Essays on Real Earnings Management

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Dedication

This dissertation is dedicated

to the memory of my father, Guichang Ge (1932-1999),

and to my mother, Guitang Li.

Acknowledgments

"Sometimes people come into your life and you know right away that they were meant to be there...to serve some sort of purpose, teach you a lesson or help figure out who you are or who you want to become."

--- *Dr. Laila Ahmed*

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[1] The research paper coauthored with Professor G. A. Whitmore, *Binary Response and Logistic Regression in Recent Accounting Research Publications: A Methodological Note*, is forthcoming in *Review of Quantitative Finance and Accounting,* Vol. 34, No.1.

Table of Contents

Chapter 3: Board, Takeover Protection and Real Earnings Management

List of Tables, Figures and Appendices

Abstract

The purpose of this thesis is to examine the economic consequences of and constraints on real earnings management. My thesis consists of two essays.

In the first essay, I examine the association between real earnings management and the cost of new corporate bond issues. Three types of real earnings management are considered: sales manipulation, overproduction and abnormal reduction of discretionary expenditures. Using the sample from 1993 to 2004, I find that cost of debt is negatively related to the proxies for sales manipulation, abnormal reduction of discretionary expenses and the overall real earnings management for firms without using stock options to compensate their managers. When managerial compensation is linked to option awards, however, the negative association between real earnings management and cost of debt is attenuated. Overproduction does not show a significant effect on bond yield spread. Overall, these results suggest that, in the primary bond market, mispricing of real earnings management exists, especially for firms that do not have executive stock option plans.

In the second essay, I investigate the effect of quality board and takeover protection on real earnings management. Four types of real earnings management

are considered in this essay: sales manipulation, overproduction, abnormal reduction of R&D expenses and abnormal reduction of discretionary expenditures (other than R&D). Using panel data from U.S. public firms in the post-Sarbanes-Oxley Act period (2004-2006), I find that the level of real earnings management (abnormal decline in R&D expenses and other discretionary expenses) increases with better board governance and decreases with higher takeover protection. The effects of these two governance factors on sales manipulation and overproduction cost are weak. Overall, the results suggest that the monitoring role of boards may put short-term market pressure on managers, and that managers may react by engaging in real earnings management to maintain good performance. In addition, takeover protection may shield managers from short-term market pressure and thus reduce the incentives for real earnings management.

Résumé

Cette thèse à pour objectif d'examiner les conséquences économiques autant que les contraintes sur la vraie gestion de revenus. Ma thèse se compose de deux essais.

Dans le premier essai, j'ai examiné la relation entre la vraie gestion de revenus et le coût des nouveaux emprunts obligataires d'une entreprise. Trois scénarios de vraie gestion de revenus sont considérés : la manipulation de ventes, l'effect de surproduction et enfin, la réduction anormale de dépenses discrétionnaires. En utilisant l'échantillon provenant de l'an 1993 à 2004, j'ai constaté que le coût de la dette est négativement relié aux procurations de la manipulation de ventes, de la réduction anormale de dépenses discrétionnaires et de la vraie gestion globale de revenus pour les sociétés qui n'emploient pas les options d'achat d'actions comme méthodes compensatoires exécutifs. Cependant, quand la compensation gestionnaire est reliée aux récompenses d'option, l'association négative entre de vrais revenus gestion et le coût de dette est diminuée. Dans ce cas, la surproduction ne cause pas d'effet significatif sur la diffusion de rendement en esclavage. De façon générale, ces résultats suggèrent que, sur le marché des obligations primaire des obligations, l'évaluation erronée

3

de la vraie gestion de revenus existe encore, particulièrement pour les sociétés qui n'ont pas les plans d'options sur titres exécutifs.

Dans le deuxième essai, j'ai étudié l'effet d'avoir accès à un conseil de qualité et de la protection de changement sur la vraie gestion de revenus. Quatre scénarios de vraie gestion de revenus sont considérés dans cette rédaction: la manipulation de ventes, la surproduction, la réduction anormale de R & D et la réduction anormale de dépenses discrétionnaires (autre que R& D). En utilisant des données de panneau des sociétés publiques établies dans la période du Sarbanes-Oxley (2004-2006), qui proviennent des États-Unis, j'ai constaté que le niveau de la vraie gestion de revenus (la baisse anormal dans R&D et d'autres dépenses discrétionnaires) augment avec un meilleur gouvernement de conseil et diminue avec une plus grande ampleur d'anti protections de changement. Les effets des deux facteurs de gouvernement sur la manipulation de ventes et le coût de surproduction sont plus faibles. De façon générale, les résultats suggèrent que le rôle de surveillance des conseils puisse faire pression à court terme du marché sur des directeurs et les ceux-ci peuvent réagir en s'engageant dans et instaurer une vraie gestion de revenus pour maintenir la bonne exécution. En outre, les anti-protections de changement peuvent protéger des directeurs de pression à court terme venant du marché et réduire ainsi les incitations pour la gestion de revenus.

Chapter 1

Introduction

Accounting literature documents that firms engage in earnings management to attain positive growth in earnings, to avoid reporting negative earnings and to meet or beat analysts' earnings forecasts. Earnings can be managed through the manipulation of accounting accruals (accrual-based earnings management) or modifications in economic transactions (real earnings management). Accrual-based earnings management assumes that managers use discretionary accruals to change accounting appearance of firm performance. It is not accomplished by changing the underlying economic activities of the firm but through the choice of accounting methods used to represent those underlying activities. Some researchers refer to this as "artificial" earnings management or taking accounting actions. Aggressive accruals manipulation is at a higher risk for audit, SEC scrutiny and class action lawsuits. Real earnings management (also referred to as real activities management or transaction-based earnings management) occurs

when managers undertake actions that deviate from normal business practices to increase reported earnings. These departures do not necessarily contribute to firm value even though they enable managers to meet reporting goals (Roychowdhury 2006). These management actions are transformed to accounting records by using accounting convention that is consistent with Generally Accepted Accounting Principles (GAAP). Compared with accrual-based earnings management, real earnings management is more opaque and more difficult to detect by shareholders, auditors or SEC regulators. Hence, the probability of lawsuits with real earnings management is less likely than with accrual management.

