Accounting Conservatism: Effect of Contract Incompleteness, Moral Hazard and Board Gender Diversity

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CERTIFICATE OF ORIGINALITY

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ABSTRACT

Prior literature on accounting conservatism examines the effect of contracting and corporate governance structure on conservatism. The results from the prior literature show that the demand for conservatism arises from contracting costs and that conservatism is more likely to be employed by firms to facilitate monitoring and thereby improve their governance (Watts 2003a). In this study, I extend previous studies by examining two specific aspects of its association with contracting and corporate governance structure that affects accounting conservatism.

I first examine the contracting-based demand for conservatism and hypothesize that it arises from the joint effect of contract incompleteness and moral hazard. I argue that the joint presence of these two factors is sufficient though not necessary for accounting conservatism. However, it is not clear at the outset how these two factors interact in creating the demand for conservatism. The empirical results in this thesis show that the degree of conservatism increases with the level of contract incompleteness. The results also show that firms with both a high (low) degree of contract incompleteness

and a more (less) severe moral hazard problem adopt more (less) conservative accounting practices. Furthermore, the results reveal that the positive association between moral hazard and conservatism demonstrated by Lafond and Roychowdhury (2008) is more significant when contracts are more incomplete. Likewise, the results also show that the positive relationship between contract incompleteness and accounting conservatism is more pronounced when the moral hazard problem is more acute.

While the demand for conservative accounting practices derives from contract incompleteness and moral hazard, the composition of the board of directors is one of the mechanisms through which this demand is translated into accounting policy. I explicitly address this issue by considering the role of the board in promoting conservative accounting. The literature (e.g. Ahmed and Duellman 2007; Garcia Lara, Garcia Osama and Penalva 2009; Srinidhi, Gul and Tsui 2011) has identified three inter-related board-based factors that might affect the implementation of the accounting policy: independent boards; CEO power; and the diversity on the board. Although there is extensive literature on the first two factors, there is little extant research on the effect of board diversity on conservatism. I address this issue by investigating the effect of

board gender diversity on conservatism in accounting. I hypothesize that financial reports in firms with gender-diverse boards are more conservative, because female directors are likely to be more sensitive to ethical issues and exhibit more risk-aversion. In effect, the boards with female directors are likely to be more effective in monitoring managers. As audit committees specialize in overseeing the financial reporting process, firms with female directors on the audit committee are more likely to adopt a conservative accounting approach. In this regard, I hypothesize that firms with female audit committee members exhibit more conservative accounting practices. I identify firms that transit from an all-male board of directors to a board with at least one female director as event years, with the year before the transition year being treated as the benchmark year. The empirical results show that firms in this cohort adopt more conservative financial reporting standards after appointing female directors on board (audit committee).

Finally, I perform an exploratory analysis on interaction effect of contract incompleteness and board gender diversity on conservatism. The results show that the effect of board gender diversity on conservatism is more pronounced in the low contract incompleteness group, suggesting a substitution between

these two aspects in driving conservatism.

Keywords: Accounting Conservatism, Contract Incompleteness, Moral Hazard, Board Gender Diversity

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CHAPTER 1

INTRODUCTION

1.1 Motivation

Conservatism is "the most ancient and probably the most pervasive principle of accounting valuation" (Sterling 1967). Accounting conservatism has traditionally been defined by the maxim "anticipate no profit, but anticipate all losses" (Bliss 1924). However, this definition has been criticized for its extremity (Watts 2003a). In a review of conservatism in accounting standards, Basu (1997) interprets conservatism as "accountants' tendency to require a higher degree of verification to recognize good news as gains than recognize bad news as losses". The spirit of Basu's (1997) interpretation of conservatism is one of asymmetric verification requirements for gains and losses. In the contracting context, it has been contended that conservative accounting reduces agency problems caused by the separation of ownership and control—such problems being characterized by asymmetric information, asymmetric payoffs and limited liability among the contracting parties—by imposing different verification requirements for gains and losses (Watts 2003a). Agency problems arise because managers have incentives to expropriate wealth at the expense of shareholders (Jensen and Meckling 1976).

Accounting information informs shareholders and board directors about performance, thereby potentially reducing information asymmetry and ultimately affecting asset allocation decisions and management welfare (Watts 2003a). The asymmetric verification of good news versus bad news reduces the cost of constraining opportunistic behavior among managers. Conservative accounting can thus increase firm value and promote investor welfare.

Following Watts (2003a, b), one line of literature examines the demand side of conservatism for contracting purpose in the modern public firm context. This line of literature assumes that accounting conservatism is demanded to address agency problems that arises from contracting. For example, study has shown that firms with a lower level of managerial ownership exhibit more conservative accounting practices because they suffer from more severe agency problems (Lafond and Roychowdhury 2008). Past literature also shows that conservatism is more likely to be employed by firms with severe agency cost of debt (Ahmed, Billings, Morton and Harris 2002) and to benefit borrowers by lower cost of debt (Ahmed, Billings, Morton and Harris 2002; Zhang 2008). The findings confirm debt contracting hypothesis of conservatism (Watts 2003a, b).

The other line of literature examines the supply side of conservatism and considers that the supply of conservatism stems from effective corporate governance structure. For example, Ahmed and Duellman (2007) find that an effective and independent board is more likely to use conservatism as an effective governance mechanism to monitor managers. Krishnan and Visvanathan (2008) also shows that audit committees with financial expertise—defined to include those comprising accounting experts only—are associated with more conservative accounting. Using a composite corporate governance index including a takeover protection index and various board characteristics, Garcia Lara, Garcia Osama and Penalva (2009) find that firms with strong governance adopt more conservative accounting practices. All of the aforementioned studies demonstrate that strongly governed firms are more likely to employ the important governance tool of accounting conservatism to reduce agency problems.

Although there is a significant stream of literature investigating the contracting demands for accounting conservatism (e.g. Ahmed, Billings, Morton and Harris 2002; Lafond and Roychowdhury 2008; Zhang 2008), previous studies

have not examined the role of conservative accounting in reducing agency costs arising from the joint effect of contract incompleteness and the moral hazard problem. For example, Lafond and Roychowdhury (2008) focus solely on the effect of moral hazard on conservatism, finding that firms with a lower level of managerial ownership are associated with greater conservatism. The literature has also neglected the potential effect of contract incompleteness on conservatism. Financial economists (e.g. Hart 1995, 2001) suggest that the rise of corporate governance is a response to the co-existence of agency problems and contract incompleteness in public firms. Following this line of argument, I propose that conservative reporting in public companies arises from the joint presence of these two factors: the agency problem and contract incompleteness. This thesis thus extends and supplements the study of Lafond and Roychowdhury (2008). I believe that investigating the joint effect of moral hazard and contract incompleteness will contribute to a more comprehensive understanding of conservatism.

Further, previous studies have shown that firms with an effective board structure featuring a substantial proportion of independent directors represent one important supply source of conservative accounting practices (e.g. Ahmed

and Duellman 2007; Krishnan and Visvanathan 2008; Garcia Lara, Garcia Osama and Penalva 2009). However, very few studies have investigated the effect of board gender diversity on conservative accounting. This topic has attracted increasing attentions by policy makers because of recent wave of regulations on the appointment of more female professionals to boards of directors. Fueled by the belief that female directors are effective monitors, regulators around the world have launched initiatives to raise the proportion of women on boards of directors in their respective countries. In the United Kingdom, the Higgs report (2003) points out that the percentage of female board directors was strikingly low in comparison with women representation in other professions, and recommend lifting the percentage of female directors from professional groups where women are strongly represented. In 2009, the Australian Corporate and Market Advisory Committee (CAMAC) issued a report showing the percentage of female directors in top 200 firms listed on the Australian Stock Exchange (ASX) was around 8.3%, and advised companies to encourage board diversity and gender diversity in particular. Several continental European countries have also imposed legal requirements to ensure more board seats are allocated to female directors. In 2010, the lower house of the French parliament passed a new law requiring French companies

to raise the percentage of women on boards to 40% by 2016 (Economist 2010). Sweden, Norway and Spain respectively require 25, 40 and 40 percent of board seats to be occupied by women (Gul, Hutchison and Lai 2011). However, a study using Australian data shows that firms with female directors exhibit less accounting conservatism (Sultana and Van der Zahn 2011), a finding which contrasts with others (Watts 2003a; Ahmed and Duellman 2007; Garcia Lara, Garcia Osama and Penalva 2009) reported in the literature. In addition, the institutional environment in United States (U.S.) provides a relatively better setting to examine the effect of board gender diversity on conservatism. Different from aforementioned countries, U.S. have not imposed mandatory requirement specifying the percentage of female directors on board (Srinidhi, Gul and Tsui 2011). In addition, the litigation risk is higher in U.S. market (Francis and Wang 2008). Thus, examining the effect of board gender diversity on accounting conservatism based on U.S. data may yield reliable results and, in turn, provide policy implications for regulators around the world.

Investigating the effect of board gender diversity on conservatism also advances our understanding of board composition in governance practice

choices, particularly accounting conservatism, an important governance tool (Watts 2003a; Ahmed and Duellman 2007; Garcia Lara, Garcia Osama and Penalva 2009). Gender diversity has come to be regarded as an important characteristic of an effective board because female directors have more highly developed moral standards (e.g. Gilligan 1977; Bertz, O'Connell and Shepard 1989; Ambrose and Schminke 1999), are more risk-averse (e.g. Powell and Ansic 1997; Barber and Odean 2001) and are more likely to make independent evaluations (Cater, Simkins and Simpson 2003; Adams, Gray and Nowland 2010). As a result, boards with female directors are associated with greater board independence (Adams and Ferreira 2009), higher earnings quality (Srinidhi, Gul and Tsui 2011), greater demand for greater audit effort (Gul, Tusi and Srinidhi, 2008), a more informative stock price (Gul, Srinidhi and Ng 2011) and more accurate analyst forecasts (Gul, Hutchinson and Lai 2011). Despite the increasing number of studies investigating the economic consequences of board gender diversity, the evidence is inconclusive about whether gender-diverse boards are more likely to employ conservative accounting practices[1]. This thesis therefore examines the effect of board

[1] An exception is the study of Sultana and Van der Zahn (2011), who find that board gender diversity is associated with less conservative accounting in the Australian market. Their result conflicts with those of previous studies. This study differs from

gender diversity on conservatism.

In this thesis, I address the abovementioned issues based principally on the empirical analysis of data from the U.S. stock market. Although the results are based on observations from the U.S. market, they also provide a number of implications for other countries.

1.2 Theoretical Framework

This section describes the theoretical framework for this thesis.

Accounting satisfies two main demands. The first demand emerged following the institution of securities laws requiring firms to provide financial information to support investment decisions. The second demand is that accounting information serves as the basis for contracting[2]. The function of

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theirs in that I use an event-study approach and find opposite results in the U.S. market.

[2] In accounting and contracting literature, there are two main hypotheses, namely contracting efficiency and opportunistic behavior hypotheses (see Holthausen 1990). Contracting efficiency hypothesis considers accounting as efficient technology that minimizes agency costs, which in turn maximizes firm value. On the other hand, opportunistic behavior hypothesis suggests that managers have incentives to choose accounting policies that lead to transfer wealth from other parties, such as shareholders and creditors. In this thesis, I follow efficiency contracting hypothesis and view accounting as a means to reduce agency costs.

accounting information in assisting investors to make investment decision may overlap the function of contracting. For example, public accounting information that provides useful information for investors to value firms also helps creditors monitor their clients. Despite that, the emphases of these two roles are different. Satisfying the first demand requires that accounting statements provide relevant and unbiased valuation information (the valuation hypothesis), and the second demand requires that accounting data provides timely and verifiable information for contracting (the contracting hypothesis). The American Institute of Certified Public Accountants (AICPA) Trueblood Committee Report (1973) provides a notable example of the valuation hypothesis:

> "An objective of financial accounting is to provide information useful to investors and creditors for predicting, comparing, and evaluating potential cash flows to them in terms of amount, timing and related uncertainty."

The contracting hypothesis regards accounting as a means of promoting contracting efficiency among firms and, in turn, affecting firm value (Watts and Zimmerman 1986). These two hypotheses explain the role of accounting

from different perspectives and hence have different implications for accounting policy choices. Figure 1.1 summarizes the demand for accounting policy choices according to these two hypotheses. The choice of accounting policy is affected by investors, regulators and contracting parties. According to the valuation hypothesis, regulators and investors prefer more accurate financial information which assists in the evaluation of firm value[3]. However, contracting parties may not necessarily require unbiased financial information. For example, recent studies (e.g. Zhang 2008) find that creditors prefer conservative accounting, which leads to downward biased estimate of earnings and net assets.

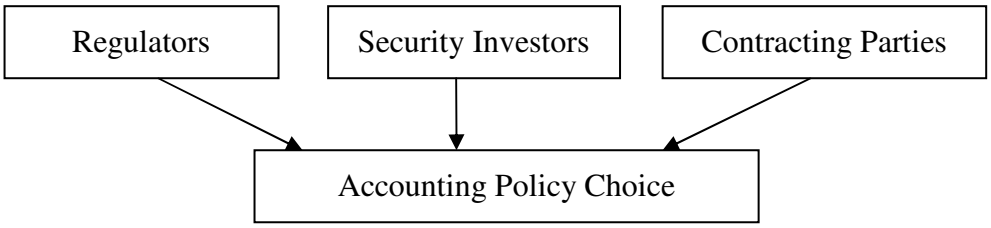

Figure 1.1: Accounting Policy Choice

As a result, accounting policy choice is contingent on underlying forces.

[3] Watts (2003a) argues that regulators may prefer conservative accounting to reduce associated political risks. However, in this thesis I emphasize regulators' policy objectives such as those enunciated in the AICPA Trueblood Committee Report (1973).

Broadly speaking, financial information can be reported either neutrally or with an upwards or downwards bias. An unbiased information system enables investors to better evaluate firm value. *Ceteris paribus*, security investors prefer unbiased financial reporting. From this perspective, conservatism jeopardizes accounting quality and reduces its value to investors for predicting future cash flows (Watts 2003a). This perspective, however, ignores contracting and organizational costs (Watts and Zimmerman, 1983). Contracting parties[4] have incentives to use accounting strategically to maximize their utility at the expense of other parties. For instance, managers have incentives to boost their reported performance by adopting aggressive accounting practices. In contrast, conservatism constrains managers from recognizing future potential earnings and increases in net assets. In effect, conservatism could reduce the distribution of resources in the form of managers' compensation and dividends, etc. The retention of assets within the firm benefits creditors by reducing default risk. Hence, *ceteris paribus*, creditors favor conservative accounting to protect their interests.

The above analysis shows that accounting conservatism is not the preferred

[4] Contracting parties include both employees and managers and external parties, including customers, suppliers, and government.

choice of all contracting parties in the firm. I delve into the motivations of contracting parties to enhance our understanding of the role of conservatism in reducing contracting costs. Modern public firms finance their development through creditors and shareholders. Raising funds from outside parties creates agency relations[5]. Agents have incentives to maximize their utility at the expense of other parties when their interests are not aligned with those of the principal (Jensen and Meckling 1976). Contracts are designed to curb opportunistic behavior among agents by restraining them from hurting shareholders' interests. When contracts are complete, agency problems can be solved by well-designed contracts (including compensation contracts and debt contracts). The problem is that regardless of how well-informed the principal is, it is impossible, or at least very costly, to sign a complete contract that specifies all possible future contingencies. The technological infeasibility of executing a complete set of contracts means that agents are granted discretion, providing them with opportunities to transfer wealth from the principal. In this sense, agency conflicts and contract incompleteness are both conditions that fuel the demand for governance in the public firm context (Hart 1995, 2001). The governance mechanisms employed in this setting include independent

[5] Agency relations include relations between shareholders and managers, minority shareholders and controlling shareholders, and shareholders and creditors.

directors, board gender diversity, and accounting conservatism (Watts 2003a), among others. The figure below illustrates a framework for the demand for conservatism in accounting.

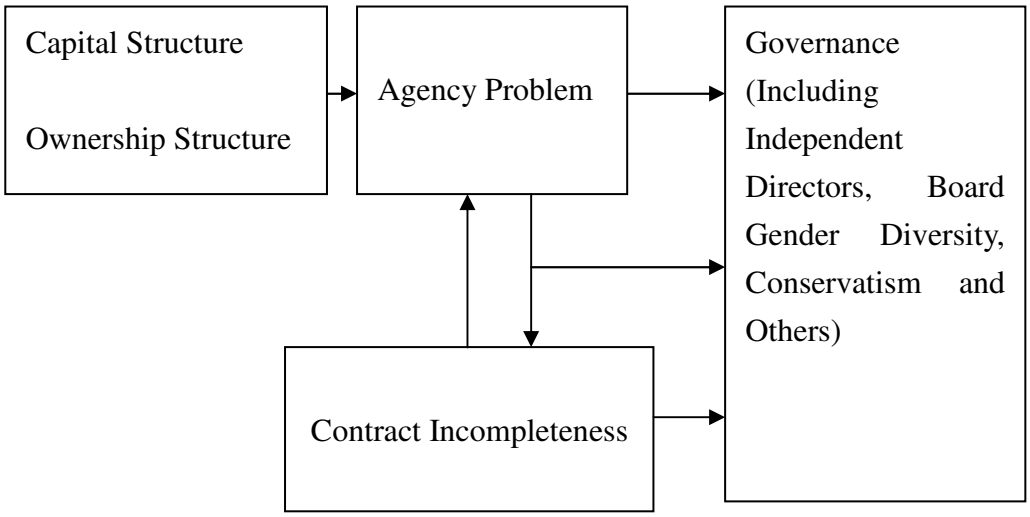

Figure 1.2: Framework of the Demand for Conservatism

Conservative accounting is hypothesized as a part of efficient technology employed by firms to reduce agency costs and in turn increase firm value (Watts 2003a). The implication of the hypothesis is that application of conservatism depends on its net benefits that contribute to firm value. The benefits of conservatism in the contracting process are manifold. In general, contracting costs include *ex ante* negotiation costs and *ex post* enforcement costs. As a means of commitment (Kim and Verrecchia 2001), conservative accounting signals the credibility of outsiders' information, which in turn

reduces the problem of adverse selection. Zhang (2008) provides evidence that conservatism reduces the *ex ante* cost of debt. *Ex post,* through the recognition of losses in a manner more timely than that of gains, conservatism accelerates contractual violations and prompts related parties to take action to avoid further losses. Thus, conservative accounting reduces the agency cost of debt. Conservatism also helps reduce agency costs between shareholders and managers. Compensation contracts provide managers with an incentive to inflate their reported performance and thus boost their compensation. However, conservatism constrains such opportunistic behavior among managers by imposing stricter verification requirements (Watts 2003a). Another important contribution of conservatism is derived from asymmetric verification. Contracts enforced in a court of law require verification; by requiring strict verification of gains and loose verification of losses, conservatism promotes contracting efficiency (Watts 2003a).

Conservatism also entails costs in the contracting context. For example, Gigler, Kanodia, Sapra and Venugapalan (2009) point out that conservative accounting may not be effective in distinguishing mere bad firms from really bad firms. Hence, conservatism might falsely alarm creditors and trigger debt

covenants when the borrower is still in a good financial position, leading to the inefficient passage of control rights to creditors. Another cost induced by conservatism is that the market is provided with noisy financial information.

Among various factors that affect the choice of level of conservatism, contract characteristics and board composition are two important ones[6]. Contract incompleteness is one of important contracting characteristics that affect the demand of conservatism. When contract is incomplete, managers have discretion to transfer wealth from other parties. To constrain managers' opportunistic behavior, shareholders may spend resources *ex ante* to specify future contingencies and/or *ex post* increase monitoring efforts. In addition, verification costs when contracts are enforced in court increase as contracts are incomplete. As a result, contract incompleteness pushes up conservatism. In this regard, I hypothesize that firms with more incomplete contracts are likely to adopt more conservative accounting practice. Figure 1.3 H1 denotes the first hypothesis. In conjunction with the moral hazard problem, more

[6] Actually, there is a large body of literature discussed how contracting (e.g. Ahmed, Billings, Morton and Harris 2002; Zhang 2008; Lafond and Roychowdhury 2008) and board composition (e.g. Ahmed and Duellman 2007; Krishnan and Visvanathan 2008; Garcia Lara, Garcia Osama and Penalva 2009) affect the demand for conservatism.

incomplete contracts demand a higher degree of conservatism. This is because contracting costs are higher when these two factors occur in conjunction with each other; contract incompleteness and moral hazard are thus mutually reinforcing. Hence, the demand for conservatism to address the moral hazard problem is greater in firms with a greater extent of contract incompleteness (H2 Figure 1.3 denotes the second hypothesis).

