism decile. Comparing the rate of change in the cost of capital for low and high information asymmetry firms through the first five deciles of conservatism, shows that the rate of change for high information asymmetry firms is in the same direction but of lower magnitude than for low information asymmetry firms. These results are consistent with earlier hypothesis testing. Also note that the optimal level of conservatism for both low and high information asymmetry firms is the fifth decile. That is, the fifth decile of conservatism is the level of conservatism that minimizes information risk and consequently the cost of equity capital. These results are also consistent with those reported in supplementary analysis in the previous section.
Table 14
Pooled Regressions of the Ex Ante Cost of Equity on Risk Proxies and Conservatism
Controlling for Time Effects

\[ COC = \varphi_0 + \varphi_1 Y97 + \varphi_2 Y98 + \varphi_3 Y99 + \varphi_4 Y00 + \varphi_5 Y01 + \varphi_6 Y02 + \varphi_7 Y03 + \varphi_8 Y04 + \varphi_9 Y05 + \varphi_{10} BETA + \]
\[ \varphi_{11} SIZE + \varphi_{12} BTK + \varphi_{13} CONS + \varphi_{14} CONS2 + \varphi_{15} IA + \varphi_{16} (IA \times CONS) + \varphi_{17} (IA \times CONS2) + \epsilon \] (Eq. 8)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Parameter Estimate</th>
<th>t-statistic</th>
<th>Parameter Estimate</th>
<th>t-statistic</th>
<th>Parameter Estimate</th>
<th>t-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \Phi_0 )</td>
<td>22.9751</td>
<td>38.19***</td>
<td>23.3710</td>
<td>37.20***</td>
<td>23.9310</td>
<td>34.32***</td>
</tr>
<tr>
<td>( \Phi_1 )</td>
<td>8.2660</td>
<td>17.92***</td>
<td>8.2735</td>
<td>17.94***</td>
<td>8.2717</td>
<td>17.93***</td>
</tr>
<tr>
<td>( \Phi_2 )</td>
<td>-2.5907</td>
<td>-5.69***</td>
<td>-2.5849</td>
<td>-5.68***</td>
<td>-2.5910</td>
<td>-5.69***</td>
</tr>
<tr>
<td>( \Phi_5 )</td>
<td>-19.0736</td>
<td>-41.03***</td>
<td>-19.0697</td>
<td>-41.03***</td>
<td>-19.0752</td>
<td>-41.04***</td>
</tr>
<tr>
<td>( \Phi_6 )</td>
<td>-26.6885</td>
<td>-59.29***</td>
<td>-26.6820</td>
<td>-59.29***</td>
<td>-26.6950</td>
<td>-59.31***</td>
</tr>
<tr>
<td>( \Phi_7 )</td>
<td>9.9149</td>
<td>22.20***</td>
<td>9.9081</td>
<td>22.19***</td>
<td>9.9032</td>
<td>22.18***</td>
</tr>
<tr>
<td>( \Phi_8 )</td>
<td>-0.1918</td>
<td>-0.43</td>
<td>-0.1895</td>
<td>-0.42</td>
<td>-0.1925</td>
<td>-0.43</td>
</tr>
<tr>
<td>( \Phi_9 )</td>
<td>-4.4599</td>
<td>-9.63***</td>
<td>-4.4531</td>
<td>-9.61***</td>
<td>-4.4673</td>
<td>-9.64***</td>
</tr>
<tr>
<td>( \Phi_{10} )</td>
<td>2.9445</td>
<td>13.22***</td>
<td>2.9385</td>
<td>13.20***</td>
<td>2.9304</td>
<td>13.16***</td>
</tr>
<tr>
<td>( \Phi_{11} )</td>
<td>-0.7424</td>
<td>-13.17***</td>
<td>-0.7387</td>
<td>-13.10***</td>
<td>-0.7369</td>
<td>-13.06***</td>
</tr>
<tr>
<td>( \Phi_{12} )</td>
<td>-4.8051</td>
<td>-31.84***</td>
<td>-4.7929</td>
<td>-31.74***</td>
<td>-4.7984</td>
<td>-31.77***</td>
</tr>
<tr>
<td>( \Phi_{13} )</td>
<td>-1.9846</td>
<td>-12.67***</td>
<td>-2.0572</td>
<td>-12.85***</td>
<td>-2.3400</td>
<td>-10.58***</td>
</tr>
<tr>
<td>( \Phi_{14} )</td>
<td>0.1820</td>
<td>13.12***</td>
<td>0.1817</td>
<td>13.10***</td>
<td>0.2075</td>
<td>10.56***</td>
</tr>
<tr>
<td>( \Phi_{15} )</td>
<td>0.3613</td>
<td>1.77*</td>
<td>-0.4822</td>
<td>-1.10</td>
<td>-1.6121</td>
<td>-2.15**</td>
</tr>
<tr>
<td>( \Phi_{16} )</td>
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<td>2.18**</td>
<td>0.7172</td>
<td>2.29**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( \Phi_{17} )</td>
<td>-0.0513</td>
<td>-1.85*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Adj. R\(^2\) = .5199
\( n = 12,794 \)
Global F-statistic = 924.6***