Graham et al. (2005) survey and interview more than 400 executives of U.S. firms. They report that about 80% of executives would rather take real economic actions than accounting actions to meet or beat earnings targets. Consistent with this finding, Cohen et al. (2008) document that accrual-based earnings management increased steadily from 1987 until the passage of the Sarbanes-Oxley Act (SOX) in 2002, followed by a significant decline after the passage of SOX. Conversely, the level of real earnings management declined prior to SOX and increased significantly in the post-SOX period. These findings indicate that real earnings management is a common phenomenon, and that managers take it as a favorite earnings management tool, especially in the post-SOX period, when corporate governance is strengthened and financial reporting standards are more stringent. With real earnings management, cash flows are usually directly affected. The main costs of real manipulation come from destruction of firm value via decreases in future period cash flows (Graham et al. 2005). The deviation from

optimal business operations also jeopardizes a firm's competitive advantage (Wang and D'Souza 2006; and Zang 2007).

Accrual-based earnings management has been studied extensively in accounting literature in past decades, while real actions to manage earnings have not received as much attention in the literature. Given the popularity of real earnings management methods among managers and the negative consequences of real activities manipulation, Graham et al. (2005) suggest that the research focus needs to be expanded to the real business decisions of managers. The purpose of my thesis is to examine issues related to the economic consequences of and constraints on real earnings management.

In the first essay, I examine the association between real earnings management and the cost of a firm's new bond issues. Three types of real earnings management are considered: sales manipulation, overproduction and abnormal reduction of discretionary expenditures. Using the sample from 1993 to 2004, I find that cost of debt is negatively related to the proxies of sales manipulation, abnormal reduction of discretionary expenses and the overall real earnings management for firms that do not use stock options to compensate their managers. When managerial compensation is linked to option awards, however, the negative association between real earnings management and cost of debt is attenuated. Overproduction does not show a significant effect on bond yield spread. Overall, these results suggest that, in the primary bond market, bondholders do not see through real earnings management.

In the second essay, I investigate the effect of quality board and takeover protection on real earnings management. The effective monitoring hypothesis suggests a negative association between quality board index and the level of real earnings management, while the market pressure hypothesis implies a positive association. There is an ongoing debate over the role of anti-takeover provisions (ATPs) on firm value. The entrenchment theory leads to a prediction that higher takeover protection is associated with a higher level of real earnings management. On the other hand, the alignment theory leads to the hypothesis that higher takeover protection is associated with a lower level of real earnings management. Four types of real earnings management are considered in this essay: sales manipulation, overproduction, abnormal reduction of R&D expenses and abnormal reduction of discretionary expenditures (other than R&D). Using panel data from U.S. public firms in the post-SOX period (2004-2006), I find that the level of real earnings management (abnormal decline in R&D expense and other discretionary expenses) increases with better board governance and decreases with greater takeover protection. The effects of these two governance factors on sales manipulation and overproduction cost are weak. Overall, the results suggest that the monitoring role of boards may put short-term market pressure on managers and managers may react by engaging in real earnings management to maintain good performance. In addition, takeover protection may shield managers from short-term market pressure and thus reduce the incentives for earnings management.

My thesis contributes to the literature in several ways. First, it extends the literature on the consequences of real earnings management. This is the first study to examine the economic consequences of real earnings management in the primary bond markets. In the United States, debt is a major source of external financing, so understanding the effect of real earnings management on the cost of new bond issues is a significant and relevant issue. Second, there is little empirical evidence on how corporate governance factors affect real earnings management. The results from the second essay make such an addition to the earnings management literature. Third, the findings in the second essay shed some light on the debate about corporate boards. Regulators emphasize the monitoring role of boards. However, a theoretical work by Adams and Ferreira (2007) shows that a management-friendly board can be optimal. The findings of my second essay show that board monitoring may encourage real earnings management. Fourth, the second essay is the first study to examine directly the effect of anti-takeover provisions on real earnings management. Inconsistent with entrenchment theory, my results imply that anti-takeover provisions may benefit shareholders, since ATPs improve management job security and mitigate managerial incentives for real earnings management. Fifth, the findings have important implications for regulators. In recent years, regulators have attempted to improve financial reporting quality by strengthening corporate governance (e.g. the Sarbanes-Oxley Act). Shareholder activists have also called for reducing anti-takeover provisions to further reduce fraudulent reporting. The findings of these two essays suggest that there may be some unintended consequences to strengthening corporate

governance. In addition, different governance mechanisms, such as boards and anti-takeover provisions, may have different impacts on real earnings management. Regulators and shareholders need to be aware of the trade-off when they consider reforms to strengthen board governance and to reduce takeover protection.

The remainder of my thesis proceeds as follows. Chapter 2 contains the first essay, *Real Earnings Management and Cost of Debt*. It includes the following sections: introduction, literature view and hypothesis development, research design, sample selection and descriptive statistics, results, robustness tests, and concluding remarks. Chapter 3 presents the second essay, *Board, Takeover Protection and Real Earnings Management*. This chapter includes several sections: introduction, literature review and hypothesis development, sample description, research design, regression results, robustness tests and concluding remarks. Chapter 4 concludes my thesis, discusses the weakness and limitations of my two studies, and points out future research avenues.

Chapter 2

Real Earnings Management

and Cost of Debt

2.1 Introduction

This chapter examines the association between real earnings management and the cost of new corporate bond issues. Standard & Poor's (1998) indicates that earnings and cash flows are important financial factors for assessing a firm's creditworthiness; it also notes that profitability and the ongoing earnings power of the firm are critical determinants of credit ratings. Consistent with this notion, Khurana and Raman (2003) document that the earnings-related fundamentals are priced in the bond market. However, much empirical evidence suggests that earnings management is a common phenomenon. Current-period reported earnings can be manipulated in two different ways. First, managers can exercise discretion over accrual choices that are allowed under GAAP in order to reach a

desired level of earnings. This is usually referred to as accrual-based earnings management. Second, managers may manipulate earnings by altering the timing and scale of operating decisions. Management actions that deviate from normal business practices, with the primary objective to mislead some stakeholders on underlying economic performance, are referred to as real earnings management (REM), or real activities management (Gunny 2005; Roychowdhury 2006; Mizik and Jacobson 2007; Cohen and Zarowin 2008). Earnings management distorts the quality of reported earnings, and the quality of accounting information impacts the bondholders' estimates of future cash flows from which the debt repayments will be serviced. Recent research has investigated the influence of accounting quality on debt contracting, and has generally demonstrated that abnormal accruals or abnormal operating accruals (measures of accounting quality or accrual-based earnings management) have a negative price impact on cost of debt (Francis et al. 2005; Bharath, Sunder and Sunder 2008; Prevost et al. 2008). However, current studies focus exclusively on the impact of accrual-based earnings management in the bond market. The purpose of this chapter is to examine whether bondholders require higher risk premiums in response to real earnings management.