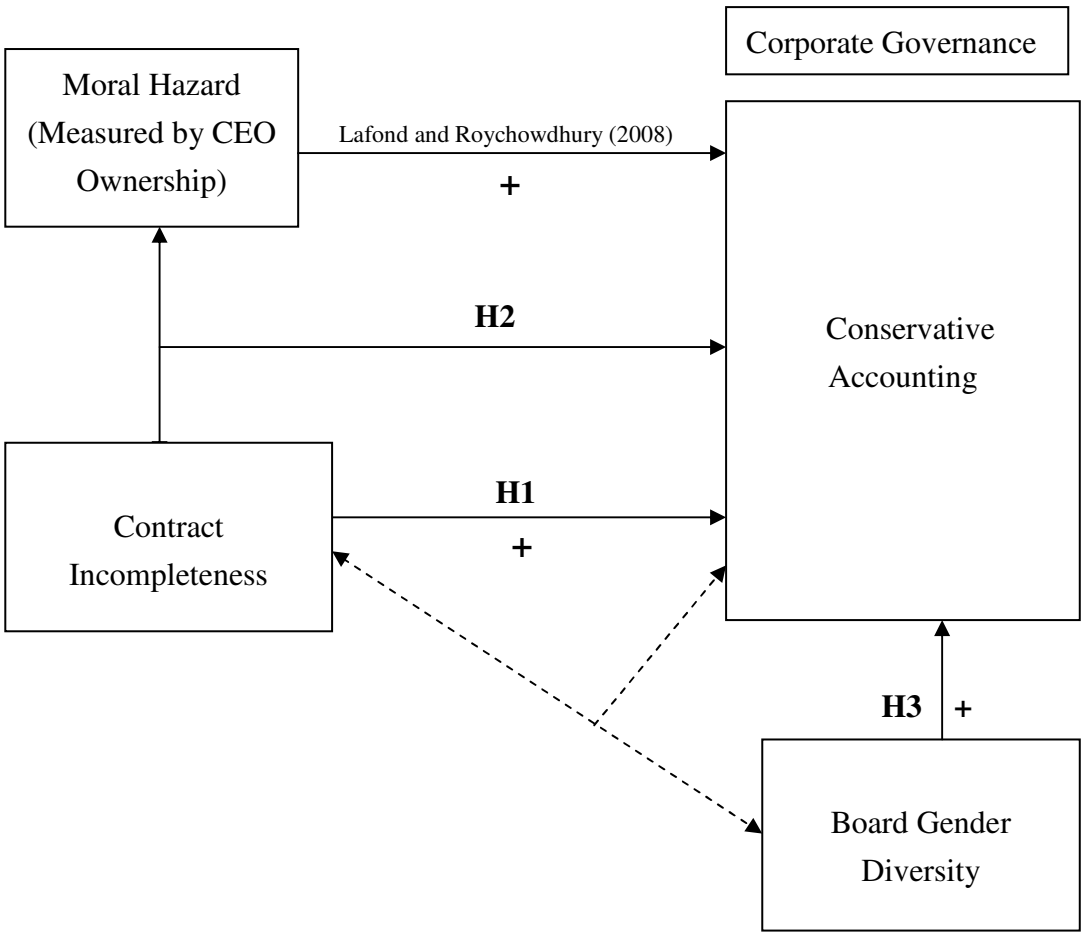

Figure 1.3: Analytical Framework Adopted in this Thesis

Monitoring demands for conservatism also vary with different board composition. Past literature shows that effective board with independent directors (e.g. Ahmed and Duellman 2007; Garcia Lara, Garcia Osama and Penalva 2009) and accounting expertise (Krishnan and Visvanathan 2008) are associated with more conservative accounting. Recent studies find that gender-diverse boards are more effective in monitoring their managers (e.g. Gul, Srinidhi and Tsui 2008; Adams and Ferreira 2009; Srinidhi, Gul and Tsui 2011; Gul, Hutchinson and Lai 2011). I draw on both the board gender diversity literature and the conservatism literature to form this part of the thesis. As female directors are generally more risk-averse and have higher moral development than their male counterparts, they demand higher requirement in verification to reduce litigation risks and avoid ethical dilemmas. By posing stricter verification requirement on gains than losses, conservative accounting reduces directors' risks and monitoring costs. As a result, firms with gender-diverse boards demand for more conservative accounting. I hypothesize that firms with female directors exhibit more conservative accounting practices. As audit committees specialize in overseeing the financial accounting process, firms with female audit committee members are more likely to adopt more conservative accounting.

H3 Figure 1.3 denotes the third hypothesis.

Finally, I attempt to link these two important aspects and explore the possible interaction effect of these two aspects on conservatism. Previous studies (e.g. Adams and Ferreira 2009; Srinidhi，Gul and Tsui2011) have demonstrated that board gender diversity is associated with more diligent and effective monitoring. On one hand, it is possible that firms with board gender diversity are more likely to adopt higher level of conservative accounting to monitor managers when contract is more incomplete. On the other hand, it is also possible that board gender diversity substitutes contracting incompleteness in driving conservatism. I am motivated to conduct an exploratory analysis to examine the interaction effect of board gender diversity contract incompleteness on conservatism.

1.3 Findings and Contributions

1.3.1 Findings

Based on the analytical framework of Srinidhi, Zhou and Mian (2011), I analyze how conservative reporting emerges in the joint presence of contract incompleteness and moral hazard. I follow the literature by using CEO

ownership to measure moral hazard (Gul, Chen and Tsui 2003; Lafond and Roychowdhury 2008) and employ R&D expenditure and intangible assets as proxies for contract incompleteness (Dasgupta and Tao 1998). Conservatism is measured based on Basu's (1997) study. The results show a positive empirical association between such incompleteness and conservatism. I also find that the extent of conservatism is greater in firms with both a high degree of contract incompleteness and a severe moral hazard problem. At the other extreme, firms with both a lower level of contract incompleteness and a less severe moral hazard problem exhibit less conservatism. Furthermore, I show that the association between moral hazard and conservatism demonstrated by Lafond and Roychowdhury (2008) is more significant when accompanied by a high degree of contract incompleteness. An additional finding I make is that the positive relationship between contract incompleteness and conservatism is more pronounced when the moral hazard problem is more severe.

To investigate whether board gender diversity affects conservative financial reporting, I examine the extent of conservatism among U.S. firms that transit from an all-male board of directors to having at least one female director. Board director data are obtained from the RiskMetrics database, with

accounting data and stock market data being extracted from the COMPUSTAT and Center for Research in Security Prices (CRSP) databases, respectively. I employ an event study method to investigate the effect of female director appointments on accounting conservatism. The sample consists of 407 (475) pairs of observations for firms that transit from an all-male board of directors (audit committee) to at least one female director (audit committee member) during the 1999 to 2009 period. Using Basu's (1997) measure of conservatism, I then compare the extent of accounting conservatism in the pre-transition period with that in the post-transition period. The results reveal that firms become more conservative in their financial reporting in the post-transition period in comparison with the pre-transition period. The results still hold after I adopt a longer window (3 years) and control for other board structure variables (including CEO-Chairman duality and percentage of independent board members).

Finally, I conduct an exploratory analysis on the interaction effect of contract incompleteness and board gender diversity on conservatism. Using board gender diversity transition sample, I compare the effect of board gender diversity on conservatism in high/low contract incompleteness environment. The results show that the effect of board gender diversity on conservatism is

more pronounced in low contract incompleteness group, suggesting a substitution effect of these two aspects in driving conservatism.

1.3.2 Contributions

This thesis makes a number of contributions to the literature.

First, my results strengthen and complement those of Lafond and Roychowdhury (2008) by showing that while moral hazard can lead to conservatism, this happens only when contracts are incomplete. This result is not obvious from existing theoretical evidence, which shows only that moral hazard becomes a sufficient condition when combined with the incompleteness of contracts. The empirical results of this thesis show that moral hazard increases the degree of conservatism only in the presence of contract incompleteness. Another related result is that in the presence of moral hazard, the degree of contract incompleteness is positively associated with the extent of conservatism.

Second, this study further advances our understanding of the determinants of accounting conservatism. Conservatism is arguably the most important of all

accounting properties (Sterling 1967). Although numerous studies have explored the determinants of conservatism, this study adds extra dimensions by introducing contract incompleteness and board gender diversity as factors supporting the adoption of conservative accounting practices (e.g. Ahmed and Duellman 2007; Qiang 2007; Krishnan and Visvanathan 2008; Lafond and Roychowdhury 2008; Lafond and Watts 2008; Garcia Lara, Garcia Osama and Penalva. 2009). In addition to making this theoretical contribution, this study also has merit from a methodological perspective. In contrast with previous studies (e.g. Ahmed and Duellman 2007; Lafond and Roychowdhury 2008; Garcia Lara, Garcia Osama and Penalva 2009) in which a level model is used, I adopt a change model to test my hypotheses. This study answers the call of Carcello, Hermanson and Ye (2011) for more studies to be conducted using change models, which may demonstrate causality more clearly and provide stronger results.

Third, the results of this thesis shed some light on how board gender diversity affects firms' tendency to report conservatively. The issue of whether female director participation facilitates monitoring is one that attracted a higher degree of concern after the financial crisis of 2008 (Sultana and Van der Zahn

2011). It is argued that female directors are good monitors and that gender-diverse boards are more effective in monitoring managers. Previous studies have shown that gender-diverse boards are associated with higher levels of audit effort (Gul, Srinidhi and Tsui 2008), better earnings quality (Srinidhi, Gul and Tsui 2011), a more informative stock price (Gul, Srinidhi and Ng 2011) and more accurate analyst forecasts (Gul, Hutchinson and Lai 2011). However, very few studies have examined the effect of board gender diversity on conservatism, a potentially important governance mechanism and arguably the most fundamental of accounting principle (Sterling 1967; Watts 2003a; Ahmed and Duellman 2007). Examining the effect of board gender diversity on conservatism has policy implications for regulators given that many countries have considered introducing rules requiring more female directors on boards.

1.4 Organization of the Thesis

The rest of the thesis is organized as follows. Chapter 2 reviews the literature. Chapter 3 presents hypotheses development and research design. In Chapter 4, I present empirical results. Chapter 5 concludes the thesis and discusses potential directions for future research.

CHAPTER 2

LITERATURE REVIEW AND THEORY DEVELOPMENT

2.1 Accounting Conservatism

2.1.1 Definition of Conservatism

Conservatism in accounting has a very long history (Basu 1997). Conservatism has traditionally been defined by the maxim "anticipate no profit, but anticipate all losses" (Bliss 1924). Anticipating profit means profits should be recorded before a verifiable legal claim to the revenue is made (Watts 2003a). Thus, Bliss' (1924) definition of conservatism is rather extreme (Watts 2003a). The Financial Accounting Standards Board (FASB) views conservatism as "a prudent reaction to uncertainty to try to ensure that uncertainty and risks inherent in business situations are adequately considered" (FASB 1980). Basu (1997) interprets conservatism as "accountants' tendency to require a higher degree of verification to recognize good news as gains than recognize bad news as losses". This definition of conservatism centers on asymmetry in the verification of gains and losses. In this thesis, I follow Basu's (1997) definition of conservatism and view accounting conservatism as

a governance mechanism by which gain recognition requirements are stricter than loss recognition requirements (Watts 2003a).

2.1.2 Historical Review of Conservatism as a Surviving and Sustainable Concept

The important accounting principle of conservatism can be traced back to the early 15th century, prior to the publication of Pacioli's pioneering text on double-entry bookkeeping (Littleton 1941). In its early application, conservatism can be interpreted as lower-of-cost-or-market in modern terms. An early example of the application of conservatism is as follows:

> This man's furniture and utensils were valued by appraisers in 1408 at less than cost because the items had deteriorated (Penndorf 1933).

The principle of conservatism was initially promulgated in France through the Code of Commerce of 1673 (Littleton 1941). The importance of the principle as an ingredient of commercial law was also recognized through its incorporation into the laws of other European countries.

Early accountants came to recognize the importance of conservatism in accounting. For example, acknowledging the problem of uncertainty in accounting practice, an editorial in the April 23, 1881 edition of *The Accountant* commented that the auditor should not "indulge in forecasts or in expressions of feeling, but rather adhere as coldly and impassively as he can to fact - hard, dry realities" (Brief 1975). The principle of conservatism was subsequently emphasized in the June 4, 1881 edition of *The Accountant*: "all estimates should be slightly to the disadvantage of the company, rather than tending the other way" (Brief 1975).

The principle of conservative accounting was subsequently embodied in modern accounting standards such as lower-of-cost-or-market for inventories (Accounting Research Bulletin (ARB) 43, Committee on Accounting Procedures (CAP) 1953), the immediate recognition of cost estimate changes (ARB 45, CAP 1955), the asymmetric recognition of expected payoffs from discontinued operations (Accounting Principles Board Opinion 30, APB 1973), and different treatments of changes in the value of physical assets (APB Opinion No. 6, APB 1965). Given the long history of conservatism in the accounting profession, it is not surprising that Sterling (1967) claims that "the

most ancient and probably the most pervasive principle of accounting valuation is conservatism".

2.1.3 Different Explanations of Conservatism

The long history of accounting conservatism in human society has kindled research interest in investigating its underlying causes. Scholars from different fields have provided explanations from a number of different perspectives. These range from contracting perspective to behavioral perspective.

Contracting

Financial accounting has been used for contracting purposes for centuries (Watts and Zimmerman 1983). Recent explanations of conservatism in the context of the corporation are rooted in the theory of the firm. Here, the firm is portrayed as a nexus of contracts among shareholders, managers and other stakeholders (Jensen and Meckling 1976). The agency relation in contracts is formally defined as "a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent" (Jensen and Meckling 1976). With the goal of maximizing their

expected utility, rational agents will seek to benefit themselves at the expense of the principal. Broadly speaking, there are two types of agency problems in firms: the interest conflict between managers and shareholders, and that between creditors and shareholders.

Under debt contracting, creditors have an asymmetric payoff with respect to firms' financial resources. Creditors do not receive any additional payment of principal or interest, regardless of the extent to which the value of the firm's net assets exceeds the sum of the principal and interest. However, a creditor will suffer a loss if the firm cannot repay the debt when it matures. Smith and Warner (1979) identify four major channels through which shareholders can maximize their value at the expense of creditors. The first is dividend distribution, whereby the value of bonds decreases if the firm raises the dividend rate and finances the increase by reducing investment. The second is claim dilution, where the value of bonds decreases if the firm issues additional debt of the same or a higher priority. The third is asset substitution, in which the value of bonds falls if the firm engages in risky investments. The fourth channel is underinvestment, whereby the value of bonds decreases if the firm rejects positive NPV (net present value) projects that may benefit creditors.

In response to the potential conflicts of interest caused by agency problems, creditors have incentives to write covenants to restrict opportunistic behavior among firms and monitor their operations (Jensen and Meckling 1976; Smith and Warner 1979). Ultimately, creditors are concerned with periodic earnings and net assets that are subject to accounting treatments. Through the asymmetric recognition of gains and losses, conservatism constrains management from making opportunistic payments to themselves and other parties, which in turn provides assurance that debt will be repaid. In this regard, conservatism plays an important role in reducing the agency conflict between creditors and shareholders.

An extensive body of empirical research has investigated the role of conservative accounting in facilitating debt contract efficiency. Studies show that conservative accounting is more likely to be employed by firms with severe conflicts over dividend policies (Ahmed, Billings, Morton and Harris 2002) and to benefit borrowers by lowering the cost of debt (Ahmed, Billings, Morton and Harris 2002; Zhang 2008).

Conservative accounting also plays an important role in corporate governance (including executive compensation contracting). By ensuring that losses are recognized in a more timely fashion than gains, conservative accounting encourages board members and shareholders to investigate losses more promptly (Watts 2003a). This investigation will, in turn, constrain managers from entering into inefficient investments (Ball 2001; Watts 2003a; Ball and Shivakumar 2005). An agency conflict between executives and shareholders arises in the context of compensation contracts. Managers generally have an information advantage over shareholders. As rational economic individuals, managers have incentives to overestimate their performance to obtain higher compensation which cannot be repaid once they leave their position. Conservatism can constrain such opportunistic behavior and hence promote contracting efficiency by reducing overpayment. In line with this argument, Lafond and Watts (2008) argue that managers' tendency to transfer wealth from investors to themselves through overstating their financial performance can be constrained by conservative accounting. Their empirical evidence supports this hypothesis that information asymmetry is positively related to conservative accounting. Lafond and Roychowdhury (2008) also show that conservative accounting is negatively associated with managerial ownership

because firms with higher levels of managerial ownership are characterized by fewer agency problems.

Litigation, Taxation and Regulation

Litigation is another factor that induces firms to adopt conservative financial reporting practices. Skinner (1994) points out that managers have incentives to disclose bad news in a timely manner due to concerns over litigation and reputational loss. This is because firms that overstate earnings numbers have a greater likelihood of being sued. Another incentive derives from auditors. Increased auditor liability has resulted in more firms being sued for overvalued financial reporting (Kothari, Lys, Smith and Watts 1988). The coexistence of increased conservatism and liability, as documented by Basu (1997), confirms the argument that conservatism can reduce firms' litigation risk by inducing them to understate profits and overstate costs and expenses.

Taxation also provides incentives for managers to adopt conservative financial reporting standards (Shackelford and Shevlin 2001). Deferring the recognition of gains and accelerating the recognition of losses promptly reduces profitable firms' current tax expenses and thus creates value for firms (Watts 2003a).

Qiang (2007) uses U.S. data to show that taxation induces conservatism.

Financial accounting standard setters and related regulatory bodies also favor conservative accounting. Conservative accounting practices that understate earnings and overstate costs and expenses lessen the adverse consequences of financial reporting. This will, in turn, reduce criticism and the political costs of regulators (Watts 2003a). Basu (1997) provides evidence corroborating this argument in a study of the U.S. stock market.

2.1.4 Conditional vs. Unconditional Conservatism

Beaver and Ryan (2005) classify conservatism into two main categories: unconditional and conditional conservatism. The FASB has formalized unconditional conservatism as "a prudent reaction to uncertainty to try to ensure that uncertainty and risks inherent in business situations are adequately considered" (SFAS No. 2). This type of conservatism is "*ex ante* or news independent, meaning aspects of the accounting process are determined at the inception of assets or when liabilities yield expected unrecorded goodwill" (Beaver and Ryan 2005). A notable example of this type of conservatism is the immediate expensing of the cost of intangible assets developed in-house.

Beaver and Ryan (2000) measure conservatism as the downward bias of book value compared to the benchmark market value. Their estimation exploits firm fixed effects and the time effect of the book-to-market ratio on current and lagged stock returns. Thus, the intercepts capture unconditional bias.

Conditional conservative accounting is a deliberate bias toward recognizing and reporting underlying economic losses more promptly than economic gains in the face of uncertainty (Ball and Shivakumar 2005; Beaver and Ryan 2005). It is an *ex post* or news dependent approach. The lower of cost or market is an example of conditional conservative accounting. Basu (1997) formalizes this kind of conservatism as a systematically different accounting recognition of good and bad news using stock returns as proxies (see Equation 2.1 for details).

However, unconditional and conditional conservatism do not make equal contributions to promoting contracting efficiency. This is because unconditional conservatism limits the discretion to account in a conditional conservative fashion and introduces randomness into decisions based on accounting numbers (Ball and Shivakumar 2005; Beaver and Ryan 2005). In

this context, Ball and Shivakumar (2005) suggest that unconditional conservatism is inefficient or at best neutral in promoting contracting efficiency, and that conditional conservatism can facilitate contracting. Therefore, I focus on conditional conservatism in this study.

2.1.5 Measurement of Conditional Conservatism

The measures of conservative accounting used in existing empirical research can be summarized as follow.

Balance Sheet Approach

This approach assumes that stock prices rationally reflect firm value, without considering accounting numbers. As gains are recognized later than losses under the conservatism principle, earnings and net assets are understated. According to this approach, firms with greater market-to-book value (more precisely, a higher stock price to net assets ratio) are more conservative in their financial reporting. Beaver and Ryan (2000) provide a notable application of this approach. However, the market-to-book ratio may measure firm performance rather than conservatism.

Asymmetric Timeliness Approach

Basu (1997) defines conservatism as recognizing bad news in a more timely manner than good news. The challenge of measuring news in the stock market is resolved through the use of annual buy-hold returns. More specifically, negative annual buy-hold returns are employed to proxy for bad news, while good news is proxied by positive annual returns. Empirically, this conservatism measure can be derived from the following specification:

$$NI_{it} = \alpha_0 + \alpha_1 D_{it} + \alpha_2 RET_{it} + \alpha_3 RET_{it} * D_{it} + \varepsilon \qquad (2.1)$$

where i indexes the firm, *NI* is net income before extraordinary items, scaled by the market value of equity at the beginning of year t; *D* is a dummy variable equal to 1 when returns (*RET*) are negative and 0 otherwise; *RET* is annual buy-hold returns compounded from monthly returns beginning in the fourth month after the fiscal year-end. In this model, *RET* is a proxy for news, good or bad, and *D* is a proxy for bad news. The term *RET***D* captures different degrees of verifiability for the recognition of good or bad news. The larger the coefficient of *RET***D*, the more conservative is the firm's financial reporting.

Accrual-Based Approach

Ball and Shivakumar (2005, 2006) argue that Basu's (1997) measure is limited because it does not exclude earnings management concerns. They propose an accrual-based measure of conservatism in which negative performance also serves as a proxy for bad news and vice versa. They point out that the timely recognition of economic gains and losses must be at least partially followed by accruals. Losses are recognized in a more timely manner against income in non-cash accruals, while gains are recognized in cash at a later date. Thus, the relationship between accruals and cash flow should be asymmetric. This implies that the positive relation between cash and accruals should be greater in periods of losses than in those of gains. The specification of the Ball and Shivakumar (2008) model is as follows:

$$ACC_{it} = \beta_0 + \beta_1 \Delta SALES_{it} + \beta_2 CFO_{it} + \beta_3 DCFO_{it} + \beta_4 DCFO_{it} * CFO_{it} + \varepsilon \quad (2.2)$$

where ACC_{it} is accruals in year t, defined as income before extraordinary items minus operating cash flow, scaled by average assets at the beginning of

year t before 1987. The estimation of ACC_{it} is specified as:

$$ACC_{it} = [\Delta \text{Current Assets} - \Delta\text{Cash} - \Delta\text{Current Liabilities} - \Delta\text{Short-Term Debt} - \Delta\text{DEPTN}]/\text{Average Total Assets} \quad (2.3)$$

CFO is cash flow in year t, which is equal to cash flow from operations scaled by average total assets. Similar to the accruals estimation, cash flow before 1987 is estimated as income before extraordinary items minus total accruals. *DCFO* is equal to 1 if *CFO* is less than 0 and 0 otherwise. Similar to Basu's (1997) measure, the larger the coefficient of $DCFO_{it} * CFO_{it}$, the more conservative is the financial reporting stance of the firm.