* significant at the \( \alpha = .10 \) level of significance
** significant at the \( \alpha = .05 \) level of significance
*** significant at the \( \alpha = .01 \) level of significance

\( Y97 \) through \( Y05 \) = dummy variables coded 1 if the firm-year observation occurred in year \( t \) where year \( t = \) 1997 through 2005 respectively. The variables are otherwise coded 0. The reference year is 1996 and the dummy variables are used to control for time effects.

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Table 14 (Continued)

\[ COC \] = cost of equity capital measured as the predicted cost of capital from the capital asset pricing model using 10 years of monthly returns data where at least 24 months were required for a prediction to be included

\[ BETA \] = the capital asset pricing model beta obtained using 10 years of monthly data where is least 24 months of data was required to estimate \[ BETA \]

\[ SIZE \] = the log of the one year lagged market value of equity

\[ BTK \] = log of the firm’s lagged book-to-market ratio

\[ CONS \] = the decile ranks of the ratio of parameter estimates shown in model (2) where Conservatism = \[ (\hat{\beta}_3 + \hat{\beta}_1) / \hat{\beta}_0 \]. Note that \[ \hat{\beta}_0 \] and \[ \hat{\beta}_1 \] come from the Basu regression shown in model (1)

\[ CONS^2 \] = the square of \[ CONS \]

\[ IA \] = dummy variable coded 1 if bid/ask spread for year \( t \) is above the median bid/ask spread for year \( t \). The variable is coded 0 otherwise.
Table 15
Change in Information Risk Due to Conservatism For High Information Asymmetry Firms Obtained From Pooled Regressions of the Ex Ante Cost of Equity on Risk Proxies and Conservatism Controlling for Time Effects

\[ COC = \varphi_0 + \varphi_1 Y97 + \varphi_2 Y98 + \varphi_3 Y99 + \varphi_4 Y00 + \varphi_5 Y01 + \varphi_6 Y02 + \varphi_7 Y03 + \varphi_8 Y04 + \varphi_9 Y05 + \varphi_{10} BETA + \varphi_{11} SIZE + \varphi_{12} BTK + \varphi_{13} CONS + \varphi_{14} CONS2 + \varphi_{15} IA + \varphi_{16} (IA \times CONS) + \varphi_{17} (IA \times CONS2) + \epsilon \]  
(Eq. 8)