Examining the effect of real earnings management in the bond market is important for several reasons. First, taking real economic actions to manage earnings for managers' private interests appears to be a common practice and is deemed as a favorite earnings management tool. For example, a recent survey conducted by Graham et al. (2005) suggest that 80% of the survey participants,

executives of U.S. firms, would rather take economic actions that could have long-term consequences than make within-GAAP accounting adjustments to meet earnings targets. Second, real earnings management deviates from optimal business operations, hides a firm's unmanaged earnings, and jeopardizes its competitive advantage in the long run (Wang and D'Souza 2006; Zang 2007). Therefore, real earnings management increases the information asymmetry between managers and bondholders with respect to a firm's current period unmanaged earnings performance, and affects bondholders' estimates of a firm's future profitability and ongoing earnings power. This information risk has a potential effect on bond pricing. Third, bondholders have contractually fixed claims such as periodic interest payments. They tend to focus on future cash flows to ensure a firm's ability to pay interest and bond principal. Unlike accrual-based earnings management, these REM activities can have direct negative consequences on the level of future net cash flows and likely increase the volatility of future cash flows. To the extent that REM affects future cash flows adversely, bondholders should be concerned about REM activities. Fourth, it has been argued that, compared with accrual-based earnings management, real earnings management is more opaque and more difficult to detect (Graham et al. 2005; Zang 2007), because they are not subject to external monitoring and scrutiny by auditors and regulators. Although recent research suggests that debt holders are able to detect accrual-based earnings management and penalize firms for doing so by demanding a higher rate of return, it is still an open question

whether they see through managers' attempts to influence earnings perceptions opportunistically by structuring transactions.

In this chapter, I consider three types of real earnings management: unusually large sales discounts to boost earnings temporarily; overproduction in order to lower the cost of goods sold; and abnormal cuts in discretionary expenses (including advertising expenses and selling, general and administrative expenses) to boost earnings. If bondholders perceive real earnings management as opportunistic behavior, I predict a positive association between REM and cost of debt (*Managerial Opportunism Hypothesis*). However, real earnings management is indistinguishable from optimal business activities, and thus very difficult to detect (e.g., Graham et al. 2005; Cohen et al. 2008). Recent research documents that the stock market positively prices real earnings management in the year of manipulation (Gunny 2005; Mizik and Jacobson 2007; Zhang 2008). Similarly, if bondholders mistake real earnings management for operational efficiency at the time of bond issuance, I predict a negative association between REM and cost of debt (*Operational Efficiency Hypothesis*).

In a levered firm, at least two types of agency problems exist: manager-shareholder conflict and shareholder-bondholder conflict. Many companies use stock option-based compensation to mitigate agency conflict between managers and shareholders. The finance literature shows that stock option plans could induce managers to take on more risk, which results in an increase in the variance of future cash flows. Option pricing theory stipulates that the change in the variance of the cash flow distribution benefits shareholders but damages debt

14

holders (Merton 1973, 1974). The empirical evidence also shows that, because of stock options, agency cost of debt increases (Ortiz-Molina 2006). Therefore, the alignment of interests of managers and shareholders can exacerbate the agency problem of debt. In addition, prior research finds that executive stock option compensation could induce managers to engage in earnings management (Matsunaga 1995; Cater et al. 2006). Thus, with the presence of stock option plans, REM is more likely to be perceived as opportunistic behavior. To protect themselves from managerial opportunism or shareholder exploitation, bondholders would require higher borrowing costs at the time of new bond issues. Therefore, I predict that bondholders require higher risk premiums in response to real earnings management for firms with executive stock option plans than for firms without these plans.

I use the estimation models proposed in prior research to construct three REM measures: abnormal cash flow from operations (proxy for sales manipulation), abnormal production cost (proxy for overproduction) and abnormal reduction of discretionary expenses. I also construct a comprehensive REM variable by summing these three REM proxies. As the measurement units of the proxies are commensurate, summing them is a meaningful aggregate measure. The financial data are from the Compustat North America Industrial database. I use the initial bond yield in excess of the Treasury yield with similar maturity to measure cost of debt. The new bond issues data are from the Mergent Fixed Income Database (FISD); compensation data are from the Compustat Executive Compensation database; and firms' daily stock returns are from CRSP. Using the sample from

1993 to 2004, I find that bond yield spread is negatively associated with the sales manipulation proxy, the abnormal cut of discretionary expense proxy, and the comprehensive REM variable in firms without stock option plans, relative to firms with these plans. This negative association indicates that more REM leads to lower borrowing cost in firms that do not use stock option compensation. The results are consistent with the notion that bondholders do not perceive these real activities as opportunistic behavior, but rather as favorable operational activities. However, when managerial compensation is linked to stock options, the negative association between REM and cost of debt is attenuated or turns positive. This result implies that, with the presence of executive stock options, bondholders suspect REM arising from managerial opportunism, and thus demand a higher risk premium in response to REM. Overproduction does not show a statistically significant effect on bond yield spread. Overall, these results suggest that bondholders do not see through REM performed by firms without stock option plans. They deem real activities management as opportunistic behavior only when managerial compensation is linked to stock option awards.

This study contributes to the accounting literature on real earnings management. Current research on the consequences of real earnings management has focused on subsequent firm performance, stock market returns, and cost of equity capital (Gunny 2005; Zang 2007; Zhang 2008; Kim and Sohn 2008). This is the first study to examine the economic consequences of real earnings management in the bond market. My results indicate that the bond market misprices REM, especially for firms that do not use stock options in their

16

executive compensation packages. In particular, firms without stock option plans are rewarded for their earnings manipulation through structuring transactions, which results in lower interest expenses for these firms, and thus, a loss of interest revenues for bondholders. Accounting information plays an important role in the capital allocation process. In the United States, debt is a major source of external financing over a long time period. In 1996, the value of new corporate bond issues was $651 billion versus $122 billion in new stock issues (Bhojraj and Sengupta 2003). In 2004, corporate bond issues exceeded $829.5 billion, whereas, equity issues were less than $130 billion (Thomson Financial 2004). Accordingly, understanding the bond market consequences of real earnings management is relevant and important. The findings of this chapter will be of interest to academicians, managers, credit agencies, and bondholders alike.

The remainder of this chapter is organized as follows: In Section 2, I review related literature and develop hypotheses. Section 3 discusses my empirical proxies and research design. Section 4 provides the sample selection and descriptive statistics. Main results are presented in Section 5. Section 6 summarizes robustness tests, and Section 7 concludes.