C-Score Approach

The most prominent feature of the C-Score measure is that it captures firm-year conservatism. The C- Score is derived from Basu's (1997) measure of the asymmetric earnings timeliness of conservatism. In the first stage, the following regression model is employed:

$$NI_{it} = \gamma_0 + \gamma_1 D_{it} + \gamma_2 RET_{it} + \gamma_3 RET_{it} * D_{it} + \varepsilon \quad (2.4)$$

where i denotes individual firms; *NI* is net income before extraordinary items, scaled by the market value of equity at the beginning of year t; *D* is a dummy variable equal to 1 if returns (*RET*) are negative and 0 otherwise; *RET* is annual buy- hold returns compounded from monthly returns beginning from the fourth month after the fiscal year end; *RET*D* captures the difference in the verifiability of the recognition of bad new versus good news; γ_2 captures good news timeliness; γ_3 measures bad news timeliness. Based on the theory they develop, Khan and Watts (2009) point out that the market-to-book ratio, firm size and firm leverage are important determinants of conservatism. To estimate their firm-year level conservatism measure, Khan and Watts (2009) specify firm-year good news timeliness (G_ Score) and firm-year bad news timeliness (C_Score) by estimating linear functions of firm-specific characteristics as follows:

$$\text{G\_score} = \gamma_2 = \delta_1 + \delta_2 * MB_{it} + \delta_3 * LEV_{it} + \delta_4 * SIZE_{it} \quad (2.5)$$

$$\text{C\_score} = \gamma_3 = \varepsilon_1 + \varepsilon_2 * MB_{it} + \varepsilon_3 * LEV_{it} + \varepsilon_4 * SIZE_{it} \quad (2.6)$$

where δ_1 and ε_1 ($_1$ = 1 to 4), as the above specifications show, are constant

across firms but vary in different years; *MB* is the market-to-book ratio, equal to the market value of equity divided by the book value of equity at the beginning of year t; *LEV* is leverage, defined as long-term and short-term debt deflated by the market value of equity at the beginning of fiscal year t; *SIZE* is the natural logarithm of the market value of equity at the beginning of fiscal year t. Equations (2.5) and (2.6) are not included in the regression model, but are then substituted into regression Equations (2.4). The C_Score represents the incremental timeliness of bad news, and the sum of the G_Score and the C_Score indicates total bad news timeliness. The annual cross-sectional regression model used to generate the measure of firm-year level conservatism is as follows:

$$NI_{it} = \gamma_0 + \gamma_1 D_{it} + \gamma_2 RET_{it} * (\delta_1 + \delta_2 * MB_{it} + \delta_3 * LEV_{it} + \delta_4 * SIZE_{it}) + \gamma_3 RET_{it} * D_{it} * (\varepsilon_1 + \varepsilon_2 * MB_{it} + \varepsilon_3 * LEV_{it} + \varepsilon_4 * SIZE_{it}) + (\zeta_1 * MB_{it} + \zeta_2 * LEV_{it} + \zeta_3 * SIZE_{it} + \zeta_4 * D_{it} * MB_{it} + \zeta_5 * D_{it} * LEV_{it} + \zeta_6 * D_{it} * SIZE_{it}) + \varepsilon_i \quad (2.7)$$

Despite its merits in measuring firm-year conservatism, the C_Score has its shortcomings. The major problem associated with the C_Score is that it captures firm characteristics including *MB*, *SIZE* and *LEV*. Thus, it may be

subject to a correlated omitted variable problem when run as a multiple-regression (Khan and Watts 2009).

Empirical studies reveal a number of debates regarding the validity of the above measures of conservatism. The controversy over the validity of conservatism measures has triggered a number of theoretical enquiries. However, Ball, Kothari and Nikolaev (2010) provide theoretical proof that the Basu (1997) measure is unbiased. I therefore adopt it as the measure of conservatism in this thesis.

2.1.6 Studies on Conservatism as a Governance Mechanism

Watts (2003a) posits that conservative accounting serves to promote contract efficiency through reducing information asymmetry (see also Ball 2001). Ball and Shivakumar (2005) observe that in comparison with public firms, private firms in the U.K. are less conservative. They argue that the reason for this is that public firms have a greater demand for conservatism to mitigate agency conflicts arising in the contracting context, while private firms have less of a demand for conservatism as they can solve the asymmetric information problem through the "insider access" model. Lafond and Watts (2008) argue

that it is information asymmetry that generates conservative accounting. In their view, managers find it more feasible to manipulate accounting numbers for their own benefit in the presence of information asymmetry. Conservative accounting can arrest trends of overstating gains and understating losses under information asymmetry settings. Using PIN (the probability of information-based trade) as proxy for information asymmetry, they find that greater information asymmetry leads to more conservative accounting.

Studies have been also conducted to examine how particular governance characteristics affect the use of conservatism as a governance mechanism (Watts 2003a). For example, Lafond and Roychowdhury (2008) report that firms with a lower level of managerial ownership exhibit more conservative accounting practices because agency problems are more severe in such firms. Previous studies have also examined how corporate governance characteristics, including boards of directors and monitoring committees, affect conservatism. One notable study by Ahmed and Duellman (2007) finds that independent boards are more likely to employ conservatism as a governance mechanism that is potentially effective in monitoring managers. As audit committees specialize in monitoring the financial accounting production process, those

with competent members are more likely to adopt a conservative stance. Krishnan and Visvanathan (2008) find that audit committees with financial expertise—defined to include those comprised of accounting experts—are associated with more conservative accounting. Using a composite corporate governance index that includes a takeover protection index and a number of board characteristics, Garcia Lara, Garcia Osama and Penalva (2009) find that firms with strong governance exhibit more conservative accounting practices. These studies suggest that firms with good governance mechanisms are more likely to use conservatism to mitigate agency problems.

2.2 The Role of Conservatism in Mitigating Agency Costs of Contract Incompleteness

Corporate governance concerns the allocation of residual controls over firm assets. It arises from two important factors in modern public firms: the agency conflict between shareholders and managers and the incompleteness of contracts (Hart 1995, 2001). In the ideal scenario of a complete contract—which means that all contingencies can be specified precisely in the initial contract—all of the contracting parties can be governed by the contract and renegotiation is not necessary. However, most future contingencies are

difficult to specify in advance. As a result, complete contracts that include all future states are technologically infeasible. Ultimately, managers are granted substantial residual control rights in shareholder-manager contracts. Accordingly, managers have incentives to use this discretion to benefit themselves at the expense of shareholders. One way of achieving this is to boost the firm's accounting performance to earn excessive compensation, which is hard to recover. More incomplete contracts provide managers with more room to manipulate accounting numbers, as verification is more difficult. Hence, incomplete contracts are a precondition for the agency problem. In this regard, the timely, periodic recognition of bad news helps to constrain opportunistic behavior among managers by restricting them from overstating the firm's accounting performance, which is the basis on which managers extract excessive compensation.

2.3 The Role of Conservatism in Mitigating Costs of Moral Hazard

Berle and Means (1932) point out that the classic modern public corporation is characterized by the separation of ownership and control. Shareholders appoint managers to run the business. Managers are granted residual control rights over firm operations, ranging from strategic decisions and operational

management to financial reporting. The moral hazard problem between managers and shareholders arises when managers hold only a fraction of the residual claims from firms (Jensen and Meckling 1976)[7]. In this case, the managers have incentives to maximize their utility at the expense of shareholders through a number of channels, including outright expropriation, shrinking and perquisites. The moral hazard problem becomes less acute as managerial ownership increases because greater managerial ownership aligns the top executive's interests with those of the shareholders (Jensen and Meckling 1976; Demsetz 1983; Morck, Shleifer and Vishny 1988). As a response to the potential moral hazard problem, compensation contracts are designed to curb self-interested opportunistic behavior on the part of the managers. Because most contracts include accounting-based numbers (e.g. bonus contracts), managers with a smaller financial stake in the firm have incentives to manipulate accounting figures to transfer wealth from the firm. Warfield, Wild and Wild (1995) build on this logic in a study confirming their hypothesis that accounting earnings are less informative in firms with a lower level of managerial ownership. They also find that managerial ownership is negatively associated with discretional accruals, suggesting managers are

[7] Another source of moral hazard is asymmetry of information among individuals, because individual actions are not observable and contractible (Hölmstrom 1979).

more likely to manipulate accounting data if they have a smaller ownership stake in the firm. In a recent study, Lafond and Roychowdhury (2008) find that conservative accounting is used as an important governance mechanism in firms with a lower degree of managerial ownership. Their study suggests that conservatism helps mitigate the moral hazard problem in firms with a lower level of managerial ownership.

2.4 Conservatism and Board Gender Diversity

2.4.1 Gender Difference

While the demand for conservative accounting practices derives from contract incompleteness and moral hazard, the composition of the board of directors is one of the mechanisms through which this demand is translated into accounting policy. I explicitly address this issue by considering the role of the board in promoting conservative accounting. The literature (e.g. Ahmed and Duellman 2007; Garcia Lara, Garcia Osama and Penalva 2009; Srinidhi, Gul and Tsui 2011) has identified three inter-related board-based factors that might affect the implementation of the accounting policy: independent boards; CEO power; and the diversity on the board. Although there is extensive literature on the first two factors, there is little extant research on the effect of board

diversity on conservatism. I address this issue by investigating the effect of gender diversity on conservatism in accounting.

Women and men behave differently when dealing with ethical issues. Women view moral issues from a framework of caring, whereas men pursue justice (Gilligan 1977). The difference can be partially explained by "gender socialization" (Bertz, O'Connell and Shepard 1989). Under this explanation, the different ethical values of men and women can be traced to differences in early socialization and role expectations such as those of mother and wife. Women bring their own unique values and traits to organizations, which in turn influence their work-related practices. Consequently, adult women and men behave differently when dealing with ethical issues (Bertz, O'Connell and Shepard 1989; Ambrose and Schminke 1999). Men are more concerned with money and advancement, and may break rules to seek success, while women are more concerned with harmonious relationships and more often adhere to rules and laws (Bertz, O'Connell and Shepard 1989). Their study shows that male students are much more likely to engage in unethical actions (e.g. insider trading, padding expenses) than are women, thus confirming the gender socialization hypothesis.

There are also differences between the genders in their sensitivity toward ethical issues, i.e. the extent to which individuals recognize instances that may involve ethical problems. In a survey of accounting major undergraduate students, Ameen, Guffey and McMillan (1996) find that female accounting students are more sensitive to unethical academic behavior (e.g. various forms of cheating in exams), are less cynical, and engage in such behavior less often than their male counterparts. Ruegger and King (1992) use questionnaire responses from business school students to report that women identify four out of six unethical situations, indicating they are significantly more sensitive than men. Studies using data gathered from potential accounting professionals also yield similar results. For example, Cohen, Pant and Sharp (1998) conduct a survey in which they distribute questionnaires to potential accounting recruits. Their findings show that women are more likely than men to perceive questionable actions as less ethical, and have a lower intention to perform such actions. Bernardi and Arnold (1997) use a survey of managers and seniors in Big 6 auditors to find that female auditors have a higher level of moral development than male auditors.

Women are also more risk-averse than men. In general, women like helping others, whereas men are more concerned with making money (Bernardi and Arnold 1997). Previous studies also reveal that women are more risk-averse than men when making investment decisions. For example, Barber and Odean (2001) examine the trading behavior of household accounts in the U.S. market and find that women trade less frequently than men. A subsequent study on portfolio choice also reveals that women invest less than men in 401(k) plans (Agnew, Balduzzi and Sunden 2003). In an experimental study, Powell and Ansic (1997) report that gender is a significant factor explaining the degree of risk aversion when making investment decisions. They find women are more conservative after controlling for other factors such as familiarity and framing, costs and ambiguity. A separate investigation shows that this effect holds after further controlling for important individual characteristics such as age, experience, education, asset holdings and knowledge (Estes and Hosseini 1988).

In addition to gender distinctions in fundamental issues such as ethical development and risk tolerance, women also behave differently from men in other respects. For example, Adams and Ferreira (2009) report that female

directors have less of an attendance problem than male directors, suggesting female directors are more diligent. Adams, Gray and Nowland (2010) indicate that female directors are more independent in their thinking and less likely to belong to old boys' networks. Female directors are also more adept at effective communication (Hillman, Shropshire and Cannella 2007) and hence facilitate more informed decisions (Daily, Certo and Dalton 2000; Rose 2007).

2.4.2 Corporate Board, Audit Committee and Conservatism

The corporate board is an important governance mechanism in modern public firms, which are characterized by the separation of control and ownership. The board has a fiduciary duty to monitor the firm's managers for the benefit of shareholders. It is arguably the most important element of the control system that helps curb opportunistic behavior among managers (Fama and Jensen 1983).

Financial reporting enables directors to monitor managers. As one important source of verifiable information, accounting reports are crucial in allowing board directors to monitor and advise managers effectively (Ahmed and Duellman 2007). By tightening the standard of verification for gains,

conservatism reduces managers' incentive to conduct negative NPV (net present value) projects (Ball 2001; Ball and Shivakumar 2005), and informs shareholders to discipline managers in a timely manner (Watts 2003a). The role of conservative accounting practices as an important tool of governance is underlined by studies showing that boards with more independent members are more likely to use conservatism to monitor managers (Ahmed and Duellman 2007; Garcia Lara, Garcia Osama and Penalva 2009).

As one of the important board committees, the audit committee is the "ultimate monitor" of financial reporting (Blue Ribbon Committee, 1999) and hence is more influential in shaping accounting and reporting practices than the board as a whole. The audit committee liaises with outside auditors, financial/accounting managers and internal auditors to review financial reports and audit internal control processes (Klein 2002). The audit committee engages in such activities to promote the quality of financial reporting.

The importance of the audit committee is recognized in relevant regulations. In 1978, the New York Stock Exchange (NYSE) required listed firms to have an audit committee consisting of independent directors (Beasley 1996).

Although the American Stock Exchange (AMEX) did not impose an equivalent mandatory requirement, it recommended that listed firms establish an audit committee composed of independent directors. In 1987, the National Association of Securities Dealers (NASDAQ) required that the majority of audit committee members be independent from incumbent management. Requirements relating to the qualifications of audit committee members were tightened after major accounting scandals such as Enron. For example, Sarbanes-Oxley Act (SOX) mandate that all audit committees should be entirely composed of independent directors (SOX Section 301).

Empirical studies have shown that an effective audit committee is associated with better earnings quality (Klein 2002), more timely and accurate management forecasts (Karamanou and Vafeas 2005) and a lower cost of debt (Anderson, Mansi and Reeb 2004). More specifically, Krishnan and Visvanathan (2008) confirm their conjecture that audit committees with financial accounting expertise are more likely to employ conservative financial reporting practices because they have better monitoring capabilities.

The evidence above suggests that effective boards and audit committees affect

conservatism incentives and capabilities.

2.4.3 Conservatism and Board Gender Diversity

Compare to all-male board, gender diversity board is more likely to improve board effectiveness and monitoring capacity. This is because women bring their traits (including greater risk aversion, a higher level of moral development, more polished communication skills and greater vigilance) into the boardroom. Recent studies have examined the effect of female directors on the financial accounting production process. For example, Srinidhi, Gul and Tsui (2011) find that firms with female directors on the board are associated with higher earnings quality. Boards with female directors are also more likely to increase audit efforts aimed at monitoring the production of financial accounting data (Gul, Srinidhi and Tsui 2008). Gul, Hutchinson and Lai (2011) add to the evidence that the participation of female directors promotes firms' accounting quality by showing that analyst forecasts are more accurate in firms with female directors.

As a potentially beneficial governance mechanism (Watts 2003a), conservatism is likely to facilitate the monitoring of managers and hence

reduce associated litigation and reputational risks. Adopting a stance of conservatism may also reduce ethical dilemmas because by recognizing losses in a more timely manner than gains, firms are less likely to encounter ethical problems such as investing in value-destroying projects (Ball 2001; Ball and Shivakumar 2005). As a result, firms with gender-diverse boards are more likely to adopt such a policy of conservatism.

CHAPTER 3

HYPOTHESES DEVELOPMENT AND RESEARCH DESIGN

3.1 Hypotheses Development

3.1.1 Conservatism, Contract Incompleteness and Moral Hazard

Earlier chapters indicate that the demand for conservatism arises from contract incompleteness and moral hazard. Although prior studies have investigated the effects of moral hazard on conservatism (e.g. Lafond and Roychowdhury 2008), very few have examined the effects of contract incompleteness and its interaction with moral hazard on the degree of conservatism. Contracts can be incomplete because of many reasons (Hart 1995, 2001). Srinidhi, Zhou and Mian (2011) identify time-incompleteness as a major reason for contract incompleteness. They define time-incompleteness as "difference in timing between the manager's efforts and the realization of the full output are characterized by uncertainty about the future payoffs of the firm" (Srinidhi, Zhou and Mian 2011). Time-incompleteness of contracts can be partially addressed by stock-based compensation contracts, making managers' payment contingent on the future consequences of current actions (Leone, Wu and Zimmerman 2006). Based on these findings, I argue that contract

incompleteness and moral hazard independently and jointly contribute to conservatism.

Srinidhi, Zhou and Mian (2011) confirm the intuitions outlined in the foregoing sections by analyzing the demand for conservatism in relation to incomplete contracts based on a principal-agent relation framework. The results they obtain using this stylized principal-agent model can be summarized in more detail as follows.

1. In the presence of time-incompleteness, where compensation needs to be settled fully at the end of the first period even though the outcomes of the manager's efforts will be partly observable only in the second period, conservative reporting is optimal;
2. The degree of conservatism is directly proportional to the extent of time-incompleteness, i.e., the relative effects of a manager's efforts on the distribution of the second period output compared to that of the first period output;
3. Although moral hazard is a necessary condition, when it is combined with contract incompleteness, the two constitute a sufficient condition for

conservatism. The extent of conservatism is directly proportional to the incentive compatibility constraints arising from moral hazard and to the sensitivity of future outcomes to current efforts – a measure of the time-incompleteness of a contract.

In the following sections, I formalize a number of hypotheses based on the results of Srinidhi, Zhou and Mian (2011) and discuss the corresponding empirical strategies I use to test them.

The first hypothesis concerns the demand for conservative accounting in the incomplete contracts setting. As discussed earlier, highly incomplete contracts make contracting difficult. As a potential governance mechanism, conservatism helps reduce contracting costs. As a result, firms with highly incomplete contracts are more likely to employ conservative accounting practices to mitigate contracting costs. Hence, the first hypothesis is stated as follows:

H1: Accounting conservatism is positively associated with contract incompleteness.

The second hypothesis concerns the joint effect of contract incompleteness and moral hazard on the demand for conservatism. In the spirit of Hart (1995, 2001) and, more specifically, the theory developed by Srinidhi, Zhou and Mian (2011), I hypothesize that firms' financial reporting is most conservative when the degrees of contract incompleteness and moral hazard are severe. Conversely, the extent of conservatism is lowest when contract incompleteness and moral hazard are both less acute. Thus, my second hypothesis is presented as follows:

H2a: Firms with greater contract incompleteness and a higher level of moral hazard exhibit more conservative accounting;

H2b: Firms with less contract incompleteness and a lower level of moral hazard exhibit less conservative accounting.

The results of Srinidhi, Zhou and Mian (2011) suggest that conservatism is a response to both contract incompleteness and moral hazard. Keeping contract incompleteness constant, a greater level of moral hazard will lead to an

increased demand for conservatism. Hence, the third hypothesis is stated as follows:

H2c: The negative relationship between moral hazard and conservative accounting is more pronounced when contract incompleteness is more severe.

Assuming the moral hazard problem does not exist, shareholders are not concerned about the agency costs caused by contract incompleteness when the CEO has no incentive to transfer wealth from them. I expect the demand for conservative accounting to exist only when the moral hazard problem is severe. Thus, my fourth hypothesis is stated as follows:

H2d: The positive relationship between contract incompleteness and conservatism is more pronounced when there is a high degree of moral hazard.

3.1.2 Conservatism and Board Gender Diversity

Conservatism and Board Gender Diversity

Most of the literature on board structure focuses on the proportion of independent directors on the board and its effects on accounting quality (Srinidhi, Gul and Tsui 2011). Researchers have recently found that boards composed of both male and female directors can more effectively oversee management and financial reporting (Gul, Srinidhi and Tsui 2008; Gul, Ng and Srinidhi 2011; Srinidhi, Gul and Tsui 2011). Broadly speaking, the role of female directors on the board can be explained at both the individual level and the group level.

At the individual level, women are generally more risk averse than men (e.g. Estes and Hosseini 1988; Powell and Ansic 1997; Barber and Odean 2001). By adopting more conservative accounting practices, female directors can reduce opportunistic behavior among managers. In other words, conservatism reduces risks faced by female directors and makes them more likely to use conservatism as a means to monitor managers, which in turn helps alleviate associated risks (Sahlman 1990).

Another reason female directors are more likely to employ conservative accounting standards is that they are more sensitive to ethical issues than are

male directors (e.g. Gilligan 1977; Bertz, O'Connell and Shepard 1989; Bernardi and Arnold 1997; Ambrose and Schminke 1999). Conservative accounting helps female directors reduce the firm's exposure to ethical dilemmas and is therefore an approach they favor.

At the board level, women participation on the board promotes its effectiveness as a governing body. Adams, Gray and Nowland (2010) suggest that female directors are more independent in their thinking and less likely to belong to old boys' networks. Female directors are also more adept at effective communication (Hillman, Shropshire and Cannella 2007). Women participation on the board is also likely to bring different viewpoints to the boardroom and facilitate more informed decisions (Daily, Certo and Dalton 2000; Rose 2007). Boards with female directors are thus more effective in monitoring and advising managers. Empirical studies have shown that firms with female directors are associated with higher earnings quality (Srinidhi, Gul and Tsui 2011), a more informative stock price (Gul, Ng and Srinidhi 2011) and greater auditor effort (Gul, Srinidhi and Tsui 2008). The evidence implies that boards with women representation are more likely to employ conservative accounting practices to monitor their managers. As audit

committee has specific responsibility of overseeing the financial reporting process, firms with female directors on the audit committee demand for high degree of conservatism. I therefore formalize the hypotheses as follows:

H3a: Firms with board gender diversity are likely to adopt more conservative accounting practices;

H3b: Firms with audit committee gender diversity are likely to adopt more conservative accounting practices.