<table>
<thead>
<tr>
<th>Conservatism Decile (CONS)</th>
<th>Partial Derivative w/r/t IA</th>
<th>Partial Derivative w/r/t CONS for Low Info. Asy. Firms</th>
<th>Partial Derivative w/r/t CONS for High Info. Asy. Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-0.9462</td>
<td>-1.9250</td>
<td>-1.3104</td>
</tr>
<tr>
<td>2</td>
<td>-0.3828</td>
<td>-1.5101</td>
<td>-0.9979</td>
</tr>
<tr>
<td>3</td>
<td>0.0781</td>
<td>-1.0951</td>
<td>-0.6855</td>
</tr>
<tr>
<td>4</td>
<td>0.4363</td>
<td>-0.6801</td>
<td>-0.3731</td>
</tr>
<tr>
<td>5</td>
<td>0.6921</td>
<td>-0.2651</td>
<td>-0.0607</td>
</tr>
<tr>
<td>6</td>
<td>0.8453</td>
<td>0.1499</td>
<td>0.2518</td>
</tr>
<tr>
<td>7</td>
<td>0.8958</td>
<td>0.5649</td>
<td>0.5642</td>
</tr>
<tr>
<td>8</td>
<td>0.8439</td>
<td>0.9798</td>
<td>0.8766</td>
</tr>
<tr>
<td>9</td>
<td>0.6894</td>
<td>1.3948</td>
<td>1.1890</td>
</tr>
<tr>
<td>10</td>
<td>0.4323</td>
<td>1.8098</td>
<td>1.5015</td>
</tr>
</tbody>
</table>

*Y97 through Y05* = dummy variables coded 1 if the firm-year observation occurred in year \( t \) where year \( t = 1997 \) through 2005 respectively. The variables are otherwise coded 0. The reference year is 1996 and the dummy variables are used to control for time effects.

*COC* = cost of equity capital measured as the predicted cost of capital from the capital asset pricing model using 10 years of monthly returns data where at least 24 months were required for a prediction to be included.

*BETA* = the capital asset pricing model beta obtained using 10 years of monthly data where is least 24 months of data was required to estimate BETA.

*SIZE* = the log of the one year lagged market value of equity.

*BTK* = log of the firm’s lagged book-to-market ratio.

*CONS = the decile ranks of the ratio of parameter estimates shown in model (2) where: Conservatism = \([\beta_0 + \beta_1] / \beta_0\). Note that \( \beta_0 \) and \( \beta_1 \) come from the Basu regression shown in model (1).

*CONS2 = the square of CONS.

*IA* = dummy variable coded 1 if bid/ask spread for year \( t \) is above the median bid/ask spread for year \( t \). The variable is coded 0 otherwise.
CHAPTER V
CONCLUSIONS

This section presents a summary of the conservatism debate, followed by a summary of the findings and implications of this study. This section concludes with a discussion of possible limitations of the study.

SUMMARY OF THE DEBATE

Considerable disagreement exists among some standard setters and accounting researchers about the value of conservatism in financial reporting where conservatism is defined as an asymmetric verifiability requirement for the inclusion of good and bad news in financial reports. Because of the asymmetric verifiability requirement, conservatism delays the recognition of apparent good news in financial reports, and is anticipatory or bad news. Opponents of conservatism believe that any kind of biased information is actually misinformation and thus increases uncertainty. On the other hand, proponents of conservatism argue that the bias implied by conservatism is necessary to offset the asymmetric reporting incentives of the firm’s management (Committee, 2007). And results of at least one recent study do not favor

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15 The disagreement about the value of conservatism seems principally to revolve around its effect on the information environment in equity markets (valuation decisions).
either position, suggesting that conservatism has no effect on information quality in equity markets (Francis et al., 2004).

Perhaps most prominent among opponents of conservatism is the FASB. The FASB contends that accounting information should be neutral—free from bias. A bias in favor of reporting one type of news is inconsistent with representational faithfulness and neutrality. The FASB takes the position that the systematic bias introduced into financial reports by conservatism breeds uncertainty about the bias only among the least informed of investors and therefore creates information asymmetry detrimental to some traders.

Proponents of conservatism point to incentives of management to manipulate financial statements by exaggerating apparent good news and/or hiding apparent bad news. Proponents claim that a conservative bias, polar to management’s reporting incentives, serve as a countervailing force to those incentives that increases information quality. In support of this view, a recent study by LaFond and Watts (2008) suggests that conservatism is a market response to information asymmetry that attempts to mitigate its harmful effects.