2.2 Literature Review and Hypothesis Development

Creditors use earnings and other accounting information to assess firm health, credibility and viability. For example, according to Standard & Poor's (1998), earnings and cash flows are important financial factors that credit agencies use to assess creditworthiness; profitability and the ongoing earnings power of a firm are

critical determinants of credit protection. Dechow (1994) documents that accrual-based earnings provide a meaningful measure of current performance and provide a good indicator of future performance and a firm's ability to generate future cash flows. Accounting literature has demonstrated that earnings and its various attributes are important determinants of cost of debt. For example, West (1970) and Ho and Rao (1993) show that earnings, especially the volatility of earnings, are an important determinant of default risk (bond ratings). Fischer and Verrecchia (1997) show analytically that debt yield is a decreasing function of earnings. Consistent with this analytical finding, Khurana and Raman (2003) report that the earnings-related fundamentals are priced in the bond market for new bond issues. All these research findings suggest that earnings, along with other items reported in financial statements, are an important source of information for creditors in the bond markets at the time of debt origination.

However, empirical evidence suggests that managers tend to manage earnings for their private benefit. Earnings management occurs when managers use discretion in financial reporting (accrual-based earnings management), or when managers structure transactions to alter financial reports (real earnings management) to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers (Healy and Wahlen 1999). According to this definition, earnings management hides the unbiased earnings of a firm from investors and other stakeholders. In this way, earnings become a less reliable measure of firm performance, and thus reported earnings that are pertinent to

18

investor pricing decisions may be of poor quality (Francis et al. 2005). The quality of accounting information affects bondholders' estimates of future cash flows from which their claims will be paid. Several papers have investigated the impact of accounting quality on cost of debt. From three standard abnormal operating accruals metrics, Bharath et al. (2008) use principal component analysis to construct a comprehensive proxy for accounting quality. They find that firms with poorer accounting quality face significantly higher yield spreads of new bond issues. Prevost et al. (2008) examine the relationship between earnings management proxied by abnormal discretionary accruals and the market determined yield spreads of traded bonds. Their results indicate that abnormal accruals have a negative price impact on all bonds generally, and the effect is more severe for non-investment grade bonds. The authors conclude that creditors are able to see through managerial attempts to influence earnings perceptions opportunistically, and then penalize firms for doing so by demanding a higher rate of return.

Managers can manipulate earnings by exercising discretion over accounting choices or by taking real economic actions. Graham et al. (2005) conduct a survey with more than 400 executives of U.S. firms. They find that managers are willing to make small or moderate sacrifices in economic value to meet earnings targets to avoid the severe market reaction for missing the targets. They also report strong evidence that managers take real economic actions, such as decreasing discretionary expenditures, to maintain accounting appearances. This evidence indicates that managers appear to be willing to burn ''real'' cash flow for the sake

of reporting desired accounting numbers. The prevalence of real earnings management makes understanding the economic consequences of such action in the bond market important.

Real earnings management masks a firm's current-period unmanaged economic performance. Because these real economic actions deviate from optimal business operations, earnings management also jeopardizes a firm's competitive advantage in the long run (Wang and D'Souza 2006; Zang 2007). Manipulated earnings numbers cannot serve as a reliable measure of firm performance for bondholders to estimate a firm's future profitability and ongoing earnings power. In this sense, real earnings management distorts earnings quality and increases the information asymmetry with respect to firm performance between managers and bondholders. The empirical findings from accrual-based earnings management suggest that bondholders require a higher rate of return for poorer earnings quality. In addition, unlike accrual-based earnings management, real earnings management could have negative consequences on the level of future net cash flows (Graham et al. 2005; Roychowdhury 2006) and could increase the volatility of future cash flows. Bondholders are entitled to contractually fixed claims rather than residual claims, so they tend to focus on a firm's ability to generate future cash flows to ensure the payment of periodic interest and principal of the bond. Thus, if bondholders perceive the existence of REM as opportunistic behavior, they will require a higher risk premium for taking on additional future cash flow risk. In other words, the lower the earnings quality and the higher the risk of future cash flows, the higher the bond yields to maturity.

Nevertheless, it is usually difficult for outside investors to distinguish sub-optimal from optimal business decisions. Graham et al. (2005) report that managers regard accrual-based earnings management as more easily detectable, and for this reason, they would rather structure transactions to reach a desired level of earnings. Cohen et al. (2008) document that, after the passage of Sarbanes-Oxley Act (SOX) imposing more stringent reporting standards, firms switch from accrual-based to real earnings management methods. These findings suggest that, compared with accrual-based earnings management, real earnings management is more opaque and more difficult to detect (Zang 2007; Cohen and Zarowin 2008). Consistent with this belief, recent research has demonstrated that the stock market misprices real earnings manipulations in the year when real actions take place to inflate current-period earnings. For example, Mizik and Jacobson (2007) find that some firms artificially inflate current-term accounting profits through both accruals and real activities management at the time of a seasoned equity offering. They also conclude that financial markets overvalue firms engaging in earnings inflation and that this overvaluation is more closely linked to real activity manipulation than accruals manipulation. Zhang (2008) reports that managers use real activities manipulation to meet cash flow forecasts. This real activity manipulation impairs these firms' future value, measured by future Tobin's Q, but the stock market positively prices a firm's real activities manipulation in the year of manipulation. These findings indicate that the stock market is not efficient in distinguishing real earnings management in the year of manipulation.

Similarly, if bondholders do not see through managerial opportunism attempts at the time of bond issuance, real earnings management may be mistaken as operational efficiency. For example, unusually large sales discounts may be deemed as an efficient sales promotion strategy; overproduction may be thought of as normal business activity to meet the demand of increasing future sales and therefore, a signal of business growth; and an abnormal reduction of discretionary expenditures may be mistaken as an effective cost saving activity. Therefore, when real earnings management is mistaken for operational efficiency, I expect a negative association between real earnings management and cost of debt.

The above discussion leads to two competing hypotheses. When real earnings management is perceived as opportunistic behavior, I predict that cost of debt will increase with the level of real earnings management (*Managerial Opportunism Hypothesis*). On the other hand, when real earnings management is mistaken for operational efficiency, I predict that cost of debt will decrease with the level of real earnings management (*Operational Efficiency Hypothesis*). These two competing hypotheses are stated below:

H₁ₐ: There is a positive relation between the cost of debt and the level of real earnings management (*Managerial Opportunism Hypothesis*).

H₁ᵦ: There is a negative relation between the cost of debt and the level of real earnings management (*Operational Efficiency Hypothesis*).