3.2 Research Design

3.2.1 Conservatism, Contract Incompleteness and Moral Hazard

In this thesis, I use R&D to proxy for contract incompleteness and supplement it with intangible assets as an alternative proxy. Economics literature (e.g. Williamson 1975, 1985, 1989, 1993) suggests that contract incompleteness contributes to transaction costs, which in turn affect the organization's choices[8]. Incomplete contracts make it impossible to fully specify all contingencies *ex ante*. The implications of transaction cost economic theory

[8] These insights are based on the assumption of bounded rationality and the uncertainty of the real world.

are wide-ranging. For example, Dasgupta and Tao (1998) suggest that R&D can result in unforeseen contingencies that make efficient contracting difficult. Another reason R&D makes complete contracting difficult is that managers have a finite tenure. Managers' compensation is partially based on accounting performance, which can be volatile if the firm invests significantly in R&D activities. Managers have incentives to boost the firm's performance during their tenure and delay the recognition of losses. For the above reasons, I use the intensity of R&D expenditure as a proxy for contract incompleteness.

Intangible assets are another measure of contract incompleteness. A firm with substantial intangible assets has more unpredictable contingencies. As a result, it is more difficult to specify all future contingencies in contracts. In this study, I measure intangible assets as [(Intangible Assets –Goodwill) / Total Assets][9].

I employ the following lead-lag specification to test the first hypothesis:

[9]The literature provides few empirical measures of contract incompleteness. There is no single account that summarizes all intangible assets in the balance sheet. Intangible assets recognized in the balance sheet include, but are not limited to, intangible assets acquired from others, goodwill and internally developed intangible assets.

$$NI_{it} = \beta_0 + \beta_1 * RET_{it} + \beta_2 * D_{it} + \beta_3 * D_{it} * RET_{it} + \beta_4 * INCOMT_{it-1} + \beta_5 * D_{it} * INCOMT_{it-1} + \beta_6 * RET_{it} * INCOMT_{it-1} + \beta_7 * D_{it} * RET_{it} * INCOMT_{it-1} + \Gamma_1 * C_{it-1} + \Gamma_2 * D_{it} * C_{it-1} + \Gamma_3 * RET_{it} * C_{it-1} + \Gamma_4 * D_{it} * RET_{it} * C_{it-1} + \varepsilon$$

(3.1)

where *INCOMT* is contract incompleteness, measured by R&D intensity or intangible assets (*ITG*). I use two proxies for each of these variables: the decile ranking of R&D (*RDRANK*) and an R&D dummy (1 for observations above the 75th percentile of R&D values in the sample and 0 otherwise). The coefficient of *D*RET*INCOMT* in Equation (3.1) captures the incremental effect of *INCOMT* on conservatism. Similarly, I also use *ITGRANK* (decile ranking of *ITG*) and *ITGD* (1 for observations above the 75th percentile of *ITG* values in the sample and 0 otherwise) as alternative measures of contract incompleteness. *C* is a vector of control variables comprising firm size (*SIZE*), leverage (*LEV*), market-to-book ratio (*MB*), litigation risk (*LIT*), managerial ownership (*CEOOWN*) and institutional ownership (*INST*). *SIZE* is measured as the natural logarithm of the firm's market value, which is equal to the number of shares outstanding times the share price at the end of the year. *LEV* is equal to the ratio of total debt to the firm's market value. Litigation (*LIT*) risk is an important factor that encourages firms to employ conservative accounting practices. In the specification, litigation is a dummy variable equal

to 1 if a firm belongs to one of the high litigation industries identified by Francis, Philbrick and Schipper (1994). I follow the literature (e.g. Gul, Chen and Tsui 2003; Lafond and Roychowdury 2008) by adopting the percentage of shares held by the CEO to the total number of shares outstanding as the proxy for managerial ownership. *INST* is calculated as the percentage of total institutional ownership. To normalize the control variables (*MB*, *SIZE*, *LEV, CEOOWN* and *INST*), I use their decile rankings within each fiscal year. Γ_i, i=1, 2, 3, 4 are the coefficients of the main, two-way and three-way interactions with the vector of control variables. The detailed definitions of the variables are given in Appendix 3. I use the Fama-MacBeth (1973) method to control for time-series correlation.

Hypotheses 2a and 2b deal with the interaction effect of contract incompleteness and moral hazard on conservatism. I use the following two-way analysis approach to test these hypotheses:

$$NI_{it} = \beta_0 + \beta_1 * RET_{it} + \beta_2 * D_{it} + \beta_3 * D_{it} * RET_{it} + \beta_4 * DUMMY_{it-1} + \beta_5 * D_{it} * DUMMY_{it-1} + \beta_6 * RET_{it} * DUMMY_{it-1} + \beta_7 * D_{it} * RET_{it} * DUMMY_{it-1} + \Gamma_1 * C_{it-1} + \Gamma_2 * D_{it} * C_{it-1} + \Gamma_3 * RET_{it} * C_{it-1} + \Gamma_4 * D_{it} * RET_{it} * C_{it-1} + \varepsilon \quad (3.2)$$

To test hypothesis H2a, I use an indicator variable (*DUMMY=HH)* to denote

jointly a high degree of contract incompleteness and a low proportion of CEO ownership in the full sample. *HH* is equal to one if *INCOMT* (proxied by R&D and *ITG*) is larger than the median value of the observations and *CEOOWN* is less than the median value of the observations in each fiscal year. A significantly positive coefficient of *D*RET*DUMMY* would support hypothesis H2a. A similar testing method is employed for hypothesis H2b, with an indicator variable *DUMMY=LL* that denotes a combination of a low degree of contract incompleteness and a high proportion of CEO ownership in the full sample. *LL* is equal to one if *INCOMT* (proxied by R&D and *ITG*) is lower than the median value of the observations and *CEOOWN* is larger than the median value of the observations in each fiscal year. *C* is a vector of control variables comprising *SIZE, LEV, MB, LIT* and *INST*. I use the decile rankings of the control variables within each fiscal year to normalize these variables. Γ_i, i=1, 2, 3, 4 are the coefficients of the main, two-way and three-way interactions with the vector of control variables. I expect the coefficient on *D*RET*DUMMY* to be negative and significant. If both H2a and H2b are validated, the degree of conservatism in the *HH* group should be much higher than that in the *LL* group. I conduct another test based on a sub-sample that either *HH* or *LL* equals to 1. In these testes, I use *DUMMY*=1

to indicate *HH* and *DUMMY*=0 to indicate *LL*. Similar to the first test, a significantly positive coefficient of *D*RET*DUMMY* would support hypotheses H2a and H2b.

Hypothesis H2c examines whether the effect of moral hazard on conservatism varies with the extent of contract incompleteness. Lafond and Roychowdhury (2008) show that firms with a severe moral hazard problem characterized by a low level of CEO ownership exhibit greater conservatism. I follow Lafond and Roychowdhury (2008) by using the following model to examine whether their results differ with the extent of contract incompleteness:

$$NI_{it} = \beta_0 + \beta_1 * RET_{it} + \beta_2 * D_{it} + \beta_3 * D_{it} * RET_{it} + \beta_4 * CEOOWN_{it-1} + \beta_5 * D_{it} * CEOOWN_{it-1} + \beta_6 * RET_{it} * CEOOWN_{it-1} + \beta_7 * D_{it} * RET_{it} * CEOOWN_{it-1} + \Gamma_1 * C_{it-1} + \Gamma_2 * D_{it} * C_{it-1} + \Gamma_3 * RET_{it} * C_{it-1} + \Gamma_4 * D_{it} * RET_{it} * C_{it-1} + \varepsilon \quad (3.3)$$

where *CEOOWN* is the level of the CEO's ownership stake in the firm and *C* is a vector of control variables comprising *SIZE, LEV, MB, LIT* and *INST*. I normalize the control variables by using their decile rankings within each fiscal year. Γ_i, i=1, 2, 3, 4 are the coefficients of the main, two-way and three-way interactions with the vector of control variables. I use the full sample and replicate the hypothesis of Lafond and Roychowdhury (2008),

introducing *INST* as an additional control variable. A negative and significant coefficient of *D*RET* CEOOWN* would confirm the results derived by Lafond and Roychowdhury (2008). I use the results generated from the augmented Lafond and Roychowdhury (2008) model as the benchmark. The full sample is divided into two equal sub-samples with higher and lower values of *INCOMT*. I use the specification (3.3) to estimate the coefficients in each sub-sample. Hypothesis H2c is tested by comparing the coefficients of *D*RET*CEOOWN* between the two sub-samples. As H2c suggests, I expect the coefficient on *D*RET* CEOOWN* to be negative and significant in the high *INCOMT* group.

To test hypothesis H2d, I split the full sample into two sub-samples: a high moral hazard sample (below median CEO ownership) and a low moral hazard sample (above median CEO ownership). I estimate Model (3.4) for each sub-sample:

$$NI_{it} = \beta_0 + \beta_1 * RET_{it} + \beta_2 * D_{it} + \beta_3 * D_{it} * RET_{it} + \beta_4 * INCOMT_{it-1} + \beta_5 * D_{it} * INCOMT_{it-1} + \beta_6 * RET_{it} * INCOMT_{it-1} + \beta_7 * D_{it} * RET_{it} * INCOMT_{it-1} + \Gamma_1 * C_{it-1} + \Gamma_2 * D_{it} * C_{it-1} + \Gamma_3 * RET_{it} * C_{it-1} + \Gamma_4 * D_{it} * RET_{it} * C_{it-1} + \varepsilon \quad (3.4)$$

The variables used in Equations (3.4) are similar to those included in Equations (3.1), except that the control variables are different. As CEO ownership is used as the basis for separating the full sample into two sub-samples, *CEOOWN* is not included in the vector of control variables. As H2d suggests, I expect the coefficient on *D*RET*INCOMT* to be positively significant in the lower CEO ownership group in which moral hazard problems are more severe.

3.2.2 Conservatism and Board Gender Diversity

To test the effect of board gender diversity on conservatism, I adopt an event study approach and examine the change in conservatism after firms transit from an all-male board (audit committee) to a board (audit committee) with at least one female director (audit committee member). This change approach is more likely to provide evidence of causality rather than just association (Carcello, Hermanson and Ye 2011).

To clarify the research design, I use a timeline and complement it with a case study below. Figure 3.1 shows the timeline for disclosing and electing directors. Firms solicit shareholders' votes in proxy statements, calling for

votes at the annual meeting. The annual meeting is normally scheduled after the fiscal year-end. The proposed directors are formally elected at the annual meeting. Taking IBM as an example, the IBM board solicited shareholders' votes to elect board directors in the proxy statement issued on March 8, 2009 (see the Notice of 2009 IBM Annual Meeting and Proxy Statement in Appendix 1 and the Notice of Annual Meeting in Appendix 2). Directors were formally elected on April 27 of the same year. The 2009 Annual Report was released on February 23, 2010, two months after the year-end. Thus, the newly appointed female director had sufficient time to monitor the financial report production process (the interval between the date of her appointment and the date of the annual report was nearly 8 months, more than one meeting regarding accounting reporting).

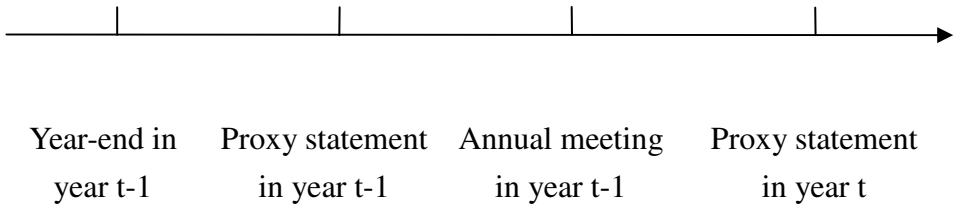

Figure 3.1: Timeline of Proxy Statement and Election of Directors

As shown in Figure 3.1, I examine the effect of appointing a female director

on conservatism by comparing the change in conservatism between the year before the transition year (year t-1) and that in the transition year (year t). To exclude alternative explanations of conservatism documented in the literature, I control for the determinants comprising firm size (*SIZE*), market-to-book ratio (*MB*), leverage (*LEV*), litigation risk (*LIT*), managerial ownership (*CEOOWN*) and institutional ownership (*INST*). The following specification is used to test the hypotheses.

$$NI_{it} = \beta_0 + \beta_1 * RET_{it} + \beta_2 * D_{it} + \beta_3 * D_{it} * RET_{it} + \beta_4 * POST_{it} + \beta_5 * D_{it} * POST_{it} + \beta_6 * RET_{it} * POST_{it} + \beta_7 * D_{it} * RET_{it} * POST_{it} + \Gamma_1 * C_{it-1} + \Gamma_2 * D_{it} * C_{it-1} + \Gamma_3 * RET_{it} * C_{it-1} + \Gamma_4 * D_{it} * RET_{it} * C_{it-1} + \varepsilon \quad (3.5)$$

where *NI* is annual net income before extraordinary items, *RET* is the 12-month consecutive buy-and-hold return, and *D* is a dummy variable that assumes the value of 1 when *RET* is negative and 0 otherwise. *POST* is an indicator variable equal to 1 if the current year is the year in which the firm transits from an all-male board to a board with at least one female, and 0 otherwise. *D*RET*POST* captures the change in conservatism after the firm transits to a gender-diverse board. *C* is the vector of control variables comprising firm size (*SIZE*), market-to-book ratio (*MB*), leverage (*LEV*),

litigation (*LIT*), managerial ownership (*CEOOWN*) and institutional ownership (*INST*). *SIZE* is measured as the natural logarithm of the firm's market value, which is equal to the number of shares outstanding times the share price at the end of the year. *LEV* is equal to the ratio of total debt to the firm's market value. Litigation (*LIT*) risk is an important factor that influences firms to employ conservative accounting practices. In the specification, litigation is a dummy variable equal to 1 if the firm belongs to one of the high litigation industries identified by Francis, Philbrick and Schipper (1994). I follow the literature (e.g. Gul, Chen and Tsui 2003; Lafond and Roychowdury 2008) by proxying managerial ownership by the number of shares the CEO holds as a percentage of the total number of shares outstanding. *INST* is calculated as the total percentage of institutional ownership. To normalize the control variables (*MB*, *SIZE*, *LEV, CEOOWN* and *INST*), I use their decile rankings within each fiscal year. Γ_i, i=1, 2, 3, 4 are the coefficients of the main, two-way and three-way interactions with the vector of control variables.

In addition to the one-year window main test, I also perform a longer window test to examine long-term effect of board gender diversity on conservatism. To address potentially correlated omitted variable bias problems, I control for

other board or audit committee characteristics that may potentially affect financial reporting quality.

Finally, to exclude the possibility that the results are driven by a contemporaneous upward trend in conservatism, I also employ a matching sample approach to mitigate the endogeneity concern. All these additional results are presented in Chapter 4.

CHAPTER 4

RESULTS

4.1 Sample Selection

CEO ownership data for 1995 to 2009 is taken from the Standard and Poor's (S&P) ExecuComp database. In an approach similar to that of previous studies (e.g. Gul, Chen and Tsui. 2003; Lafond and Roychowdhury 2008), I use the number of CEO shares as a percentage of total shares outstanding as the measure of CEO ownership. The stock return data are extracted from the CRSP database, and the accounting data are from S&P's COMPUSTAT database. Financial firms are excluded from the sample because of the unique accounting treatment in these industries. I also follow previous studies by controlling for total institutional ownership. The institutional ownership data are sourced from the CDA Spectrum database, which includes data from institutional investors' 13-f filings. To be included in the sample, firms must have all 12-month consecutive stock return data and R&D data available. Taken together, these criteria generate a final sample comprising 15,142 observations[10]. The details of the sample selection process are presented in

[10] The number of observations in the *ITG* sample is lower than that in the *R&D* sample because of different treatments of missing values for these two measures.

Panel A of Table 4.1.

INSERT TABLE 4.1

The sample spans the period from 1995 to 2009. Panel B of Table 4.1 presents the yearly distribution, showing the observations are evenly distributed across the sample period. Among the fifteen years in the sample, the largest percentage is 7.21% in 2008 and the lowest is 5.71% in 1995. The distribution indicates that the results are unlikely to be driven by the clustering of data in any particular period.

To examine the effect of board gender diversity on conservatism, I retrieve directorship data from RiskMetrics, a dataset that provides information on the directors of S&P 1500 companies from 1999 to 2009. RiskMetrics data are sourced from proxy statements submitted to the SEC and filed with shareholders before annual meetings. I choose the firms that transit from an all-male board to a board with at least one female member for the first time. To qualify for the sample, I also require firms to have (1) 12 months of

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Following common practice in the literature, I treat all missing R&D values as zero and remove missing intangible assets (INTAN) and goodwill (GDWL) values in the *ITG* sample. The difference is trivial (39 observations, or around 0.26% of the total sample).

consecutive buy-and-hold returns data; (2) data on all control variables comprising firm size (*SIZE*), leverage (*LEV*), market-to-book ratio (*MB*), managerial ownership (*CEOOWN*) and institutional ownership (*INST*); and (3) benchmark firm-year data before the transition year.

These criteria generate 407 (475) pairs of firms that transit from an all-male board (audit committee) to a board (audit committee) with at least one female director (member). Table 4.1 Panel C lists the yearly distribution of firms that transit from an all-male board (audit committee) to a board (audit committee) with at least one female director (audit committee member) during the selected sample period. The number of all-male board (audit committee) to gender diversity board (audit committee) peaks in 1999 and decrease afterward.

Figure 4.1 illustrates the trend in board and audit committee gender diversity transitions among the sample firms selected[11]. The figure shows that the number of transition cases decreased over the course of the sample period.

[11] As I impose restrictions in selecting the sample examined in this study (e.g. only firms that experience a transition in the sample period are retained), the figure does not necessarily represent the real trend during the sample period.

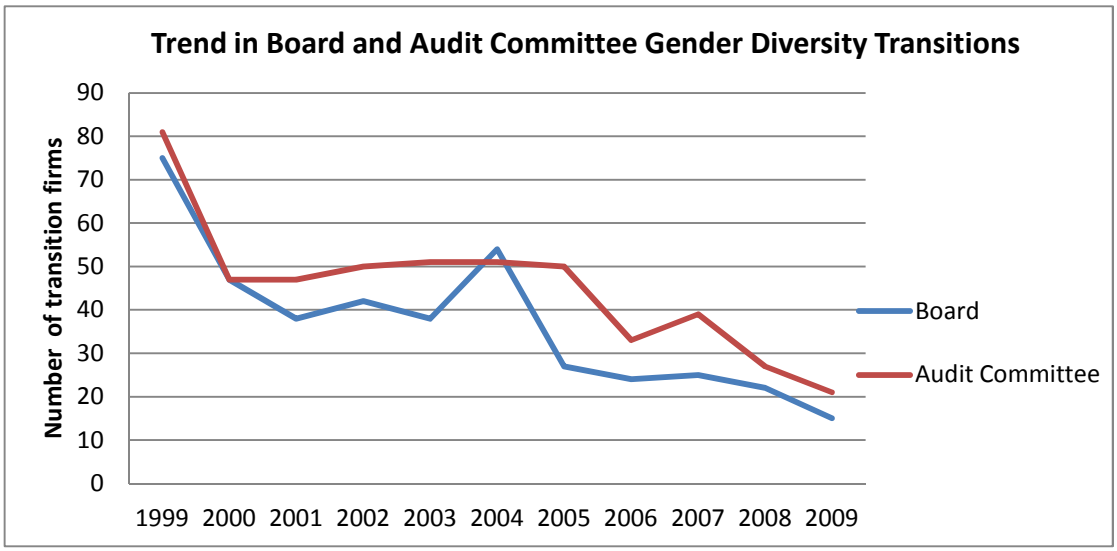

Figure 4.1: Trend in Board and Audit Committee Gender Diversity Transitions

4.2 Descriptive Statistics and Correlation

Table 4.2 reports descriptive statistics for the key variables examined in this study. The mean and median values of net income (*NI*) and 12-month consecutive returns (*RET*) are positive, indicating that U.S. corporations were generally profitable during the selected period. The average level of CEO ownership (*CEOOWN*) is 2.6% and the median is 0.30%, which are comparable to those reported by Lafond and Roychowdhury (2008). The measure of contract incompleteness (*R&D*) has a mean of 3.2%. The standard deviation of R&D is quite large, suggesting large variations in R&D investment among these firms. Around 2% of the sample firms are in litigious industries.

Panel B of Table 4.2 presents the Pearson and Spearman correlations among the key variables. A higher level of CEO ownership is associated with better performance, as reflected in positive values for variables including *NI* and *RET*, but it is not significant in all cases. This result is consistent with the argument that firms with a higher level of CEO ownership have less severe agency problems and, in turn, better performance. In general, CEOs hold relatively small portions of shares in larger firms (the Pearson correlation coefficient of *CEOOWN* is -0.160 and Spearman correlation coefficient is -0.318). The correlations between R&D and firm performance (*NI* and *RET*) are mixed. The results indicate a significantly positive relation between *R&D* and *RET*, suggesting the stock market favors firms that invest more in R&D activities. However, spending on R&D may hurt a firm's short-term accounting performance, as the table shows a negative association between *R&D* and *NI*.

INSERT TABLE 4.2

4.3 Regression Results

4.3.1 Conservatism, Contract Incompleteness and Moral Hazard

This section presents the multiple-regression results. Table 4.3 shows the relationship between contract incompleteness and conservatism. I employ the Fama and MacBeth (1973) model to correct for time-series correlation. Contract incompleteness is proxied by the decile rank of R&D expenditure scaled by total assets (*RDRANK*) and the R&D dummy variable (*RDD*). The regression results are presented in Table 4.3 Panel A. A baseline regression is presented in the first column, and the remaining columns show two sets of extended regression results in which contract incompleteness measures (measured by R&D) are added to the specification. The baseline regression model includes only variables the literature documents as affecting conservatism. These determinants are firm size (*SIZE*), market-to-book ratio (*MB*), leverage (*LEV*), litigation (*LIT*), managerial ownership (*CEOOWN*) and institutional ownership (*INST*). Consistent with previous studies, the results in the first column of Panel A of Table 4.3 show that firms that are larger, have a high MB, or have a higher level of CEO ownership are less conservative, whereas firms with more debt are more conservative. Column two of Panel A presents the results of the multiple-regressions on the effect of contract incompleteness on conservatism using the decile rank of R&D expenditure scaled by total assets (*RDRANK*). The results in column two reveal a positive

relation between conservatism and contract incompleteness, with a coefficient of 0.116 and a significance level of less than 1%. Column 3 shows the results when incompleteness is measured by the R&D dummy (*RDD*), which is equal to 1 if R&D expenditure is greater than the 75th percentile of R&D observations in the sample and 0 otherwise. The coefficient of *D*RET*RDD* is 0.099 at a significance level of less than 1%. In comparison with the baseline regression results reported in column one, the explanatory power of those reported in the second and third columns is greater in terms of R-square values. This suggests that contract incompleteness has an incremental explanation power in explaining conservatism. In Panel B of Table 4.3, incompleteness is measured by intangible assets (*ITG*). Similar to Panel A, I present a set of baseline regression results followed by the results of extended regressions. The baseline regression results in Panel B of Table 4.3 are similar to the results in Panel A. The second and third columns present similar regression results. The coefficient on *D*RET*ITGRANK* is 0.046 but not significant. However, when the dummy value of *ITG (ITGD)* is used in the model, the coefficient of *D*RET*ITGD* is 0.061 and is significant at less than 5% level. It also shows that larger firms and higher MB firms are less conservative in their accounting practices, which is consistent with findings in the literature (e.g.