The abiding nature of the conservatism debate attests to the plausibility of arguments on both sides. If conservatism is in fact a creation of markets meant to reduce information risk then conservative reporting choices should be rewarded via a lower cost of equity capital. Conversely, if conservatism simply creates bias that allows for exploitation of relatively uninformed investors, then conservative reporting choices should be met with a higher cost of equity capital. Lastly, if conservatism does not affect
either information quality or quantity then it should not be correlated with the cost of equity capital at all.

**FINDINGS AND IMPLICATIONS**

This study finds that conservatism, in cross-sectional comparisons, is important to the information environment in equity markets. Information risk is higher among the least conservative (most aggressive) firms. Stated differently, information risk decreases as conservatism increases. Nevertheless, this study also finds that although information risk is decreasing in conservatism, it is doing so at a decreasing rate. In fact, conservatism seems to reduce information risk to an optimal point after which increasing levels of conservatism actually increase information risk.

Parties on both sides of the conservatism debate agree that biased reporting in favor of good news is undesirable. That proposition is supported to a significant degree by this study as well. Rather than producing accounting reports that are free from bias, the least conservative (most aggressive) firms under study produce reports that are biased in favor of good news. As accounting reports get increasingly conservative this bias is reduced and information risk decreases.

Further, the effect of conservatism on information risk reverses after reaching some optimal level. Further inquiry revealed that the optimal level of conservatism does not rise to the level of a bias in favor of reporting bad news. Proponents of conservatism argue that the bias in favor of reporting bad news implied by conservatism serves to decrease information risk. On the other hand, the FASB argues that biased

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16 In fact, the optimal level of bias found in this study was somewhat in favor of good news which I attribute to the nature of the sample.
reporting in either direction increases information risk. This study finds that the optimal level of conservatism is not conservative at all. Stated differently, as bias in favor of reporting bad news increases, information risk also increases which supports the position of the FASB.

A study by LaFond and Watts (2008), suggests that the effect of conservatism on information risk in equity markets depends on the level on information asymmetry. This study finds that the global effect of conservatism holds for all levels of information asymmetry. In other words, increasing conservatism reduces information risk at a decreasing rate to an optimal point after which it increases information risk. However, the rate at which conservatism reduces information risk is decreasing as the level of information asymmetry increases. This effect is attributable to the way in which good news is reported. When accounting reports contain less good news (get more conservative), they contain less total news as well, and private information persists as does the potential to exploit it. Nevertheless, the overall effect of increasing conservatism is to improve the information environment at all levels of information asymmetry. It is only the magnitude of the effect that is diminishing. In addition, the optimal level of conservatism is consistent across information asymmetry deciles and continues to support the FASB position. Namely, that the bias in favor of reporting bad news implied by conservatism increases information risk.
POSSIBLE LIMITATIONS

Possible limitations of this study revolve primarily around its external validity. First, the research design employed in this study requires an extended time-series of data which likely creates a survivorship bias in the sample. In other words, the sample may not be truly representative of all firms because it consists of a disproportionate number of large, successful firms. Therefore, it is possible that the findings of this study are not applicable to smaller firms.

Second, the findings of this study may not be applicable to other reporting regimes. The sample used in this study consisted of publically traded U.S. firms. The reporting environment in the U.S. is substantially different from that of many other countries. The U.S. reporting environment can be characterized as having a strong policing capacity. For example, the U.S. has a strong regulatory environment with a powerful public sector watchdog, the SEC. The U.S. also provides parties to the firm with easy access to judicial relief for reporting malfeasance that includes both criminal and civil sanctions. Ball (2001) explains how infrastructure of this type is essential for an informationally efficient system of financial reporting and disclosure. It is possible that the infrastructure requirements described by Ball are substitutes for a conservative bias in accounting reports. Therefore, it is possible that results of this study are not applicable to reporting regimes lacking similar infrastructures in the reporting environment. Consequently, testing the generalizability of this study across reporting regimes offers one meaningful avenue for further research.