In a levered firm, at least two types of agency problems exist: manager-shareholder conflict and shareholder-bondholder conflict. Based on the assumption that firms maximize the combined wealth of shareholders and bondholders, or "market value maximization" (Fama and Miller 1972), conflicting bondholder-shareholder interests imply that shareholders will be tempted to deviate from "market value maximization" and instead maximize the value of shareholders' equity (Frankel and Litov 2007). Many companies use stock option-based compensation to align the interests of managers and shareholders. The finance literature shows that stock option plans could induce managers to take on more risk, which results in an increase in the variance of future cash flows. Option pricing theory stipulates that the change in the variance of cash flow distribution impacts the value of equity and debt in opposite directions (Merton 1973, 1974). Therefore, increased managerial risk-taking may benefit shareholders at the expense of bondholders. In other words, the increased management-shareholder alignment through stock option plans can exacerbate other agency problems of debt, as bondholders may suffer from shareholder incentives to take risks (Jensen and Meckling 1976; Galai and Masulis 1976; Begley and Feltham 1999). DeFusco et al. (1990) find that the adoption of executive stock option plans is associated with positive stock and negative bond market reactions, which is consistent with the notion that executive stock options may induce wealth transfers from bondholders to shareholders. Ortiz-Molina (2006) documents a positive relation between managerial stock options and borrowing costs. His evidence indicates that rational bondholders price new debt

issues using the information concerning a firm's future risk choices contained in managerial incentive structures; and that, because of stock options, the agency cost of debt increases. In addition, the empirical evidence from accounting literature suggests that equity compensation leads to incentives for earnings management. For example, Matsunaga (1995) reports that the amounts of employee stock option grants are negatively associated with the extent to which a firm's earnings are below the target levels and positively related to the use of income-increasing accounting methods. Carter et al. (2006) find that firms with concerns about meeting earnings targets use more stock options than stocks themselves, which are less restricted in executive compensation. Therefore, when managerial compensation is linked to stock options, real activities manipulation is more likely to be perceived as opportunistic behavior, which is detrimental to the interests of bond investors.

Debt holders can use three devices – monitoring, debt covenants and cost of debt - to mitigate shareholder-bondholder agency problems and to protect themselves from managerial opportunism. However, unlike private debt holders (banks), public debt holders are at arms' length to the borrower, so effective monitoring is unlikely in public debt markets. Moreover, recent research shows that public debt holders rely on borrowing costs rather than debt covenants to protect themselves from managerial opportunism. For example, Frankel and Litov (2007) report little association between discretionary accruals and the use of accounting-based debt covenants. This result suggests that accounting quality does not affect the propensity to use accounting-based covenants. In addition,

Bharath et al. (2008) find no evidence that maturity and the collateral terms of public debt contracts are more stringent in response to poorer borrower accounting quality; instead, the higher risk from poorer accounting quality is entirely reflected in the borrowing cost. Altogether, these findings suggest that bondholders require higher bond offering yields to mitigate the agency problems of debt resulting from increased management-shareholder alignment.

In summary, when managerial compensation is linked to stock options, real earnings management is more likely to be perceived as opportunistic behavior. Bondholders will anticipate wealth transfers resulting from executive stock options, and thus require higher risk premium to mitigate potential exploitation. Therefore, I expect that bondholders will demand higher borrowing costs in response to real earnings management for firms that have executive stock option plans than for firms without these plans. The second hypothesis is stated below:

> **H₂:** Bondholders require higher risk premiums in response to real earnings management for firms with executive stock option plans than for firms without these plans.

2.3 Research Design

Models to estimate real earnings management proxies

In this chapter, I consider three types of real earnings management activities: (1) sales manipulation, (2) overproduction and (3) cutting discretionary expenses.

Sales manipulation is defined as managers' attempts to increase sales temporarily during the year by offering "limited-time" price discounts or more lenient credit terms (Roychowdhury 2006). Sales management activities lead to lower current-period cash flow from operations and higher production costs than is normal, given the sales level. Overproduction refers to producing more goods than necessary in order to meet expected demand. It reflects an intention to cut prices or to extend more lenient credit terms to boost sales and/or to decrease the cost of goods sold. Earnings boosted by sales manipulation or lower cost of goods sold due to overproduction are less sustainable. Also, offering more lenient credit terms, such as a longer payment period, increases a firm's risk of exposure to uncollectible accounts. Discretionary expenses are defined as the sum of advertising and SG&A expenses, which often include certain discretionary expenditures such as employee training, maintenance and travel. Discretionary expenditures are generally paid in the form of cash. Reducing such expenditures lowers cash outflows and has a positive effect on abnormal cash flows in the current period, possibly at the risk of lower cash flows in the future. For example, abnormal reduction of advertising expenses may result in lower future sales revenues and therefore lower future cash flows; and an abnormal reduction of employee training expenses may hurt a firm's competitive edge in the long run. These opportunistic activities deviate from optimal business decisions, depict a biased picture of economic performance and a firm's on-going earnings power, and have negative consequences on future cash flows.

Roychowdhury (2006) develops empirical models to estimate the normal levels of real business activities, as reflected in cash flow from operations, production costs, and discretionary expenditure. The residuals (abnormal levels) from these models are used as proxies for opportunistic real activities manipulation. Gunny (2005), Zang (2007) and Yu (2008) find that real earnings management (measured by some of these real earnings management proxies) leads to adverse subsequent performance, such as lower future abnormal ROA, abnormal CFO and Tobin's Q. Cohen et al. (2008) show that firms switch from accrual-based to real earnings management methods in the post-SOX period. These findings support these proxies as satisfactory measures to capture managerial opportunism.

Following Roychowdhury (2006) and Cohen et al. (2008), I use regression model (2.1) to estimate the normal level of cash flow from operations:

$$\frac{CFO_t}{A_{t-1}} = \alpha_0 \frac{1}{A_{t-1}} + \alpha_1 \frac{S_t}{A_{t-1}} + \alpha_2 \frac{\Delta S_t}{A_{t-1}} + \varepsilon_t \qquad (2.1)$$

where, CFO_t = Cash flow from operations (Compustat data #308);

A_t = Total assets at the end of period t (Compustat data #6);

S_t = Net sales during period t (Compustat data #12);

$\Delta S_t = S_t - S_{t-1.}$

Prior research (e.g., Roychowdhury 2006; Zang 2007; Cohen et al. 2008; and Carcello et al. 2006) expresses production cost as a linear function of sales and change in sales. I use regression model (2.2) to estimate the normal level of production costs:

$$\frac{Prod_t}{A_{t-1}} = \alpha_0 \frac{1}{A_{t-1}} + \alpha_1 \frac{S_t}{A_{t-1}} + \alpha_2 \frac{\Delta S_t}{A_{t-1}} + \alpha_3 \frac{\Delta S_{t-1}}{A_{t-1}} + \varepsilon_t \qquad (2.2)$$

where, $Prod_t$ = COGS$_t$ (Compustat data #41) + ΔInventory$_t$ (Δ Compustat data #3)

$\quad\quad S_t$ = Net sales (Compustat data #12);

$\Delta S_t = S_t - S_{t-1}$.