Lafond and Roychowdhury 2008; Lafond and Watts 2008). Also consistent with the findings of Lafond and Roychowdhury (2008), the results show a significantly negative association between managerial ownership and conservatism. The results in Table 4.3 thus provide support for my first hypothesis.

INSERT TABLE 4.3

Table 4.4 shows the Fama-MacBeth (1973) regression results for Hypotheses 2a and 2b based on Model (3.2). In this table, I examine the joint effect of contract incompleteness and moral hazard on the degree of conservatism. I sort the sample based on the measures of contract incompleteness (*R&D* and *ITG*) and moral hazard (*CEOOWN*) to generate four sub-samples. *HH* is a dummy variable equal to one if the observation belongs to the low CEO ownership (high moral hazard) group and the high *R&D* or *ITG* (more incomplete contracts) group. Similarly, *LL* represents the sub-sample with a high level of CEO ownership (low moral hazard) and a low value for *R&D* or *ITG* (less incomplete contracts). The empirical results in column one of Panel A in Table 4.4 show that firms with high degrees of moral hazard and contract incompleteness are more conservative (the coefficient is 0.085 with a

significance level of less than 1%). The second column shows a significantly negative association between *LL* and conservatism. The coefficient is -0.065 with a significance level of less than 5%, suggesting financial reporting in firms with low levels of moral hazard and contract incompleteness is less conservative. In the third column, I analyze only the *HH* and *LL* sub-samples and employ a dummy variable assigned the value of 1 if the firm belongs to the *HH* group. The coefficient of *D*RET*HH* is 0.130 with a significance level of less than 1%. This result provides further support for the corresponding result in the first column. Panel B presents Fama-MacBeth (1973) results using *ITG* as the measure of contract incompleteness. Similar to the findings in Panel A, it shows that firms with high degrees of moral hazard and contract incompleteness are more conservative (the coefficient of *HH* is 0.072 in the full sample and 0.097 in the sub-sample selected). Panel B also shows that firms with less acute contract incompleteness and moral hazard problems are less conservative (the coefficient of *LL* is -0.057 with a significance level of less than 5%). The third column in Panel B shows a positive and significant coefficient of *D*RET*HH* (0.097) at a significance level of less than 5%, thereby confirming the corresponding result in the first

column. Overall, these results provide strong support for Hypotheses 2a and 2b.

INSERT TABLE 4.4

To supplement the results, I construct a matrix that contains the extent of conservatism in four scenarios that are described by two dimensions, contract incompleteness and moral hazard. HH represents firms with both higher moral hazard and greater contract incompleteness. Similarly, LL represents firms with both lower moral hazard and less contract incompleteness. The cut-off of high / low is median value of CEO ownership (measure of moral hazard) and that of contract incompleteness proxies, including R&D and intangible assets. Two tables are presented in Table 4.5.

INSERT TABLE 4.5

In Panel A, the coefficient of *D*RET* is 0.266 in HH group and 0.258 in LL group, both with less than 1% significant level. The same pattern shows in Panel B. The results show that the extent of conservatism is larger in higher moral hazard and greater contract incompleteness environment than that in lower moral hazard and less contract incompleteness environment. Averaging

the coefficients of four scenarios in both Panel A and Panel B, it shows that the average coefficient in HH ranks highest while LL ranks lowest. These results support H2 a, b.

Table 4.6 provides the Fama-MacBeth (1973) regression results for Hypothesis 2c. I split the sample into two sub-samples based on contract incompleteness. Firms with *R&D (ITG)* below the median constitute the low contract incompleteness sub-sample. The remainder of the sample forms the high contract incompleteness sub-sample. I then examine the relationship between CEO ownership and conservatism in the high and low contract incompleteness sub-samples separately. I expect the negative relationship between CEO ownership and conservatism to be more pronounced in the sub-sample with high *R&D (ITG)* than in the sub-sample with low *R&D (ITG)*.

INSERT TABLE 4.6

I present the baseline Fama-MacBeth (1973) regression results for the R&D sample in the first column of Table 4.6 Panel A. Consistent with the finding of Lafond and Roychowdhury (2008), the coefficient of *D*RET*CEOOWN* is

-0.106 and is significant at the 5% level. In the second and third columns, I report the results of regressions examining the relationship between *CEOOWN* and conservatism in the high and low *R&D* sub-samples, respectively. The results show that the negative relationship between managerial ownership and conservatism is mainly driven by the high *R&D* group, which is characterized by more incomplete contracts. The coefficient of *D*RET*CEOOWN* for the high R&D group is -0.096 with a significance level of less than 5%. The coefficient of *D*RET*CEOOWN* in the low R&D group is also -0.096, but is not significant. I then conduct similar regressions in which *ITG* serves as the measure of contract incompleteness and present the results in Panel B of Table 4.6. The table shows the negative relationship between *CEOOWN* and conservatism is more pronounced in the high contract incompleteness group (the coefficient is -0.194 with less than 1% significance) than in the low contract incompleteness group (the coefficient of -0.086 is not significant). Taken together, these results suggest that the negative relationship between moral hazard and conservatism documented by Lafond and Roychowdhury (2008) is driven by firms with a high degree of contract incompleteness. The results therefore support Hypothesis 2c.

Table 4.7 presents regression results for the interaction between contract incompleteness (proxied by *R&D* and *ITG*) and conservatism in two sub-samples with different levels of CEO ownership. The two sub-samples are based on the median level of CEO ownership in the sample. The higher (lower) CEO ownership group is the lower (higher) moral hazard group. Panel A of Table 4.7 shows the effect of contract incompleteness (measured by R&D) on conservatism in different (sub-) samples. The first column reports the relationship between contract incompleteness and conservatism in the full sample. This is followed by the regression results for the low and high moral hazard sub-samples. As the results show, the positive relationship between contract incompleteness and conservatism is more pronounced in the low CEO ownership group (the coefficient is 0.132 with a significance level of less than 5%) in which the moral hazard problem is more severe. In Panel B, I examine the relationship between contract incompleteness measured by *ITG* and conservatism in the high and low moral hazard groups. Although the difference is not significant, the results shows that firms with a high degree of contract incompleteness exhibit more conservative accounting when the moral hazard problem is severe (the coefficient is 0.092 in the high moral hazard group and 0.018 in the low moral hazard group). The results thus support

Hypothesis 2d.

INSERT TABLE 4.7

The foregoing findings are subject to some limitations. Studies on the effect of contract incompleteness on accounting properties are scarce in the accounting literature. As a result, there is very little discussion of the empirical measurement of contract incompleteness. The measure of contract incompleteness (R&D) I employ is borrowed from the economics literature. Although I control for other proxies for information asymmetry (firm size, institutional ownership), there remains a concern over whether R&D is merely another measure of asymmetric information or truly captures the extent of conservatism.

4.3.2 Conservatism and Board Gender Diversity

The main results are presented in Table 4.8. *D*RET*POST* captures the difference in the extent of conservatism between year t-1 and year t. The first column shows the effect of appointing at least one female director on conservatism. The coefficient of *D*RET*POST* is 0.134 with a significance level of less than 5%, suggesting that financial reporting becomes more

conservative when an all-male board transit to a gender-diverse board. Similarly, the coefficient of *D*RET*POST* in the audit committee sample is 0.114 with a significance level of less than 5%. Consistent with the finding of Lafond and Roychowdhury (2008), the coefficient of *D*RET*CEOOWN* is negative. Explanatory power in terms of R-square is higher than 20%, suggesting the empirical model is reasonably robust. The results support Hypothesis 3a and 3b.

INSERT TABLE 4.8

Table 4.9 presents the results when I run a three-year window to test Hypothesis 3a and 3b. A longer window test allows us to examine whether the change in conservatism results from appointing female director is merely a short-term effect. The results are presented in Table 4.9. *POST* is a dummy variable, equal to 1 in the post-transition period [0, +2] and 0 in the pre-transition period [-3, -1]. I require at least one firm-year observation before the transition event to exist for inclusion in the sample. The foregoing procedure yields a sample comprising 409 firms that transit to a gender-diverse board and 501 firms that transit to a gender-diverse audit committee. The two columns show the long-term effect of appointing female

directors and audit committee members on conservatism, respectively. The results show that financial reporting become more conservative in both samples. In column one, the coefficient of *D*RET*POST* is 0.082 and is significant at less than the 5% level, suggesting financial reporting becomes more conservative after all-male board transit to gender-diverse board. In column two, the coefficient of *D*RET*POST* in the audit committee sample is 0.079 and is significant at less than the 1% level. The results derived using the longer window are consistent with those for the one-year window and confirm the Hypothesis 3a and 3b.

INSERT TABLE 4.9

4.4 Additional Tests

Chandra (2011) shows that technology firms exhibit higher unconditional conservatism and lower conditional conservatism compared to non-technology firms. The study also shows highly correlated relationship between technology firms and R&D expenditure. As a result, it is possible that the results using R&D measure of contract incompleteness in this study contrast with those in Chandra (2011). I address this concern by comparing the difference of key variables in my study and those in Chandra (2011). It shows significant

difference among those key variables, suggesting sample difference may drive different results. Another way to address this concern is to use excessive R&D expenditure derived from R&D expenditure expectation model, including technology firms as a determinant, to examine the incremental effect of R&D as measure of contract incompleteness on conservatism. The results are presented in Table 4.10.

INSERT TABLE 4.10

In first stage, I use R&D expectation model to predict expected R&D expenditure in each year. The excessive R&D expenditure is equal to the difference between actual R&D expenditure and expected value derived from expectation model. I normalize excessive R&D expenditure by scaling decile rank value of excessive R&D by 9. The coefficient of *D*RET* RDR* captures the incremental effect of R&D beyond technology firms as defined in Chandra (2011) in explaining conservatism. The coefficient of *D*RET* RDR* is 0.107 with less than 1% significant level. The result suggests that R&D as measure of contract incompleteness has incremental explanation power to predict conservatism. The result further confirms the first hypothesis.

The results of board gender diversity and conservatism are mainly based on event-study approach. Previous results have not shown the extent of conservatism in pre and post transitions periods. I supplement previous results by examining the extent of conservatism in pre and post transitions periods respectively. The results are shown in Table 4. 11.

INSERT TABLE 4.11

As shown in Table 4.11, the extent of conservatism (*D*RET)* for board gender diversity transition firms increases from 0.112 in pre-transition period to 0.196 in post-transition period. The difference is 0.084. In audit committee sample, it also shows an increasing extent of conservatism after transition. These results provide additional evidence to support the third hypothesis.

The results reported in this part of board gender diversity and conservatism are potentially subject to correlated omitted variable bias problems. To mitigate this concern, I control for other board or audit committee characteristics that may potentially affect financial reporting quality. For example, previous studies find that a higher proportion of independent directors on the board and a greater percentage of independent audit committee members affect

accounting quality (e.g. Klein 2002; Ahmed and Duellman 2007). The proportion of independent audit committee members may also affect the extent of conservatism. However, as the Sarbanes-Oxley Act (SOX) has since 2002 required listed firms to appoint audit committees made up solely of independent members (SOX Section 301), variation in the proportion of independent directors on the audit committee disappeared after 2002. I therefore control for two important board characteristics that may affect the degree of conservatism: CEO-Chairman duality (*DUAL*) and the proportion of independent board directors (*INDDir*). Table 4.12 presents the empirical results of the augmented model that includes *DUAL* and *INDDir* as additional control variables. The coefficient of *D*RET*POST* is 0.128 in the board sample and 0.106 in the audit committee sample. Both of these results are significant at less than the 5% level and corroborate the earlier results. Previous studies reveal that firms with accounting expertise on the audit committee are associated with more conservative accounting (e.g. Krishnan and Visvanathan 2008). However, information indicating whether directors are accounting experts is not available before 2002. Controlling for accounting expertise in the regression would result in a dramatic reduction in sample size. Due to this data limitation, I cannot exclude the possibility that the results

would change if the accounting expertise of directors were controlled for.

INSERT TABLE 4.12

To exclude the possibility that the results are driven by a contemporaneous upward trend in conservatism, I employ a matching sample. For each experimental group observation, I match it with a control firm that has not transited from an all-male board to a board with at least one female director based on the firm closest in size within the same 2-digitial SIC code in the same year. I follow the suggestion of Clogg, Petkova and Haritou (1995) by using Z-statistics to assess the difference between the coefficients of *D*RET*POST* in the experimental group and the control group. This approach is also widely used in the accounting literature (e.g. Chen, Sun and Wu 2010).

The regression results for both the experimental group and the control group are presented in Table 4.13. Panel A of Table 4.13 shows the regression results for both the matched experimental group of firms that experience a transition from an all-male board to a board with at least one female director and the control group. Consistent with previous results, it shows that financial reporting becomes more conservative after firms that transit from all-male

board to gender-diverse board in the experimental group (the coefficient of *D*RET*POST* is 0.120 with a significance level of less than 5%). In the control group, the coefficient of *D*RET*POST* is -0.060 and is not significant. The difference between the coefficients of 0.180 is significant at less than the 5% level. Panel B of Table 4.13 presents similar results. The difference between the coefficients of *D*RET*POST* between the experimental group and the control group is 0.095, and is significant at less than the 10% level.

INSERT TABLE 4.13

The empirical results show the coefficients of *D*RET*POST* in the sample of firms that transit to a gender-diverse board are larger than those in the audit committee sample, similar findings in Srinidhi, Gul and Tsui (2011) . A possible reason for this result is that the board characteristics of these two samples differ. For example, around 70% of the directors in the audit committee transition sample are independent, while only 65% of the directors serving in the firms in the board transition sample are independent. Hence, the incremental effect of gender diversity in the audit committee on conservatism becomes weak due to an alternative and better governance mechanism being put in place. Another possible explanation is that changes in board gender

diversity and changes in audit committee gender diversity coexist in the sample[12]. Hence, it is difficult to determine which effect dominates the other. Although the scope of this study does not allow for these two effects to be disentangled, I reserve this issue for future research.

Finally, I also perform analysis to examine the effect of reverse change from a gender diverse board to an all-male board on conservatism. There are 183 (384) firms that transit from gender diverse board (audit committee) to an all-male board (audit committee) in the sample. The result is presented in Table 4.14.

INSERT TABLE 4.14

As shown in Table 4.14, the coefficients of *D*RET* RPOST* are not significantly negative, suggesting the effect of female directors on conservatism does not disappear immediately after departure of female directors. The result also implies that the effect of female director on conservatism is long-lasting.

4.5 Exploratory Analysis: Interaction of Board Gender Diversity and

[12] Around 40% of firms in the sample transit to a gender-diverse board and a gender-diverse audit committee simultaneously.

Contract Incompleteness on Conservatism

In this section, I explore the interaction of board gender diversity and contract incompleteness on conservatism. I compare the different extent of conservatism after firms appoint female directors (audit committee members) in high and low contract incompleteness groups. Empirically, I spilt the sample in Table 4.7 into two subsamples with the above median R&D as high contract incompleteness group and below R&D sample as low contract incompleteness group. The results are presented in Table 4.15.

INSERT TABLE 4.15

The results of board gender diversity on conservatism in high/low R&D groups are presented in Table 4.15 Panel A. The first column shows the effect of board gender diversity on conservatism in high contract incompleteness group. The coefficient of *D*RET*POST* is positive but not significant. The results of the effect of board gender diversity on conservatism in low contract incompleteness environment are presented in the second column. As it shows, the coefficient of *D*RET*POST* is 0.024 with less than 1% significant level. A similar result is shown in audit committee gender diversity sample (results are shown in Table 4.15 Panel B). As it shows, the coefficient of

*D*RET*POST* is significant only in low contract incompleteness group. The results support the substitution effect of board gender diversity and contract incompleteness in driving conservatism. However, the small sample size limit testing power of this exploratory analysis.

CHAPTER 5

CONCLUSIONS AND FUTURE RESEARCH

5.1 Conclusions

This thesis starts from the premise that accounting conservatism is a potentially important tool of governance (Watts 2003a). It extends the literature by examining the effect on conservatism of the joint effect of incomplete contracts and moral hazard and board (audit committee) gender diversity.

I consider the joint effect of contract incompleteness and moral hazard on the demand for conservative accounting, expecting that conservative accounting arises from this joint effect. The joint occurrence of these two factors has been shown to be a sufficient condition for conservatism in Srinidhi, Zhou and Mian (2011). The empirical analysis supports this theoretical expectation regarding the effect of contract incompleteness on conservative accounting. It shows that the degree of conservatism increases with the level of contract incompleteness. The empirical results in this study also show that more conservative accounting practices are adopted by firms with both high degree

of contract incompleteness and severe moral hazard problem. At the other extreme, firms with both lower level of contract incompleteness and less severe moral hazard problem exhibit less conservatism than other firms. Furthermore, the results show that the positive association between moral hazard and conservatism demonstrated by Lafond and Roychowdhury (2008) is more significant when contracts are more incomplete. An additional finding is that the positive relationship between contract incompleteness and conservatism is more pronounced when the moral hazard problem is more severe.

Although the demand for conservatism arises from moral hazard and contract incompleteness, the satisfaction of the demand requires the implementation of such an accounting policy. Investors use board composition as a means of implementing such policy. Therefore, I examine the role of board composition on conservatism. Given their independence and CEO power has already been extensively examined in the literature (e.g. Ahmed and Duellman 2007; Garcia Lara, Garcia Osama and Penalva 2009), I choose to examine the role of diversity on the board. In particular, I use board gender diversity to proxy for the diversity of board composition. The literature shows that women are

generally more sensitive to ethical issues and more risk-averse, and that boards with female directors are more effective. As a result, firms with a gender-diverse board are associated with higher earnings quality (Srinidhi, Gul and Tsui 2011), a more informative stock price (Gul, Ng and Srinidhi 2011) and greater auditor effort (Gul, Srinidhi and Tsui 2008). This thesis extends the findings of previous studies by examining the effect of board gender diversity on conservatism. I hypothesize that firms with gender-diverse boards exhibit more conservative accounting. Empirically, I employ an event study approach and examine changes in the extent of conservatism after firms transit from an all-male board (audit committee) to a board (audit committee) with at least one female director (audit committee member). The results reveal that firms adopt more conservative accounting after such transitions and thus support my hypotheses. An exploratory analysis shows the substitution effect between contract incompleteness and board gender diversity in driving conservatism. This study provides important policy implications for regulators.

5.2 Future Research

The role of conservatism in promoting contracting efficiency has been recognized in the accounting literature. Numerous studies have investigated

the interaction between corporate governance structures and conservative financial reporting (e.g. Ahmed and Duellman 2007; Krishnan and Visvanathan 2008; Garcia Lara, Garcia Osama and Penalva 2009). Even so, there are a number of areas that have not been fully examined in the literature.

One such area is to extend previous studies (e.g. Lafond and Roychowdury 2008) to examine the effect of executive compensation structure on conservatism. Firms with more incomplete contract are more likely to grant CEO with contingency-based compensation, e.g. stock or option, to reduce time-incompleteness concerns. As a result, CEO compensation with a substantial proportion of stock/option is likely to be associated with higher extent of conservatism. I conduct tests and results support this expectation. Given that CEO compensation is rather complex and the implication of CEO compensation on moral hazard and contract incompleteness varies under different compensation structure, it is interesting to investigate the effect of CEO compensation structuring on conservatism.

Another area concerns how the dual-class structure and other differences between the cash flow and control rights of inside investors affect

conservative accounting. The literature shows that a large number of U.S. firms employ a dual-class structure which differs from the one-share-one-vote system (e.g. Gompers, Ishii and Metrick 2010). The wedge between voting rights and cash flow rights in dual-class firms creates an agency conflict between controlling shareholders and outside minority investors. Controlling shareholders have the capacity and incentives to tunnel firm assets (e.g. Nenova 2003). In any such case, conservatism might serve to constrain expropriation by preserving firm assets within firms (Watts 2003a). Whether firms employ conservative accounting to improve their governance or controlling shareholders report less conservatively to make expropriation easier is an interesting issue for future research.

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Appendix 1: IBM Notice of 2009 Annual Meeting and Proxy Statement

Armonk, New York 10504
March 8, 2010

Dear Stockholders,

You are cordially invited to attend the Annual Meeting of Stockholders on Tuesday, April 27, 2010 at 10 a.m., in the Midwest Airlines Center, Milwaukee, Wisconsin.

We are very pleased that Mr. Andrew N. Liveris, chairman, president and chief executive officer of The Dow Chemical Company, and Mr. W. James McNerney, Jr., chairman, president and chief executive officer of The Boeing Company, are new nominees for the Board this year.

Stockholders of record can vote their shares by using the Internet or the telephone. Instructions for using these convenient services are set forth on the enclosed proxy card. Of course, you also may vote your shares by marking your votes on the enclosed proxy card, signing and dating it, and mailing it in the enclosed envelope. If you will need special assistance at the meeting because of a disability, please contact the Office of the Secretary, Armonk, NY 10504.

Very truly yours,

Samuel J. Palmisano
Chairman of the Board

Appendix 2: Notice of Annual Meeting

Notice of Meeting

The Annual Meeting of Stockholders of International Business Machines Corporation will be held on Tuesday, April 27, 2010 at 10 a.m., in the Midwest Airlines Center, 400 West Wisconsin Avenue, Milwaukee, Wisconsin 53203. The items of business are:

1. Election of directors proposed by the Company's Board of Directors for a term of one year, as set forth in this Proxy Statement.
2. Ratification of the appointment of PricewaterhouseCoopers LLP as the Company's independent registered public accounting firm.
3. Four stockholder proposals if properly presented at the meeting.