The normal level of discretionary expenses is estimated in model (2.3):

$$\frac{DisExp_t}{A_{t-1}} = \alpha_0 \frac{1}{A_{t-1}} + \alpha_1 \frac{S_{t-1}}{A_{t-1}} + \varepsilon_t \qquad (2.3)$$

where, $DisExp_t$ = Discretionary expenses

$\quad\quad\quad\quad$ = Advertising expense (Compustat data #45) + SG&A expense

$\quad\quad\quad\quad$ (Compustat data #189)

$\quad\quad S_{t-1}$ = Net sales (Compustat data #12)

Model (2.3) expresses discretionary expenses as a linear function of lagged, rather than contemporaneous, sales. Roychowdhury (2006) points out that firms can exhibit unusually low residuals when discretionary expense is expressed as a linear function of contemporaneous sales if they manage sales upwards to increase reported earnings, even though they do not reduce discretionary expenses. Using lagged sales as the independent variable can avoid this problem.

The above regressions are estimated cross-sectionally for each 2-digit SIC industry-year with at least 15 observations from 1992 to 2004. The residuals from the corresponding regressions capture the abnormal level of real earnings management activities. I multiply the residuals from models (2.1) and (2.3) by negative one, such that higher values indicate a higher probability of taking real decisions to increase earnings (Zang 2007). I do not multiply residuals from the

overproduction model by negative one since higher production cost is indicative of overproduction to reduce cost of goods sold. In order to capture the effects of earnings management through all these three activities in a comprehensive measure, consistent with Cohen and Zarowin (2008), I also construct an overall real earnings management proxy (*RealEM*) by summing up these three real earnings management measures: *Ab_CFO*, *Ab_Prod*, and *Ab_Dexp*. All proxies have been scaled by total assets lagged one period (A_{t-1}). Hence, the proxies are unitless fractions of assets and can be summed, i.e., the REM proxies are commensurate.

Models to examine the relationship of cost of debt and REM

I use initial bond yield spread (i.e., the corporate bond yields at the issuance date minus the Treasury bond yields with comparable maturity) as a proxy for the cost of public corporate debt. Bond yield spread represents the risk premium that firms must pay to borrow money in the bond market and directly measures a firm's incremental cost of debt (Sengupta 1998 and Shi 2003).

Model (2.4) provides a framework to test the association between real earnings management and the initial bond yield spread:

$$
\begin{aligned}
YieldSpread_{it} =\ & \beta_0 + \beta_1 REM_{i,t-1} + \beta_2 OptionD_{i,t-1} + \beta_3(REM_{i,t-1} * OptionD_{i,t-1}) \\
& + \beta_4 Size_{i,t-1} + \beta_5 MB_{i,t-1} + \beta_6 Lev_{i,t-1} + \beta_7 Cov_{i,t-1} + \beta_8 Prof_{i,t-1} \\
& + \beta_9 SdRET_{i,t-1} + \beta_{10} Rating_{i,t} + \beta_{11} IssueSize_{i,t} + \beta_{12} Maturity_{i,t} \\
& + \beta_{13} CallDis_{i,t} + \beta_{14} Put_{i,t} + \varepsilon_{i,t}
\end{aligned}
\tag{2.4}
$$

where

YieldSpread$_{i,t}$ = the corporate bond yield to maturity at the issuance date minus the Treasury bond yield with similar maturity, measured in percent points;

REM$_{i,t-1}$ = each of four real earnings management variables (*Ab_CFO*, *Ab_Prod*, *Ab_Dexp*, and *RealEM*) in year *t-1*;

OptionD$_{i,t-1}$= dummy variable, which takes the value of 1 if firm *i* uses managerial stock option compensation, 0 otherwise;

Size$_{i,t-1}$ = size of firm *i* at the beginning of year *t* = ln(total assets (Compustat data #6));

MB$_{i,t-1}$= market to book ratio at the beginning of year *t*;

Lev$_{i,t-1}$= leverage in year *t-1*= long-term debt(#9)/total assets(#6);

Cov$_{i,t-1}$ = interest coverage in year *t-1*= operating income after depreciation(#178) /interest expense(#15);

Prof$_{i,t-1}$ = profitability in year *t-1* = operating income after depreciation(#178) /total assets(#6);

SdRET$_{i,t-1}$ = standard deviation of firm *i*'s daily stock returns in year *t-1*;

Rating$_{i,t}$= residual bond ratings;

IssueSize$_{i,t}$= natural log of the offering amount of a bond issue for firm *i* in year *t* (in thousands of dollars);

Maturity$_{i,t}$= natural log of the maturity period of the bond in months;

Call $_{i,t}$= dummy variable, 1 if a new bond issue has call option, 0 otherwise;

Put$_{i,t}$ = dummy variable, 1 if a new bond issue has put option, 0 otherwise.

In this model, bond specific variables are in year t while accounting variables are in year t-1. Using lagged accounting variables has two advantages. First, bond premiums are more affected by past accounting information than by current accounting information (Ederington and Yawitz 1986). Using one-year lagged data ensures that accounting information is already available to bondholders at the time of bond issuance. Second, regressions of current bond yield on lagged accounting characteristics reduce endogeneity (Frankel et al. 2007).

In model (2.4), the dependent variable is the bond offering yield adjusted by the matched Treasury bill rate. The testing variables are the four REM proxies (*Ab_CFO*, *Ab_Prod*, *Ab_Dexp* and *RealEM*) and their interaction terms with *OptionD*. The *Managerial Opportunism Hypothesis* (H_{1A}) implies that the coefficients of REM variables are positive, while the *Operational Efficiency Hypothesis* (H_{1B}) predicts these REM coefficients to be negative. Ortiz-Molina (2006) finds borrowing cost to be positively associated with managerial stock options, so I expect the coefficient of *OptionD* to be positive. According to H_2, I predict that the coefficient of the interaction term will be positive.