These items are more fully described in the following pages, which are a part of this Notice.

Andrew Bonzani
Vice President and Secretary

This Proxy Statement and the accompanying form of proxy card are being mailed beginning on or about March 8, 2010 to all stockholders entitled to vote. The IBM 2009 Annual Report, which includes consolidated financial statements, is being mailed with this Proxy Statement.

Appendix 3: Definitions of Variables

Variables		Definitions
NI	=	Net income before extraordinary items scaled by market value of equity at the beginning of year t.
RET	=	Annual buy - hold returns compounded from monthly returns.
MB	=	Market-to-book ratio at the beginning of year t.
LEV	=	Leverage, defined as long term and short term debt deflated by market value of equity at the beginning of fiscal year t.
SIZE	=	Natural logarithm of market value of equity at the beginning of fiscal year t.
LIT	=	Dummy variable, equal to 1 if a firms belongs to the classification in Francis, Philbrick and Schipper (1994), 0 otherwise.
R&D	=	R&D intensity, which is equal to R&D expenditure divided by total assets at the beginning of fiscal year t.
ITG	=	Intangible asset, which is equal to the difference between intangible assets (INTAN) and goodwill (GDWL) scaled by total assets at the beginning of year t.
INCOMT	=	Measure of contract incompleteness, proxied by the intensity of R&D and intangible asset.
CEOOWN	=	CEO ownership, which is equal to the shares hold by CEO divided by total common stock outstanding at the beginning of fiscal year t. The CEO ownership data comes from ExecuComp.
INST	=	Total ownership of institutions (data from Thompson in WRDS).
POST	=	Dummy variable, which is equal to 1 if a firm transit from all-male board (audit committee) to at least one female director (audit committee member) and 0 otherwise.
DUAL	=	Dummy variable, which is equal to 1 if CEO and board chairman are the same person, 0 otherwise.
INDDir	=	Proportion of independent director on board.
LNSALE	=	Natural logarithm of sales in fiscal year t.
CEOOWN2	=	The square of institutional ownership (*INST*).
TECH	=	Technology firm dummy, which equals to 1 if a firm belongs to technology firms defined by Francis and Schipper (1999), 0 otherwise.

ROA	=	Return of asset, defined as net income divided by total asset in fiscal year t.
SALEGR	=	Sales growth, which is equal to the difference between sales in year t minus those in year t-1 scaled by sales in year t-1.
STDROA	=	Standard deviation of ROA, defined as three-year ROA standard deviation.
RDR	=	Decile ranking value of residual value of R&D derived from expectation model and scaled by 9.
RPOST	=	Dummy variable, which is equal to 1 if a firm transit from gender diverse board (audit committee) to all-male director (audit committee) and 0 otherwise.

Table 4.1: Data Selection and Yearly Distribution

Panel A: Data Selection

Description	Number of firm-years
Number of firm-years with CEO ownership data in the period 1995-2009	25,239
Less:	
CEO ownership that is larger than 1	5
Firm-years missing from CRSP (12 months consecutive return)	6,181
Firm-years missing from Institutional ownership data	1,534
Firm-years without controls data (including *LEV*, *MB*, and *SIZE*)	81
Financial firms	2,294
Final Sample	15,142

Panel B: Yearly Distribution

Year	Number of firms	Percentage
1995	864	5.71%
1996	923	6.10%
1997	952	6.29%
1998	992	6.55%
1999	988	6.52%
2000	1,022	6.75%
2001	1,032	6.82%
2002	1,016	6.71%
2003	1,013	6.69%
2004	1,050	6.93%
2005	1,044	6.89%
2006	1,030	6.80%
2007	1,047	6.91%
2008	1,091	7.21%
2009	1,078	7.12%
Total	15,142	100.00%

Panel C: Yearly Distribution of Number of All-Male Board (Audit Committee) to Gender Diversity Board (Audit Committee)

Year	Board	Audit Committee
1999	75	81
2000	47	47
2001	38	47
2002	42	50
2003	38	51
2004	54	51
2005	27	50
2006	24	33
2007	25	39
2008	22	27
2009	15	21
Total	407	475

Table 4. 2: Descriptive Statistics and Correlation

Panel A: Descriptive Statistics

Variables	N	Mean	STD	25 %	50 %	75%
NI	15,142	0.022	0.219	0.022	0.051	0.073
RET	15,142	0.157	0.636	-0.173	0.082	0.351
D	15,142	0.408	0.491	0	0	1
CEOOWN	15,142	0.026	0.065	0.001	0.003	0.014
INST	15,142	0.005	0.004	0.003	0.005	0.007
R&D	15,142	0.032	0.065	0	0.000	0.040
SIZE	15,142	7.245	1.568	6.161	7.103	8.219
LEV	15,142	0.419	1.329	0.033	0.178	0.455
MB	15,142	4.314	7.296	1.528	2.297	3.710
LIT	15,142	0.021	0.144	0	0	0

Panel B: Correlation

	NI	*RET*	*D*	*CEOOWN*	*INST*	*R&D*	*SIZE*	*LEV*	*MB*	*LIT*
NI		**0.392**	**-0.352**	0.000	**-0.034**	**-0.219**	**0.040**	**0.130**	**-0.052**	**-0.072**
		0.000	**0.000**	0.977	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RET	**0.065**		**-0.851**	0.007	-0.010	0.000	**-0.052**	**0.048**	**-0.087**	**-0.018**
	0.000		**0.000**	0.365	0.213	0.994	**0.000**	**0.000**	**0.000**	**0.030**
D	**-0.136**	**-0.567**		**0.018**	**0.051**	**0.026**	0.000	**-0.061**	**0.066**	**0.027**
	0.000	**0.000**		**0.023**	**0.000**	**0.001**	0.993	**0.000**	**0.000**	**0.000**
CEOOWN	0.014	**0.032**	0.003		**0.298**	0.000	**-0.318**	**-0.092**	**-0.031**	**-0.053**
	0.086	**0.000**	0.746		**0.000**	0.977	**0.000**	**0.000**	**0.000**	**0.000**
INST	**-0.088**	**0.054**	**0.038**	**0.097**		**-0.034**	**-0.854**	0.001	**-0.334**	-0.013
	0.000	**0.000**	**0.000**	**0.000**		**0.000**	**0.000**	0.907	**0.000**	0.123
R&D	**-0.082**	**0.053**	**0.038**	**-0.030**	**0.029**		**0.032**	**-0.335**	**0.241**	**0.203**
	0.000	**0.000**	**0.000**	**0.000**	**0.000**		**0.000**	**0.000**	**0.000**	**0.000**
SIZE	**0.141**	**-0.124**	0.006	**-0.160**	**-0.755**	**-0.052**		**-0.057**	**0.444**	**0.017**
	0.000	**0.000**	0.491	**0.000**	**0.000**	**0.000**		**0.000**	**0.000**	**0.032**
LEV	**-0.200**	**0.264**	**-0.028**	**-0.031**	**0.076**	**-0.098**	**-0.136**		**-0.487**	**-0.086**
	0.000	**0.000**	**0.001**	**0.000**	**0.000**	**0.000**	**0.000**		**0.000**	**0.000**
MB	0.005	-0.013	**0.020**	-0.002	-0.001	0.010	0.012	-0.007		**0.016**
	0.582	0.106	**0.016**	0.838	0.881	0.222	0.147	0.419		**0.013**
LIT	**-0.026**	-0.006	**0.027**	**-0.028**	-0.012	**0.191**	**0.025**	**-0.028**	-0.001	
	0.001	0.486	**0.001**	**0.001**	0.146	**0.000**	**0.002**	**0.001**	0.890	

This table shows sample descriptive statistics and Pearson and Spearman correlation among the variables. The total number of firm-year observations is 15,142 over the period 1995 to 2009. *NI* is net income before extraordinary items scaled by market value of equity at the beginning of fiscal year t. *RET* is equal to the buy-and-hold return over the 12-month of fiscal year t. *D* is dummy variable, which equals to one if *RET* is less than 0, and zero otherwise. *CEOOWN* is CEO ownership, measured by the shares hold by CEO divided by total common stock outstanding at the beginning of fiscal year t. *R&D* is equal to R&D divided by total assets at the beginning of fiscal year t. I measure *SIZE* by taking natural logarithm value of market value of equity at the beginning of fiscal year t. *LEV* equals to long term and short term debt deflated by market value of equity at the beginning of fiscal year t. *MB* is market-to-book ratio at the beginning of fiscal year t. *LIT* is industry dummy, characterized by high litigation risk as Francis, Philbrick, and Schipper (1994) suggested. The upper triangle of Panel B shows Spearman correlation coefficients while the lower triangle reports Pearson correlation coefficients. Bold text indicates 5% significant level or better.

Table 4.3: The Effect of Contract Incompleteness on Conservatism

Panel A: The Effect of Contract Incompleteness on Conservatism (R&D as measure of contract incompleteness)

	Column (1)		Column (2)		Column (3)	
			INCOMT=*RDRANK*		INCOMT=*RDD*	
	Coefficient	T-value	Coefficient	T-value	Coefficient	T-value
Intercept	0.003	0.16	0.022**	2.17	0.013	1.28
RET	-0.017	-0.79	-0.019	-0.96	-0.018	-0.92
D	-0.034	-1.29	-0.007	-0.28	-0.016	-0.66
*D*RET*	0.456***	5.13	0.340***	4.68	0.374***	5.58
INCOMT			-0.034***	-3.52	-0.024***	-3.87
*D*INCOMT*			0.006	0.56	0.006	0.96
*RET*INCOMT*			-0.026*	-1.87	-0.016*	-1.81
*D*RET*INCOMT*			0.116***	2.92	0.099***	4.34
SIZE	0.028*	1.74	0.024*	1.88	0.023	1.82
MB	0.019	1.36	0.024**	2.04	0.022*	1.91
LEV	0.013**	2.14	0.006	1.24	0.004	0.74
LIT	-0.038	-1.24	-0.022	-0.79	-0.022	-0.78
CEOOWN	0.002	0.42	0.000	-0.05	0.000	0.06
INST	0.021**	2.14	0.020***	2.59	0.020***	2.66
*RET*SIZE*	0.063**	2.07	0.060**	2.43	0.062**	2.39
*RET*MB*	-0.012	-0.38	-0.01	-0.38	-0.012	-0.44
*RET*LEV*	-0.001	-0.11	-0.01	-0.84	-0.011	-0.86
*RET*LIT*	0.003	0.06	0.004	0.11	0.005	0.12
RET CEOOWN*	0.032	1.57	0.024	1.42	0.027	1.55
*RET*INST*	0.034*	1.68	0.032*	1.91	0.032*	1.88
*D*SIZE*	0.010	0.60	0.015	1.09	0.014	1.04
*D*MB*	0.003	0.11	-0.001	-0.04	-0.001	-0.07
*D*LEV*	0.024**	2.35	0.020**	2.31	0.022**	2.41
*D*LIT*	0.003	0.07	0.000	-0.01	0.003	0.10
D CEOOWN*	-0.004	-0.30	-0.003	-0.29	-0.004	-0.34
*D*INST*	0.020	1.08	0.023	1.58	0.021	1.44
*D*RET*SIZE*	-0.285***	-3.07	-0.238***	-3.09	-0.247***	-3.32
*D*RET*MB*	-0.212***	-3.23	-0.230***	-4.14	-0.236***	-4.38
*D*RET*LEV*	0.195***	3.51	0.222***	4.28	0.235***	4.95
*D*RET*LIT*	0.038	0.39	0.009	0.11	0.008	0.11
*D*RET* CEOOWN*	-0.111**	-2.08	-0.091*	-1.87	-0.096**	-1.99
*D*RET*INST*	-0.093	-1.24	-0.059	-0.92	-0.069	-1.09

R_Square	0.2766	0.2972	0.2970
Observations	15,142	15,142	15,142

Panel B: The Effect of Contract Incompleteness on Conservatism (*ITG* as measure of contract incompleteness)

	Column (1)		Column (2)		Column (3)	
			INCOMT=*ITGRANK*		INCOMT=*ITGD*	
	Coefficient	T-value	Coefficient	T-value	Coefficient	T-value
Intercept	0.007	0.60	0.008	0.70	0.000	-0.01
RET	-0.023	-1.00	-0.024	-1.34	-0.014	-0.71
D	-0.037	-1.33	-0.031	-1.4	-0.019	-0.92
*D*RET*	0.458***	5.14	0.438***	5.79	0.461***	5.77
INCOMT			-0.004	-0.86	-0.007**	-2.19
*D*INCOMT*			0.005	0.40	0.016**	2.56
*RET*INCOMT*			-0.009	-0.78	0.003	0.30
*D*RET*INCOMT*			0.046	1.24	0.061**	2.34
SIZE	0.025	1.62	0.026**	2.05	0.032**	2.17
MB	0.018	1.32	0.018	1.56	0.019	1.61
LEV	0.012*	1.91	0.013***	2.56	0.015***	2.79
LIT	-0.038	-1.24	-0.035	-1.27	-0.037	-1.35
CEOOWN	0.003	0.48	0.003	0.70	0.006	0.95
INST	0.017*	1.92	0.018**	2.40	0.022**	2.33
*RET*SIZE*	0.066**	2.10	0.066**	2.53	0.053**	2.22
*RET*MB*	-0.013	-0.40	-0.013	-0.48	-0.015	-0.57
*RET*LEV*	-0.003	-0.22	-0.002	-0.17	-0.009	-0.79
*RET*LIT*	0.002	0.04	-0.005	-0.13	0.002	0.06
RET CEOOWN*	0.033	1.64	0.031*	1.77	0.027*	1.67
*RET*INST*	0.038*	1.83	0.036**	2.22	0.023	1.26
*D*SIZE*	0.015	0.93	0.014	1.14	0.006	0.37
*D*MB*	0.002	0.08	0.002	0.10	-0.002	-0.09
*D*LEV*	0.025**	2.22	0.023**	2.05	0.019**	2.15
*D*LIT*	0.002	0.06	-0.003	-0.09	-0.003	-0.09
D CEOOWN*	-0.003	-0.24	-0.003	-0.35	-0.006	-0.52
*D*INST*	0.026	1.35	0.026*	1.64	0.021	1.18
*D*RET*SIZE*	-0.287***	-3.07	-0.293***	-3.78	-0.292***	-3.62

*D*RET*MB*	-0.214***	-3.32	-0.207***	-3.76	-0.239***	-4.18
*D*RET*LEV*	0.192***	3.47	0.184***	4.04	0.185***	4.70
*D*RET*LIT*	0.039	0.40	0.032	0.41	0.024	0.30
*D*RET* CEOOWN*	-0.112**	-2.12	-0.106**	-2.45	-0.104**	-2.18
*D*RET*INST*	-0.091	-1.20	-0.094	-1.47	-0.082	-1.27
R_Square	0.2782		0.2564		0.2801	
Observations	15,093		15,093		15,093	

I report the effect of contract incompleteness on conservatism in this table. *NI* is net income before extraordinary items scaled by market value of equity at the beginning of fiscal year t. *RET* is equal to the buy-and-hold return over the fiscal year. *D* is dummy variable, taking 1 if *RET* is negative, 0 otherwise. *INCOMT* is the extent of contract incompleteness. In this table, I use two proxies to measure contract incompleteness, namely R&D and *ITG*. The regression results using these two measures are reported in Panel A and Panel B respectively. *RND* is equal to R&D divided by total assets. *RDRANK* is equal to R&D scaled decile rank of R&D by 9 in each year. *RDD* is dummy variable, 1 if above top quartile R&D value, 0 otherwise. Similarly, *ITG* is equal to difference between intangible assets (INTAN) and goodwill (GDWL) scaled by Total Assets. *ITGRANK* is equal to *ITG* scaled decile rank of ITG by 9 in each year. *ITGD* is dummy variable, 1 if above top quartile *ITG* value, 0 otherwise. In each regression, I control *CEOOWN*, *INST*, *SIZE*, *LEV*, *MB* and *LIT*. All control variables except *LIT* are ranked in decile and scaled by 9. Definitions of controls are included in Appendix 3. Time series autocorrelation is controlled by using Fama-MacBeth (1973) regression. *,**, and ***, indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 4.4: Two - Way Analysis of Moral Hazard and Contract Incompleteness

Panel A: Two - Way Analysis of Moral Hazard and Contract Incompleteness (R&D as measure of contract incompleteness)

	Column (1)		Column (2)		Column (3)	
	Full Sample		Full Sample		Selected Sample	
	DUMMY=*HH*		DUMMY=*LL*		DUMMY=*HH*	
	Coefficient	T-value	Coefficient	T-value	Coefficient	T-value
Intercept	0.005	0.43	0.001	0.10	0.015	0.82
RET	-0.019	-1.01	-0.019	-0.97	-0.018	-0.70
D	-0.013	-0.81	-0.020	-1.29	0.009	0.31
*D*RET*	0.369***	6.21	0.410***	6.30	0.361***	4.20
DUMMY	-0.007**	-2.01	0.012**	2.37	-0.013**	-2.48
*D*DUMMY*	0.001	0.18	-0.002	-0.29	0.003	0.60
*RET*DUMMY*	-0.029**	-2.22	0.010	1.23	-0.029**	-2.16
*D*RET*DUMMY*	0.085***	2.74	-0.065**	-2.05	0.130***	2.92
SIZE	0.029**	2.27	0.029**	2.12	0.026*	1.76
MB	0.020*	1.71	0.018	1.59	0.012	0.85
LEV	0.011**	2.17	0.014***	2.73	0.012	1.57
LIT	-0.032	-1.12	-0.036	-1.34	-0.025	-0.80
INST	0.021**	2.48	0.019**	2.15	0.021**	1.98
*RET*SIZE*	0.062**	2.54	0.057***	2.60	0.054	1.33
*RET*MB*	-0.009	-0.36	-0.004	-0.17	0.005	0.16
*RET*LEV*	-0.002	-0.15	-0.007	-0.68	-0.026	-1.14
*RET*LIT*	0.005	0.13	0.002	0.06	-0.136	-0.76
*RET*INST*	0.040**	1.96	0.039*	1.94	0.024	0.77
*D*SIZE*	0.013	1.02	0.013	0.97	0.028	1.24
*D*MB*	0.001	0.06	0.003	0.14	-0.010	-0.53
*D*LEV*	0.023***	2.99	0.022***	2.84	0.002	0.14
*D*LIT*	0.000	0.01	0.004	0.12	-0.001	-0.01
*D*INST*	0.021	1.30	0.020	1.27	0.031	1.50
*D*RET*SIZE*	-0.264***	-3.74	-0.253***	-3.62	-0.301***	-2.66
*D*RET*MB*	-0.217***	-4.21	-0.235***	-4.19	-0.267***	-4.22
*D*RET*LEV*	0.198***	3.99	0.211***	4.58	0.195***	2.99
*D*RET*LIT*	0.028	0.35	0.046	0.61	0.090	0.41
*D*RET*INST*	-0.090	-1.34	-0.099	-1.52	-0.086	-0.84
R_Square	0.2788		0.2918		0.3028	

Observations	15,142	15,142	8,100

Panel B: Two - Way Analysis of Moral Hazard and Contract Incompleteness (Intangible assets as measure of contract incompleteness)

	Column (1)		Column (2)		Column (3)	
	Full Sample		Full Sample		Selected Sample	
	DUMMY=*HH*		DUMMY=*LL*		DUMMY=*HH*	
	Coefficient	T-value	Coefficient	T-value	Coefficient	T-value
Intercept	0.008	0.73	0.006	0.58	0.023*	1.76
RET	-0.020	-1.10	-0.016	-0.75	-0.017	-0.49
D	-0.018	-0.98	-0.030	-1.41	-0.020	-0.45
*D*RET*	0.414***	6.24	0.455***	6.13	0.466***	4.41
DUMMY	0.000	0.10	0.004	1.13	0.004	0.98
*D*DUMMY*	-0.001	-0.14	-0.008	-1.18	-0.003	-0.25
*RET*DUMMY*	-0.022*	-1.81	0.019**	2.01	-0.043***	-3.02
*D*RET*DUMMY*	0.072***	2.94	-0.057**	-2.05	0.097**	2.22
SIZE	0.027*	1.85	0.028*	1.94	0.027*	1.86
MB	0.017	1.53	0.016	1.43	0.004	0.23
LEV	0.013**	2.29	0.012**	2.50	-0.007	-0.87
LIT	-0.036	-1.29	-0.038	-1.33	-0.063**	-2.11
INST	0.020*	1.80	0.021**	2.03	0.022*	1.86
*RET*SIZE*	0.058**	2.45	0.061***	2.58	0.062**	2.22
*RET*MB*	-0.005	-0.20	-0.002	-0.10	0.006	0.16
*RET*LEV*	-0.003	-0.21	0.001	0.07	0.023	1.18
*RET*LIT*	0.005	0.16	0.010	0.33	0.081	1.49
*RET*INST*	0.036	1.52	0.034	1.53	0.030	0.85
*D*SIZE*	0.009	0.72	0.005	0.42	-0.014	-0.58
*D*MB*	0.002	0.08	0.004	0.19	0.019	0.77
*D*LEV*	0.023***	2.84	0.023***	3.15	0.046***	3.03
*D*LIT*	0.000	0.00	-0.001	-0.03	0.051	0.89
*D*INST*	0.023	1.33	0.020	1.14	-0.006	-0.23
*D*RET*SIZE*	-0.288***	-4.03	-0.296***	-4.17	-0.389***	-4.55
*D*RET*MB*	-0.248***	-4.51	-0.248***	-4.44	-0.236**	-2.49
*D*RET*LEV*	0.176***	4.70	0.179***	4.33	0.207***	3.53
*D*RET*LIT*	0.046	0.67	0.029	0.40	0.080	0.50

*D*RET*INST*	-0.092	-1.33	-0.109*	-1.66	-0.202***	-2.74
R_Square	0.2756		0.2754		0.3040	
Observations	15,093		15,093		8,133	

In this table, I use two way analyses to examine different extent of conservatism in High/Low contract incompleteness and moral hazard. *R&D* (Panel A) and *ITG* (Panel B) are used to proxy the degree of contract incompleteness. I double sort the total firm-year observations on CEO ownership and contract incompleteness. I first sort firms into two groups based on whether the CEO ownership is above or below the sample median. I then independently sort firms based on the proxy for contract incompleteness. The extent of contract incompleteness is sorted based on the median value of R&D *(ITG)*. The group with the higher R&D*(ITG)* is then identified as the high R&D *(ITG)* intensity sub-sample. This yields us 4 sub-samples sorted on ownership and contract incompleteness. I define *HH* as a dummy variable that takes the value of one if the firm-year belongs to the sample of low CEO ownership (high moral hazard) and high R&D *(ITG)* intensity. Similarly, I define *LL* as a dummy variable that takes the value of one if the firm-year belongs to the sample of high CEO ownership (low moral hazard) and low R&D *(ITG)* intensity. The third regression show results in a sample restricted to HH and LL values only. The dummy "HH" takes the value of one if the observation is HH and 0 if it is LL. In each regression, I control *INST*, *SIZE*, *LEV*, *MB* and *LIT*. All control variables except *LIT* are ranked in decile and scaled by 9. The regressions are estimated using the Fama-MacBeth (1973) procedure. All other variables are defined in Appendix 3. *,**, and ***, indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 4.5: The Extent of Conservatism in Four Scenarios Characterized by Moral Hazard and Contract Incompleteness

Panel A: The Extent of Conservatism in Four Scenarios Characterized by Moral Hazard and Contract Incompleteness (R&D as Proxy)

		Contract Incompleteness (R&D as proxy)	
		High	Low
Moral Hazard	High	0.266 ***(8.96)	0.286*** (8.41)
	Low	0.207*** (6.54)	0.258 ***(9.50)

Panel B: The Extent of Conservatism in Four Scenarios Characterized by Moral Hazard and Contract Incompleteness (Intangible Assets as Proxy)

		Contract Incompleteness (Intangible assets as proxy)	
		High	Low
Moral Hazard	High	0.285*** (10.71)	0.253*** (8.73)
	Low	0.290 ***(7.64)	0.157 ***(6.46)

In this table, I present the extent of conservatism in four scenarios characterized by moral hazard and contract incompleteness. Conservatism is measured by Basu (1997). Coefficients of *D*RET* generated from regressions in each sub-sample are reported in corresponding cells. T-values are included in parentheses right to coefficients. The cut-off of high/low is median value of CEO ownership (as measure of moral hazard) and that of proxies, of contract incompleteness, including R&D and intangible assets. *,**, and ***, indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 4.6: Moral Hazard and Conservatism in Samples Split on Contract Incompleteness

Panel A: Moral Hazard and Conservatism in Samples Split on Contract Incompleteness (R&D as measurement of contract incompleteness)

	Column (1)		Column (2)		Column (3)	
	Total sample		High *R&D* group		Low *R&D* group	
	Coefficient	T-value	Coefficient	T-value	Coefficient	T-value
Intercept	-0.002	-0.14	-0.045*	-1.78	0.032**	2.37
RET	-0.010	-0.53	0.030	1.21	0.001	0.02
D	-0.019	-0.92	-0.042	-1.80	0.034	0.79
*D*RET*	0.467***	5.64	0.563***	4.31	0.462***	5.12
CEOOWN	0.005	0.91	0.009	1.12	0.007	1.32
*D*CEOOWN*	-0.006	-0.59	-0.012	-0.91	-0.014	-0.83
*RET*CEOOWN*	0.025	1.58	0.032	1.39	-0.002	-0.12
*D*RET*CEOOWN*	-0.106**	-2.25	-0.096**	-2.13	-0.096	-1.43
SIZE	0.032**	2.05	0.071***	2.98	0.008	0.60
MB	0.018	1.56	0.022*	1.68	0.014	0.94
LEV	0.014***	2.67	0.010	1.16	0.000	-0.01
LIT	-0.038	-1.42	-0.027	-1.06	-0.087*	-1.83
INST	0.024**	2.47	0.052***	3.30	0.006	0.44
*RET*SIZE*	0.053**	2.27	0.048	1.58	0.038	1.21
*RET*MB*	-0.012	-0.47	0.001	0.04	-0.033	-0.75
*RET*LEV*	-0.006	-0.58	0.013	0.77	-0.018	-1.10
*RET*LIT*	0.008	0.26	0.013	0.46	0.000	0.00
*RET*INST*	0.022	1.22	0.022	1.10	0.014	0.45
*D*SIZE*	0.005	0.31	-0.039	-1.37	0.018	0.72
*D*MB*	0.000	0.01	0.013	0.51	-0.027	-1.22
*D*LEV*	0.021***	2.78	0.013	1.12	0.022*	1.95
*D*LIT*	0.001	0.03	0.003	0.11	0.000	0.00
*D*INST*	0.017	1.01	-0.021	-0.76	0.025	0.82
*D*RET*SIZE*	-0.282***	-3.55	-0.370***	-2.68	-0.207***	-2.66
*D*RET*MB*	-0.242***	-4.18	-0.215***	-3.12	-0.364***	-3.33
*D*RET*LEV*	0.195***	5.07	0.121**	2.44	0.215***	5.47
*D*RET*LIT*	0.030	0.37	0.038	0.44	0.000	0.00
*D*RET*INST*	-0.083	-1.29	-0.182*	-1.73	-0.038	-0.41

R_Square	0.2758	0.2826	0.3129
Observations	15,142	7,571	7,571

Panel B: Moral Hazard and Conservatism in Samples Split on Contract Incompleteness (Intangible asset as measure of contract incompleteness)

	Column (1)		Column (2)		Column (3)	
	Total sample		High *ITG* group		Low *ITG* group	
	Coefficient	T-value	Coefficient	T-value	Coefficient	T-value
Intercept	0.002	0.13	0.012	0.91	0.000	0.01
RET	-0.014	-0.74	0.023	0.64	-0.033	-1.52
D	-0.022	-0.99	-0.036	-0.77	-0.028	-0.87
*D*RET*	0.469***	5.69	0.707***	5.70	0.340***	4.67
CEOOWN	0.006	0.95	0.001	0.12	0.005	0.59
*D*CEOOWN*	-0.006	-0.52	-0.017	-0.81	0.002	0.12
*RET*CEOOWN*	0.026*	1.65	0.023	1.24	0.042	1.36
*D*RET*CEOOWN*	-0.107**	-2.28	-0.194***	-2.68	-0.086	-1.56
SIZE	0.029*	1.95	0.025	1.28	0.037**	2.57
MB	0.018	1.52	0.010	0.70	0.020	1.48
LEV	0.013**	2.52	0.013*	1.96	0.009	0.99
LIT	-0.038	-1.42	-0.016	-0.38	-0.079***	-3.34
INST	0.021**	2.19	0.017	1.27	0.020**	2.09
*RET*SIZE*	0.055**	2.33	0.042	1.00	0.050*	1.72
*RET*MB*	-0.012	-0.49	0.019	0.47	-0.019	-1.10
*RET*LEV*	-0.008	-0.69	0.009	0.60	-0.004	-0.25
*RET*LIT*	0.007	0.23	-0.066	-0.79	0.001	0.01
*RET*INST*	0.025	1.35	0.017	0.41	0.036*	1.92
*D*SIZE*	0.009	0.56	-0.032	-1.26	0.029	1.33
*D*MB*	-0.001	-0.05	0.003	0.12	0.006	0.28
*D*LEV*	0.022***	2.74	0.029**	2.37	0.012	0.64
*D*LIT*	0.001	0.02	-0.023	-0.38	-0.082	-0.59
*D*INST*	0.022	1.26	-0.002	-0.07	0.023	1.24
*D*RET*SIZE*	-0.283***	-3.56	-0.470***	-4.29	-0.210***	-2.60
*D*RET*MB*	-0.246***	-4.27	-0.246***	-3.02	-0.148**	-2.45
*D*RET*LEV*	0.192***	4.95	0.190**	2.46	0.160***	2.69
*D*RET*LIT*	0.030	0.38	0.056	0.50	-0.315	-1.10

*D*RET*INST*	-0.080	-1.25	-0.211**	-2.09	-0.065	-0.93
R_Square	0.2772		0.2968		0.2701	
Observations	15,093		7,546		7,547	

In this table, I report the regression results of CEO ownership (*CEOOWN*) and conservatism (Lafond and Roychowdhury 2008) under different extent of contract incompleteness (proxies by *R&D and ITG*). I sort the total firm-year observations into two sub-samples based on the median of R&D intensity (*ITG*). The group with the higher R&D (*ITG*) is then identified as the high R&D (*ITG*) intensity sub-sample. I separately examine and report the relationship between CEO ownership and conservatism in each of the high and low R&D (*ITG*) samples. Testing variable as well as control variables is ranked into decile and scaled by 9. I use Fama-MacBeth (1973) regressions with controls of *INST*, *SIZE*, *LEV*, *MB*, and *LIT*. All control variables except *LIT* are ranked in decile and scaled by 9. All variables are defined in Appendix 3. *,**, and ***, indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 4.7: Contract Incompleteness and Conservatism in Samples Split on CEO Ownership

Panel A: Contract Incompleteness and Conservatism in Samples Split on CEO Ownership (R&D as measurement of contract incompleteness)

	Column (1)		Column (2)		Column (3)	
	Total sample		High *Moral Hazard*		Low *Moral Hazard*	
	Coefficient	T-value	Coefficient	T-value	Coefficient	T-value
Intercept	0.022**	2.18	0.018*	1.66	0.017	0.79
RET	-0.021	-1.10	-0.031	-1.04	0.017	0.49
D	0.007	0.36	0.029	0.81	-0.008	-0.25
*D*RET*	0.284***	4.90	0.218**	2.37	0.475***	4.30
INCOMT	-0.035***	-3.49	-0.039***	-3.11	-0.030**	-2.34
*D*INCOMT*	0.008	0.77	0.010	0.62	0.002	0.20
*RET*INCOMT*	-0.030**	-2.00	-0.002	-0.10	-0.058**	-2.23
*D*RET*INCOMT*	0.129***	3.28	0.079*	1.86	0.132**	1.98
SIZE	0.024**	1.99	0.042***	2.76	0.030*	1.85
MB	0.023**	2.08	0.018	1.35	0.021	1.50
LEV	0.006	1.25	0.004	0.51	0.003	0.34
LIT	-0.021	-0.73	-0.050	-1.18	-0.003	-0.09
INST	0.021**	2.38	0.026***	2.74	0.024*	1.65
*RET*SIZE*	0.053**	2.49	-0.008	-0.22	0.066**	2.39
*RET*MB*	-0.003	-0.14	0.007	0.22	0.010	0.38
*RET*LEV*	-0.011	-0.92	-0.001	-0.08	-0.002	-0.07
*RET*LIT*	0.003	0.08	-0.034	-0.37	-0.145	-0.84
*RET*INST*	0.036*	1.83	-0.002	-0.11	0.056	1.60
*D*SIZE*	0.014	1.13	0.011	0.53	-0.006	-0.20
*D*MB*	0.001	0.04	0.008	0.39	-0.015	-0.75
*D*LEV*	0.021***	2.75	0.027*	1.88	0.014	1.00
*D*LIT*	-0.001	-0.03	-0.100	-0.92	-0.013	-0.28
*D*INST*	0.021	1.42	0.024	1.04	-0.001	-0.03
*D*RET*SIZE*	-0.218***	-3.30	-0.144	-1.58	-0.302***	-2.66
*D*RET*MB*	-0.236***	-4.52	-0.222***	-2.91	-0.322***	-3.74
*D*RET*LEV*	0.224***	4.23	0.271***	4.00	0.151**	2.25
*D*RET*LIT*	0.020	0.28	-0.135	-0.65	0.075	0.33
*D*RET*INST*	-0.068	-1.03	-0.009	-0.11	-0.174	-1.64

R_Square	0.2929	0.2975	0.3205
Observations	15,142	7,571	7,571

Panel B: Contract Incompleteness and Conservatism in Samples Split on CEO Ownership (Intangible asset as measure of contract incompleteness)

	Column (1)		Column (2)		Column (3)	
	Total sample		High *CEOOWN* group		Low *CEOOWN* group	
	Coefficient	T-value	Coefficient	T-value	Coefficient	T-value
Intercept	0.008	0.70	0.008	0.61	0.012	0.57
RET	-0.024	-1.34	-0.037	-1.20	0.002	0.05
D	-0.031	-1.40	0.019	0.71	-0.060	-1.42
*D*RET*	0.438***	5.79	0.286***	3.19	0.574***	4.58
INCOMT	-0.004	-0.86	-0.010	-1.45	-0.001	-0.11
*D*INCOMT*	0.005	0.40	0.007	0.47	-0.003	-0.16
*RET*INCOMT*	-0.009	-0.78	-0.006	-0.52	-0.014	-0.48
*D*RET*INCOMT*	0.046	1.24	0.018	0.37	0.092	1.51
SIZE	0.026**	2.05	0.042***	2.65	0.018	1.02
MB	0.018	1.56	0.012	0.92	0.020	1.37
LEV	0.013**	2.56	0.010	1.13	0.011	1.48
LIT	-0.035	-1.27	-0.057	-1.51	-0.016	-0.45
INST	0.018**	2.40	0.021*	1.69	0.016	1.10
*RET*SIZE*	0.066**	2.53	0.001	0.02	0.098***	2.99
*RET*MB*	-0.013	-0.48	0.003	0.11	-0.010	-0.28
*RET*LEV*	-0.002	-0.17	0.003	0.14	0.013	0.64
*RET*LIT*	-0.005	-0.13	-0.025	-0.29	-0.159	-0.90
*RET*INST*	0.036**	2.22	0.008	0.42	0.068*	1.78
*D*SIZE*	0.014	1.14	0.016	0.61	0.010	0.32
*D*MB*	0.002	0.10	0.009	0.41	-0.018	-0.82
*D*LEV*	0.023**	2.05	0.026	1.36	0.021	1.14
*D*LIT*	-0.003	-0.09	-0.110	-1.05	-0.010	-0.22
*D*INST*	0.026	1.64	0.034	1.14	0.008	0.27
*D*RET*SIZE*	-0.293***	-3.78	-0.180**	-2.04	-0.349***	-3.18
*D*RET*MB*	-0.207***	-3.76	-0.191***	-2.78	-0.328***	-3.77

*D*RET*LEV*	0.184***	4.04	0.236***	3.19	0.107	1.41
*D*RET*LIT*	0.032	0.41	-0.171	-0.92	0.113	0.49
*D*RET*INST*	-0.094	-1.47	-0.038	-0.42	-0.220**	-2.07
R_Square	0.2564		0.3241		0.3435	
Observations	15,093		7,547		7,546	

In this table, I report the regression results of contract incompleteness (proxies by *R&D* and *ITG*) and conservatism under different CEO ownership. I sort the total firm-year observations into two sub-samples based on the median of CEO ownership. The group with the higher CEO ownership is then identified as the less moral hazard sub-sample. I separately examine and report the relationship between contract incompleteness and conservatism in each of the high and low CEO ownership samples. Testing variable as well as control variables (except *LIT*) is ranked into decile and scaled by 9. I use Fama-MacBeth (1973) regressions with controls of *INST*, *SIZE*, *LEV*, *MB*, and *LIT*. All variables are defined in Appendix 3.*, **, and ***, indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 4.8: The Effect of Board Gender Diversity on Conservatism

	Column (1)		Column (2)	
	Board		Audit Committee	
	Coefficient	T-value	Coefficient	T-value
Intercept	0.008	0.18	0.077*	1.89
D	-0.006	-0.08	-0.006	-0.10
RET	0.022	0.36	-0.067	-0.87
*D*RET*	0.215	1.16	0.368**	2.09
POST	-0.011	-0.89	-0.011	-1.01
*D*POST*	0.052**	2.52	0.036**	2.17
*RET*POST*	0.044**	2.08	0.027	1.27
*D*RET*POST*	0.134**	2.43	0.114**	2.37
SIZE	0.035	0.91	0.002	0.04
MB	0.020	0.94	-0.008	-0.40
LEV	0.023	1.05	-0.014	-0.72
LIT	-0.022	-0.61	-0.042	-0.69
CEOOWN	0.037*	1.94	0.021	1.22
INST	0.019	0.51	-0.030	-0.81
*RET*SIZE*	0.049	0.87	0.058	0.70
*RET*MB*	-0.076**	-2.27	0.010	0.24
*RET*LEV*	-0.052	-1.63	0.055	1.49
*RET*LIT*	0.007	0.12	0.009	0.08
RET CEOOWN*	-0.027	-0.86	-0.031	-0.92
*RET*INST*	0.027	0.50	0.075	1.02
*D*SIZE*	-0.035	-0.54	0.004	0.06
*D*MB*	0.043	1.06	-0.022	-0.64
*D*LEV*	0.016	0.43	0.024	0.84
*D*LIT*	-0.094	-1.36	-0.029***	-3.06
D CEOOWN*	-0.057*	-1.72	-0.002	-0.05
*D*INST*	-0.015	-1.24	-0.022	-0.39
*D*RET*SIZE*	-0.161	-0.94	-0.131	-0.75
*D*RET*MB*	-0.071	-0.59	-0.324***	-3.03
*D*RET*LEV*	0.201*	1.83	0.075	0.82
*D*RET*LIT*	-0.075	-0.49	-0.522**	-2.49
*D*RET* CEOOWN*	-0.156*	-1.91	0.058	0.73
*D*RET*INST*	-0.042	-0.26	-0.207	-1.32

R_Square	0.2031	0.2264
Observations	814	994

In this table, I present the OLS results of the effect of board gender diversity on conservatism by examining the changes of the extent of conservatism for firms that transit from all-male board / audit committee to at least one female delegate. *POST* is dummy variable, which is equal to 1 when it is the year that firm transit from all-male board / audit committee to at least one female delegate, and 0 for base year. *D*RET*POST* capture the change of the extent of conservatism for these firms. In each regression, I control firm size (*SIZE*), leverage (*LEV*), market-to-book ratio (*MB*), litigation risk (*LIT*), managerial ownership (*CEOOWN*) and institutional ownership (*INST*). All control variables except *LIT* are ranked in decile and scaled by 9. Definitions of the variables are detailed in Appendix 3. *,**, and ***, indicate significance at the 10%, 5%, and 1% levels, respectively

Table 4.9: The Effect of Board Gender Diversity on Conservatism: Longer Window

	Column (1)		Column (2)	
	Board		Audit Committee	
	Coefficient	T-value	Coefficient	T-value
Intercept	0.055**	2.22	0.066***	3.55
D	-0.018	-0.42	0.040	1.27
RET	-0.077**	-2.32	-0.054*	-1.74
*D*RET*	0.524***	4.52	0.473***	5.67
POST	-0.005	-0.62	-0.008	-1.52
*D*POST*	0.027**	2.19	0.025***	2.71
*RET*POST*	0.021	1.61	0.013	1.21
*D*RET*POST*	0.082**	2.42	0.079***	2.94
SIZE	-0.001	-0.03	0.012	0.68
MB	0.009	0.61	0.000	0.02
LEV	0.021	1.54	0.002	0.19
LIT	-0.021	-0.80	-0.074***	-3.06
CEOOWN	0.018	1.55	0.002	0.26
INST	-0.023	-1.09	-0.012	-0.70
*RET*SIZE*	0.097***	2.91	0.020	0.57
*RET*MB*	-0.027	-1.20	0.005	0.25
*RET*LEV*	-0.023	-1.12	0.008	0.48
*RET*LIT*	0.003	0.10	0.070*	1.80
RET CEOOWN*	0.018	1.00	0.028*	1.74
*RET*INST*	0.082**	2.55	0.052*	1.68
*D*SIZE*	0.020	0.52	-0.017	-0.56
*D*MB*	-0.005	-0.22	-0.030*	-1.65
*D*LEV*	0.003	0.12	-0.012	-0.74
*D*LIT*	-0.012	-0.30	-0.081*	-1.80
D CEOOWN*	-0.019	-0.99	0.003	0.23
*D*INST*	0.014	0.40	-0.035	-1.23
*D*RET*SIZE*	-0.167	-1.62	-0.049	-0.58
*D*RET*MB*	-0.304***	-4.27	-0.364***	-6.66
*D*RET*LEV*	0.092	1.43	-0.018	-0.40
*D*RET*LIT*	-0.012	-0.15	-0.278***	-2.74
*D*RET* CEOOWN*	-0.110**	-2.14	-0.016	-0.36
*D*RET*INST*	-0.260***	-2.64	-0.228***	-3.01

R_Square	0.2091	0.2130
Observations	1,945	2,411

In this table, I present the OLS results of the effect of board gender diversity on conservatism by examining the changes of the extent of conservatism for firms that transit from all-male board / audit committee to at least one female delegate. I define *POST* as 1 if it falls in[t t+2] year , with year t as the year firm transits from all-male board / audit committee to at least one female delegate, and 0 if it falls in [t-3 t-1] . *D*RET*POST* capture the change of the extent of conservatism for these firms. In each regression, I control firm size (*SIZE*), leverage (*LEV*), market-to-book ratio (*MB*), litigation risk (*LIT*), managerial ownership (*CEOOWN*) and institutional ownership (*INST*). All control variables except *LIT* are ranked in decile and scaled by 9. Definitions of the variables are detailed in Appendix 3. *,**, and ***, indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 4.10: The Effect of Excessive R&D Expenditure on Conservatism

Stage 1: R&D Expenditure Prediction Model

Variables	Co-efficient	T-value
Intercept	0.083***	25.93
LNSALE	-0.008***	-24.99
MB	0.000***	3.03
LEV	-0.007***	-5.26
INST	-1.476***	-6.53
CEOOWN	-0.083***	-11.02
CEOOWN2	0.150***	6.77
TECH	0.057***	26.12
ROA	-0.045***	-7.56
SALEGR	-0.005**	-2.22
STDROA	0.061***	5.49
R-Square	0.4133	
Observations	14,755	