In addition, based on prior research on the determinants of cost of debt (e.g., Sengupta 1998; Shi 2003; Mansi et al. 2004; Bharath et al. 2008; Jiang 2008; Shi and Zhang 2008; Kim, Kim and Shi 2008), a number of firm-level and bond-level control variables are included in the model. *Size* is measured by the natural log of the total assets from the most recent annual report before the new bond issue. New bonds issued by large firms are perceived to be less risky than those of small firms, so its coefficient is expected to be negative. Market-to-book ratio (*MB*) is

31

included to control for the growth potential of the firm. However, as this ratio is also used as a proxy for risk, its effect on cost of debt is not clear. Therefore, I do not make a prediction on this variable. Leverage (*Lev*) is calculated as long-term debt over total assets. It is expected to have a positive association with the bond yield spread. Interest coverage ratio (*Cov*) and profitability ratio (*Prof*) are expected to be negatively associated with bond yield spread, because higher interest coverage and profitability ratios indicate a lower default risk for bonds. The standard deviation of stock returns (*SdRET*) is a proxy for the market risk of the issuer; therefore, it is expected to be positively associated with *YieldSpread*.

Bond-level variables in model (2.4) include *Rating*, *IssueSize*, *Maturity, Call* and *Put*. Credit rating scores are good proxies for the default risk of a bond. I transform the S&P bond rating (*SP_Rating*) at the issue date to a numerical credit rating score using the numerical conversion process provided in the Mergent FISD Codes Table, 1, 2,…8,…27 for bonds rated AAA, AA+, …, BBB+, …, NR respectively. When the S&P rating is "NR", I replace it with a Moody rating if it is available. When a Moody rating is not available, I replace it with a Fitch rating. By construction, a higher value of bond rating implies a higher default risk. A potential problem is that credit ratings may already incorporate the impact of real earnings management. To mitigate this concern, I run a regression of the natural logarithm of S&P credit ratings (*lnSPR*) on the corresponding REM variable, other firm-level control variables and bond specific variables. The residuals from this regression incorporate the credit rating information without the influence or impact of real earnings management. I label the residuals from this regression as

Rating, and use it as my primary measure of credit rating in the multiple regression analysis (Mansi et al. 2004 and Anderson et al. 2004 use a similar approach.) [2]. Bond issue size (*IssueSize*) may be viewed as a measure of marketability, and it is expected to be inversely correlated with risk premium. On the other hand, larger bond issue size implies higher debt burden and, therefore, higher probability of default. Thus, the impact of issue size is ambiguous. The longer the years to maturity, the higher the interest risk exposure. Thus, the natural logarithm of maturity (*Maturity*) is expected to be positively associated with the risk premium. In addition, call provision exposes bondholders to interest risk, so *Call* is expected to be positively associated with bond yield spread. A put option on a bond allows bondholders the right to force the issuer to pay back the principal on the bond whenever they want, before maturity, or for whatever reason. Therefore, I predict the dummy variable *Put* is negatively related to bond yield spread.

2.4 Sample selection and descriptive statistics

The initial list of sample firms that are used to construct the real earnings management variables and firm-specific variables consist of all firms in the Compustat North America Industry Annual database. I eliminate observations with negative sales numbers (data #12) and observations where the total assets

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[2] The primary test results are similar when I do not replace the S&P "NR" rating with Moody or Fitch ratings; the primary test results are also robust when I include all three REM variables in the regression to obtain the residual ratings. Instead of using the residual bond rating, I also use S&P rating scores and the natural logarithm of S&P rating scores; the primary test results remain similar.

number (data #6) is equal to zero or missing. I also exclude financial institutions (SIC 6000-6999) and utility industries (SIC 4400-4999) because the accounting rules in highly regulated industries differ from those in other industries, and these industries have different operating characteristics and different debt financing activities from industrial firms. The three real earnings management samples are a subset of the full sample with data available to calculate the normal level of each real earnings management activity.

The new public bond issue information is from the Mergent Fixed Income Securities Database (FISD) (data available until 2004). Since convertible bond yields are affected by their equity component, the observed yields may be picking up the real earnings management impact on equity rather than on debt. Thus, I drop convertible bonds from the sample. Compensation data is from the Compustat Executive Compensation database. This database provides the top five executives' compensation data. I aggregate executive level data to firm level data. The Executive Compensation data begins with 1992. I collect firms' daily stock returns from CRSP. After merging bond data with real earnings management, compensation and other control variables, the final sample period is 1993 to 2004, because one-year lagged data is required.

Table 2.1 presents the descriptive statistics of variables used in the primary test.[3] By construction, the mean and median of three REM variables are close to

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[3] After merging data from different databases, I winsorize all continuous accounting and bond variables at the top and bottom one percent, in order to mitigate the influence of extreme observations. Then I drop observations where bond yield is missing or *OptionD* is missing. The actual sample used for each regression is a subset of this general sample, depending on the availability of the variables required for each regression.

zero. The average bond yield equals 1.65% in excess of the Treasury yield with similar maturity duration. The average yield spread is comparable to 1.36% in Anderson et al. (2004), and 1.46% in Jiang (2008). The average offering amount is $463 million, with an average maturity of 13 years. The average S&P credit rating (*SP_Rating*) is 9.47, ranging from 1 to 27. The mean of the dummy variable *Put* is 0.03, which suggests that 3% of sample bond issues (70 bond issues) have a put option. The average market to book ratio (*MB*) is 3.23, and the average interest coverage ratio (*Cov*) is 6.93. The mean value of leverage (*Lev*) shows that, in the sample firms, 27% of total assets on average are financed by long-term debt. The minimum and maximum values of profitability ratio (*Prof*) suggest that the sample firms include both un-profitable and profitable firms. Among the sample firms where compensation data are available, 88% of firms use stock option compensation.

[Insert Table 2.1 Here]

Table 2.2 provides the Pearson correlations between bond yield spread, lagged real earnings management variables, lagged firm-specific variables and bond-specific variables. Three REM variables (*Ab_CFO*, *Ab_Prod* and *Ab_Dexp*) and the comprehensive REM variable (*RealEM*) are positively correlated with *YieldSpread*, but two of these correlations are not statistically significant. The three REM variables are significantly correlated. *Ab_CFO* and *Ab_Prod* are positively correlated with each other, while *Ab_Dexp* shows a negative correlation with the other two. The correlations between *YieldSpread* and many bond-

specific and firm-specific variables are very informative. For example, bond

yield spread is higher when the credit risk (*lnSPR*) is higher, when the leverage is

higher, and when the issuer's market risk (*SdRET*) is higher. Bond offering yield

spread is lower in larger firms, more profitable firms, and firms with a greater

ability to generate earnings to cover interest expenses. Surprisingly, *OptionD* is

negatively correlated with *YieldSpread*.