Stage 2: The Effect of Excessive R&D Expenditure on Conservatism

Variables	Co-efficient	T-value
Intercept	0.011	0.81
D	-0.025	-1.11
RET	-0.028	-1.09
*D*RET*	0.402***	5.42
RDR	-0.013	-1.48
*D*RDR*	0.007	0.44
*RET*RDR*	-0.016	-1.18
*D*RET*RDR*	0.107***	4.07
SIZE	0.030**	2.07
MB	0.017	1.47
LEV	0.009*	1.79
LIT	-0.041	-1.53
CEOOWN	0.004	0.85

INST	0.017*	1.93
*RET*SIZE*	0.065***	3.04
*RET*MB*	-0.012	-0.51
*RET*LEV*	0.001	0.09
*RET*LIT*	0.007	0.20
RET CEOOWN*	0.027	1.46
*RET*INST*	0.043**	2.41
*D*SIZE*	0.010	0.72
*D*MB*	0.004	0.20
*D*LEV*	0.031***	2.70
*D*LIT*	0.008	0.23
D CEOOWN*	-0.005	-0.46
*D*INST*	0.021	1.53
*D*RET*SIZE*	-0.309***	-4.41
*D*RET*MB*	-0.195***	-3.29
*D*RET*LEV*	0.222***	4.19
*D*RET*LIT*	0.010	0.14
*D*RET* CEOOWN*	-0.104**	-2.18
*D*RET*INST*	-0.132*	-1.97
R-Square	0.2885	
Observations	14,755	

In this table, I present the effect of excessive R&D expenditure on conservatism. In the first stage, I predict R&D on yearly basis. The determinants of R&D include firm size (*LNSALE*), Market-to-book ratio (*MB*), leverage (*LEV),* CEO ownership (*CEOOWN*), institutional ownership (*INST*), institutional ownership square (*INST2*), technology firm dummy (*TECH*), firm performance (*ROA*), sales growth (*SALEGR*), and performance volatility (*STDROA*). The excessive R&D expenditure is derived from the first stage and is used to examine the effect of contract incompleteness on conservatism in stage 2. *RDR is* decile ranking value of residual value of R&D derived from stage 1 and scaled by 9. In stage 2, *D*RET* RDR* captures the excessive R&D expenditure on conservatism. In the regression, I control firm size (*SIZE*), leverage (*LEV*), market-to-book ratio (*MB*), litigation risk (*LIT*), managerial ownership (*CEOOWN*), and institutional ownership (*INST*). All control variables except *LIT* are ranked in decile and scaled by 9. Definitions of the variables are detailed in Appendix 3. *, **, and ***, indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 4.11: The Extent of Conservatism in Pre and Post Transition Periods

Panel A: The Extent of Conservatism in Pre and Post Transition Periods (Board Sample)

	Column (1)		Column (2)	
	Pre-Transition (Board)		Post-Transition(Board)	
Variables	Co-efficient	T-value	Co-efficient	T-value
Intercept	0.055***	6.55	0.047***	5.01
D	-0.019	-1.22	0.020	1.33
RET	-0.022*	-1.65	0.025*	1.59
*D*RET*	0.112***	2.64	0.196***	5.25
R-Square	0.042		0.1516	
Observations	407		407	

Panel B: The Extent of Conservatism in Pre and Post Transition Periods (Audit Committee Sample)

	Column (1)		Column (2)	
	Pre-Transition (AC)		Post –Transition (AC)	
Variables	Co-efficient	T-value	Co-efficient	T-value
Intercept	0.052***	7.19	0.045***	5.53
D	-0.011	-0.93	0.028**	2.17
RET	0.012	0.87	0.034**	2.04
*D*RET*	0.091***	2.57	0.212***	6.00
R-Square	0.0707		0.1712	
Observations	497		497	

The table presents the extent of conservatism in pre and post transition periods. I use Basu (1997) model to measure conditional conservatism. Coefficients of *D*RET* captures the extent of conservatism. *, **, and ***, indicate significance at the 10%, 5%, and 1% levels, respectively

Table 4.12: The Effect of Board Gender Diversity on Conservatism: Additional Controls

	Column (1)		Column (2)	
	Board		Audit Committee	
	Coefficient	T-value	Coefficient	T-value
Intercept	-0.036	-0.72	0.027	0.58
D	0.041	0.50	0.045	0.64
RET	0.090	1.14	0.027	0.30
*D*RET*	0.222	1.00	0.279	1.36
POST	-0.012	-0.97	-0.014	-1.32
*D*POST*	0.052**	2.53	0.040**	2.37
*RET*POST*	0.046**	2.22	0.038*	1.74
*D*RET*POST*	0.128**	2.33	0.106**	2.19
SIZE	0.038	1.00	-0.003	-0.07
MB	0.014	0.65	-0.007	-0.36
LEV	0.020	0.90	-0.022	-1.14
LIT	-0.026	-0.71	-0.034	-0.55
CEOOWN	0.049**	2.54	0.029	1.64
INST	0.019	0.51	-0.028	-0.77
DUAL	-0.006	-0.40	0.007	0.59
INDDir	0.072*	1.91	0.067*	1.89
*RET*SIZE*	0.022	0.38	0.070	0.84
*RET*MB*	-0.055	-1.52	0.000	0.00
*RET*LEV*	-0.046	-1.44	0.072*	1.93
*RET*LIT*	0.010	0.18	-0.032	-0.28
RET CEOOWN*	-0.061*	-1.84	-0.066*	-1.80
*RET*INST*	0.025	0.46	0.084	1.14
*RET*DUAL*	0.037	1.59	0.023	0.96
*RET*INDDir*	-0.117*	-1.90	-0.164**	-2.47
*D*SIZE*	-0.042	-0.64	0.001	0.01
*D*MB*	0.050	1.23	-0.027	-0.79
*D*LEV*	0.011	0.30	0.022	0.72
*D*LIT*	-0.097	-1.40	-0.305***	-3.19
D CEOOWN*	-0.064*	-1.91	-0.013	-0.46
*D*INST*	-0.015	-0.24	-0.024	-0.41
*D*DUAL*	0.035	1.58	0.032*	1.68
*D*INDDir*	-0.096	-1.55	-0.091*	-1.65
*D*RET*SIZE*	-0.113	-0.66	-0.154	-0.88

*D*RET*MB*	-0.072	-0.59	-0.344***	-3.20
*D*RET*LEV*	0.212*	1.92	0.024	0.26
*D*RET*LIT*	-0.097	-0.63	-0.495**	-2.35
*D*RET* CEOOWN*	-0.098	-1.18	0.096	1.20
*D*RET*INST*	-0.026	-0.16	-0.217	-1.38
*D*IRET*DUAL*	0.046	0.75	0.071	1.34
*D*IRET*INDDir*	-0.157	-0.95	0.115	0.74
R_Square	0.2139		0.2333	
Observations	814		994	

In this table, I present the OLS results of the effect of board gender diversity on conservatism by examining the changes of the extent of conservatism for firms that transit from all-male board / audit committee to at least one female delegate. *POST* is dummy variable, which is equal to 1 when it is the year that firm transit from all-male board / audit committee to at least one female delegate, and 0 for base year. *D*RET*POST* capture the change of the extent of conservatism for these firms. In each regression, I control firm size (*SIZE*), leverage (*LEV*), market-to-book ratio (*MB*), litigation risk (*LIT*), managerial ownership (*CEOOWN*), institutional ownership (*INST*), CEO-Chairman duality (*DUAL*) and percentage of independent director (*INDDir*). All control variables except *LIT* and *DUAL* are ranked in decile and scaled by 9. Definitions of the variables are detailed in Appendix 3. *, **, and ***, indicate significance at the 10%, 5%, and 1% levels, respectively

Table 4.13: The Effect of Board Gender Diversity on Conservatism: Matching Sample Approach

Panel A: The Difference of Conservatism between Firms that Transit from All-Men Directors to at least one Female Director and Firms without any Changes during the Same Year.

	Column (1)		Column (2)	
	Experiment group		Control group	
	Coefficient	T-value	Coefficient	T-value
Intercept	0.038	0.82	0.069**	2.40
D	-0.008	-0.11	0.037	0.77
RET	-0.026	-0.37	-0.049	-1.14
*D*RET*	0.361*	1.81	0.540***	4.29
POST	-0.003	-0.20	-0.001	-0.12
*D*POST*	0.031	1.38	-0.020	-1.36
*RET*POST*	0.028	1.27	-0.023	-1.30
*D*RET*POST*	0.120**	2.03	-0.060	-1.42
SIZE	0.010	0.23	-0.017	-0.60
MB	0.013	0.51	0.003	0.17
LEV	0.014	0.60	0.016	0.97
LIT	-0.013	-0.34	-0.022	-0.44
CEOOWN	0.031	1.52	0.002	0.13
INST	-0.002	-0.06	0.011	0.46
*RET*SIZE*	0.091	1.43	0.065*	1.74
*RET*MB*	-0.065*	-1.90	0.004	0.15
*RET*LEV*	-0.053*	-1.67	0.035	1.29
*RET*LIT*	-0.008	-0.15	0.009	0.16
RET CEOOWN*	-0.005	-0.15	-0.014	-0.47
*RET*INST*	0.054	0.88	0.041	1.19
*D*SIZE*	-0.006	-0.08	0.004	0.10
*D*MB*	0.037	0.79	-0.007	-0.25
*D*LEV*	-0.004	-0.09	0.013	0.49
*D*LIT*	0.032	0.40	-0.095	-1.10
D CEOOWN*	-0.042	-1.17	0.005	0.21
*D*INST*	-0.002	-0.03	-0.069*	-1.75
*D*RET*SIZE*	-0.131	-0.71	-0.278**	-2.55

*D*RET*MB*	-0.162	-1.19	-0.112	-1.46
*D*RET*LEV*	0.086	0.74	-0.013	-0.17
*D*RET*LIT*	0.095	0.60	-0.293	-1.25
*D*RET* CEOOWN*	-0.209**	-2.33	-0.019	-0.29
*D*RET*INST*	-0.209	-0.58	-0.343***	-3.32
R_Square	0.1643		0.1985	
Observations	662		662	
Diff. in Coeff. on				
*D*RET* POST*	0.180**			
Z - statistics	2.48			

Panel B: The Difference of Conservatism between Firms that Transit from All-Men Audit Committee Members to at least one Female Audit Committee Member and Firms without any Changes during the Same Year.

	Column (1)		Column (2)	
	Experiment group		Control group	
	Coefficient	T-value	Coefficient	T-value
Intercept	0.069*	1.81	0.104***	4.28
D	0.017	0.30	-0.084**	-2.11
RET	-0.061	-0.86	-0.050	-1.33
*D*RET*	0.337**	2.05	0.169*	1.70
POST	-0.014	-1.45	-0.015**	-2.15
*D*POST*	0.030*	1.94	0.018	1.57
*RET*POST*	0.028	1.35	0.054***	4.01
*D*RET*POST*	0.081*	1.73	-0.014	-0.43
SIZE	0.024	0.65	-0.011	-0.55
MB	-0.018	-0.95	-0.026*	-1.84
LEV	-0.019	-1.12	0.008	0.59
LIT	-6.243***	-2.57	-0.096***	-3.16
CEOOWN	0.023	1.39	-0.018	-1.61
INST	-0.020	-0.57	-0.002	-0.09
*RET*SIZE*	0.039	0.52	0.011	0.29
*RET*MB*	0.016	0.43	0.000	0.01
*RET*LEV*	0.066*	1.91	0.019	0.88

*RET*LIT*	18.878**	2.52	0.081*	1.79
RET CEOOWN*	-0.044	-1.35	0.061***	2.83
*RET*INST*	0.074	1.12	-0.018	-0.51
*D*SIZE*	-0.018	-0.32	-0.004	-0.11
*D*MB*	-0.017	-0.52	0.061**	2.32
*D*LEV*	0.021	0.79	0.072***	2.93
*D*LIT*	5.974**	2.45	0.122***	2.90
D CEOOWN*	-0.013	-0.48	0.020	1.06
*D*INST*	-0.035	-0.66	0.008	-0.24
*D*RET*SIZE*	-0.032	-0.20	-0.186**	-2.27
*D*RET*MB*	-0.321***	-3.13	0.055	0.82
*D*RET*LEV*	-0.016	-0.18	0.162**	2.54
*D*RET*LIT*	-19.250**	-2.57	0.052	0.60
*D*RET* CEOOWN*	0.081	1.07	-0.084*	-1.70
*D*RET*INST*	-0.187	-1.28	-0.108	-1.36
R_Square	0.2293		0.2220	
Observations	840		840	
Diff. in Coeff. on				
*D*RET*POST*	0.095*			
Z - statistics	1.67			

In this table, I present the difference of conservatism for experiment group, in which firms experience changes from all-man directors to at least one female director, and control group. For control group, I identify the firms with same two-digital SIC code and closest absolute value of firm size with experiment group in the same year. The difference of *D*RET*POST* is presented after the regressions results for each group. Following Clogg, Petkova and Haritou(1995), the Z-statistics of difference of Coefficient on *D*RET*POST* is calculated as:

$$Z = (\hat{\beta}_1 - \hat{\beta}_2) / \sqrt{S(\hat{\beta}_1)^2 + S(\hat{\beta}_2)^2}$$

Where $\hat{\beta}_1$ and $\hat{\beta}_2$ are coefficients of *D*RET*POST* in two different samples, $S(\hat{\beta}_1)^2$ and $S(\hat{\beta}_2)^2$ are square standard error of coefficients. *, **, and ***, indicate significance at the 10%, 5%, and 1% levels, respectively

Table 4.14: The Effect of Transition from Gender Diverse Board (Audit Committee) to All-Male Board (Audit Committee) on Conservatism

	Column (1)		Column (2)	
	Board		Audit Committee	
Variables	Co-efficient	T-value	Co-efficient	T-value
Intercept	0.011*	1.67	0.092***	2.63
D	-0.104	-0.91	-0.065	-1.01
RET	-0.195**	-2.05	-0.243***	-3.56
*D*RET*	0.507*	1.69	0.861***	4.36
RPOST	0.004	0.19	0.007	0.81
D RPOST*	0.007	0.21	-0.015	-0.93
RET RPOST*	-0.020	-0.57	-0.040**	-1.97
*D*RET* RPOST*	0.092	1.10	-0.033	-0.70
SIZE	-0.037	-0.64	-0.004	-0.11
MB	-0.040	-1.02	-0.039**	-2.01
LEV	-0.019	-0.54	-0.004	-0.22
LIT	0.252**	2.31	0.019	0.55
CEOOWN	0.019	0.59	-0.001	-0.04
INST	-0.043	-0.80	-0.041	-1.26
*RET*SIZE*	0.330***	3.07	0.202**	2.46
*RET*MB*	-0.089	-1.35	0.061	1.41
*RET*LEV*	0.014	0.26	0.046	1.37
*RET*LIT*	-0.854***	-5.28	-0.336***	-4.53
RET CEOOWN*	-0.012	-0.24	0.021	0.60
*RET*INST*	0.209**	2.35	0.243***	3.44
*D*SIZE*	0.001	0.01	0.097	1.59
*D*MB*	0.101*	1.62	-0.028	-0.83
*D*LEV*	0.127**	2.10	-0.026	-0.88
*D*LIT*	-0.637***	-4.49	-0.329***	-2.73
D CEOOWN*	-0.230	-0.44	0.006	0.22
*D*INST*	0.052	0.56	0.114*	1.93
*D*RET*SIZE*	-0.842***	-3.63	-0.095	-0.51
*D*RET*MB*	0.148	0.93	-0.729***	-6.58
*D*RET*LEV*	0.509***	3.29	-0.174*	-1.80
*D*RET*LIT*	0.534**	2.09	0.128	0.40
*D*RET* CEOOWN*	-0.103	-0.79	-0.018	-0.22
*D*RET*INST*	-0.365	-1.55	-0.237	-1.28

R-Square	0.3834	0.3484
Observations	366	768

In this table, I present the OLS results of the effect of transition from gender diverse board (audit committee) to all-male board (audit committee) on conservatism. *RPOST* is dummy variable, which is equal to 1 when it is the year that a firm transits from gender diverse board (audit committee) to all-male board (audit committee), and 0 for base year. *D*RET* RPOST* capture the change of the extent of conservatism for these firms. In each regression, I control firm size (*SIZE*), leverage (*LEV*), market-to-book ratio (*MB*), litigation risk (*LIT*), managerial ownership (*CEOOWN*), and institutional ownership (*INST*). All control variables except *LIT* are ranked in decile and scaled by 9. Definitions of the variables are detailed in Appendix 3. *, **, and ***, indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 4.15: Interaction Effect of Board Gender Diversity and Contract Incompleteness on Conservatism

Panel A: Interaction Effect of Board Gender Diversity and Contract Incompleteness on Conservatism

	Column (1)		Column (2)	
	High R&D Group		Low R&D Group	
	Coefficient	T-value	Coefficient	T-value
Intercept	0.023	0.40	-0.021	-0.32
D	-0.096	-0.95	0.038	0.37
RET	-0.103	-1.27	0.207*	1.92
*D*RET*	0.230	0.94	0.042	0.14
POST	-0.021	-1.29	0.001	0.06
*D*POST*	0.057**	2.08	0.057*	1.83
*RET*POST*	0.044*	1.69	0.029	0.71
*D*RET*POST*	0.096	1.32	0.240***	2.70
SIZE	-0.033	-0.64	0.078	1.40
MB	0.089***	2.89	-0.017	-0.51
LEV	0.047	1.47	0.014	0.41
LIT	-0.006	-0.16	-0.092	-1.01
CEOOWN	0.017	0.61	0.052*	1.82
INST	0.005	0.10	0.042	0.77
*RET*SIZE*	0.179**	2.37	-0.058	-0.68
*RET*MB*	-0.094**	-2.36	-0.063	-0.98
*RET*LEV*	-0.050	-1.32	-0.118*	-1.88
*RET*LIT*	0.015	0.21	0.031	0.46
RET CEOOWN*	0.026	0.60	-0.111*	-1.86
*RET*INST*	0.117	1.58	-0.062	-0.70
*D*SIZE*	0.153	1.65	-0.128	-1.38
*D*MB*	-0.070	-1.23	0.110*	1.88
*D*LEV*	-0.057	-1.08	0.068	1.24
*D*LIT*	-0.103	-1.49	0.000	0.00
D CEOOWN*	-0.027	-0.57	-0.084*	-1.77
*D*INST*	0.145	1.63	-0.132	-1.48
*D*RET*SIZE*	-0.020	-0.09	-0.194	-0.75
*D*RET*MB*	-0.286*	-1.75	0.123	0.68
*D*RET*LEV*	0.027	0.19	0.454**	2.53
*D*RET*LIT*	-0.034	-0.19	0.000	0.00

*D*RET* CEOOWN*	0.014	0.12	-0.215*	-1.71
*D*RET*INST*	0.063	0.29	-0.085	-0.34
R_Square	0.2183		0.2201	
Observations	369		445	

Panel B: Interaction Effect of Audit Committee Gender Diversity and Contract Incompleteness on Conservatism

	Column (1)		Column (2)	
	High R&D Group		Low R&D Group	
	Coefficient	T-value	Coefficient	T-value
Intercept	-0.010	-0.15	0.117**	2.13
D	0.129	1.41	-0.074	-0.86
RET	-0.067	-0.58	0.023	0.20
*D*RET*	0.485*	1.90	0.231	0.91
POST	-0.010	-0.64	-0.007	-0.48
*D*POST*	0.028	1.17	0.039	1.69
*RET*POST*	0.014	0.44	0.026	0.91
*D*RET*POST*	0.079	1.14	0.133*	1.95
SIZE	0.043	0.64	-0.019	-0.38
MB	0.029	0.90	-0.014	-0.54
LEV	-0.008	-0.27	-0.034	-1.29
LIT	-0.032	-0.55		
CEOOWN	0.056**	2.02	-0.007	-0.30
INST	0.037	0.61	-0.049	-1.01
*RET*SIZE*	0.017	0.12	0.040	0.36
*RET*MB*	0.061	1.00	-0.057	-1.01
*RET*LEV*	0.134**	2.50	-0.024	-0.46
*RET*LIT*	0.052	0.48		
RET CEOOWN*	-0.037	-0.67	-0.016	-0.34
*RET*INST*	-0.010	-0.09	0.052	0.49
*D*SIZE*	-0.069	-0.75	0.049	0.56
*D*MB*	-0.063	-1.19	-0.013	-0.27
*D*LEV*	-0.022	-0.46	0.054	1.37
*D*LIT*	-0.300***	-3.27		
D CEOOWN*	-0.034	-0.79	0.017	0.45

*D*INST*	-0.105	-1.26	0.016	0.20
*D*RET*SIZE*	-0.130	-0.51	-0.095	-0.37
*D*RET*MB*	-0.397**	-2.44	-0.256*	-1.78
*D*RET*LEV*	0.009	0.06	0.149	1.20
*D*RET*LIT*	-0.592***	-2.94		
*D*RET* CEOOWN*	0.052	0.40	0.046	0.45
*D*RET*INST*	-0.253	-1.16	-0.108	-0.46
R_Square	0.2424		0.2360	
Observations	414		578	

In this table, I present the OLS results of the interaction effect of board gender diversity and contract incompleteness on conservatism. R&D is used to proxy for contract incompleteness. I split the sample in table 4.7 into two sub-samples: a high contract incompleteness sample (above median R&D) and a low contract incompleteness sample (below median R&D). *POST* is dummy variable, which is equal to 1 when it is the year that firm transit from all-male board / audit committee to at least one female delegate, and 0 for base year. *D*RET*POST* capture the change of the extent of conservatism for these firms. In each regression, I control firm size (*SIZE*), leverage (*LEV*), market-to-book ratio (*MB*), litigation risk (*LIT*), managerial ownership (*CEOOWN*) and institutional ownership (*INST*). All control variables except *LIT* are ranked in decile and scaled by 9. In Panel B, as all firms whose R&D below sample median do not belong to litigious industry (*LIT*), there are no variations in *LIT*. All definitions of the variables are detailed in Appendix 3. *,**, and ***, indicate significance at the 10%, 5%, and 1% levels, respectively