[Insert Table 2.2 here]

Table 3 reports the sample distribution across 2-digit SIC industries. More

than half of the observations are from the manufacturing industry.

[Insert Table 2.3 here]

2.5 Results

I estimate Model (2.4) using Ordinary Least Squares (OLS). I report *p*-values

based on robust cluster standard errors to control for heteroskedasticity and

unobserved firm effects.

Table 2.4 summarizes the OLS results of Model (2.4)[4]. *OptionD* has a

significant positive association with *YieldSpread*, after controlling for other

determinants of bond yields in all model specifications. Column (1) reports the

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[4] In this model, the dependent variable is the yield spread, which is supposed to
parse out the year effect. Including a year dummy variable in this model generates
smaller magnitudes of the coefficients of test variables and significance levels
become weaker (not tabulated). Overall, however, the inference on the test
variables remains similar.

results when *Ab_CFO* is used as a proxy for real earnings management. The estimated coefficient of *Ab_CFO* is -2.48, significant at the 5% level. *Ab_CFO* is constructed in such a way that the higher value implies more real earnings management. The negative sign is consistent with the *Operational Efficiency Hypothesis*. This result implies that bondholders do not see through sales manipulation in firms that do not use executive stock option plans. Instead, sales manipulation is associated with a lower borrowing cost. The interaction term *Ab_CFO*OptionD* is 2.59, significant at the 1% level, and the magnitude of this coefficient is greater than the absolute value of the *Ab_CFO* coefficient. This positive coefficient of *Ab_CFO*OptionD* suggests that, compared with firms without executive stock option plans, bondholders require a higher risk premium in response to sales manipulation performed by firms that use stock options to compensate their managers.[5]

In column (2), the estimated coefficient of *Ab_Prod* is 0.55, not statistically significant. Its interaction term with *OptionD* has a negative but insignificant coefficient. This result suggests that overproduction does not have a statistically significant impact on the bond yield spread.

Column (3) presents the result when real earnings management proxy, *Ab_Dexp*, is included in the model.[6] The estimated coefficient of the variable

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[5] The overall coefficient of *Ab_CFO* for firms with stock option plans is not statistically significant from zero.

[6] In this study, I define discretionary expense as the sum of advertising and SG&A expenses. Following Zang (2007), I also estimate discretionary R&D expense from the regression model: $\frac{RD_t}{A_{t-1}} = \alpha_0 + \alpha_1 \frac{RD_{t-1}}{A_{t-1}} + \alpha_2 \frac{Funds_t}{A_{t-1}} + \alpha_3 TobinsQ_t + \alpha_4 \frac{CaptialExp_t}{A_{t-1}} + \varepsilon_t$, where RD_t = R&D expense (Data 46). As long as SG&A (Data 189) is available, R&D is set to zero if it is missing. $Funds_t$ = Internal funds = IBEI + R&D + Depreciation = Data 18 +

Ab_Dexp is -0.30, while the coefficient of the interaction term, *Ab_Dexp*OptionD*, is 0.30. Both coefficients are statistically significant at the 1% level. Therefore, on average, for firms without executive stock option plans, the higher the level of abnormal cuts in discretionary expenses, the lower the borrowing costs. This result is consistent with the hypothesis that bondholders deem abnormal declines in discretionary expenditure as a favorable operational activity rather than as opportunistic earnings management behavior. However, when managerial compensation is linked to stock options, the negative association between *Ab_Dexp* and bond yield spread is attenuated.

These statistically significant coefficients of the test variables are economically significant as well. Take the coefficient of *Ab_Dexp* as an example, and consider the regression model with full controls. Recall from Table 2.1 that the mean bond issue size is $463 million and that the standard deviation of *Ab_Dexp* is 0.99. For firms that do not use stock options as compensation, a change of one standard deviation in abnormal discretionary expense cuts is associated with a change in bond premium of 0.297 (0.30*0.99) percent points. For a firm with an average bond size of $463 million, a decrease in risk premium by 0.297 percent points would result in approximately a decrease of $1.38 million

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Data 46 + Data 14; TobinsQ$_t$ = (MVE + Book value of preferred stock + Long-term debt + Short-term debt)/ Total assets = (Data 199 * Data 25 + Data 130 + Data 9 + Data 34)/ Data 6; CapitalExp$_t$ = Capital expenditure = Data 128. Then I multiply the residuals from this model by negative one to derive *Ab_RD*. I use model (2.4) to test the association between abnormally cutting R&D expenses and the bond yield spread in R&D intensive industries (2-digit ISC code 28, 35, 36, 37 and 38). The estimated coefficient of *Ab_RD* is -4.22, and the estimated coefficient of *Ab_RD*OptionD* is 4.84. Both are marginally significant at the 10% level.

of interest expenses per annum. To the extent that the *Ab_Dexp* captures managerial opportunism, bondholders are misled by this REM activity.

Column (4) reports the results of the regression that examines the association between the comprehensive REM variable (*RealEM*) and cost of debt. Similarly, *RealEM* shows a significantly negative association with bond yield spread, while the interaction term, *RealEM*OptionD,* is positively related to yield spread. The results on the comprehensive REM proxy are consistent with the *Operational Efficiency Hypothesis* and Hypothesis 2.

Regarding other firm-specific characteristics, *Size*, *Lev*, *Cov* and *Prof* show the predicted association with bond yield spread. The estimated coefficient of *MB* is negatively significant. *SdRET* is positive and significant in all model specifications, implying that bondholders consider the market risk of the issuer in their bond pricing decision. In terms of bond-specific variables, the estimated coefficient of *IssueSize* is positive in all model specifications, suggesting that bondholders require a risk premium for the higher probability of default associated with higher debt burden. The negative sign of the *Maturity* coefficient in columns (3) and (4) is counterintuitive but consistent with the results reported in prior studies (Shi and Zhang 2008; Kim et al. 2008). The estimated coefficient of *Call* is negative but not significant. Consistent with the prediction, *Put* is significantly negatively related with *YieldSpread*. In addition, residual bond rating (*Rating*) is significantly positively associated with *YieldSpread* in all model specifications.

[Insert Table 2.4 Here]

Overall, I find a lower borrowing cost associated with real earnings management activities in firms without executive stock option plans. This finding suggests that bondholders do not perceive those real earnings management activities as opportunistic behavior, but rather as optimal business practice. However, when managerial compensation links to stock options, bondholders respond to REM activities by requiring a higher cost of debt, compared to those firms that do not use executive stock option plans. The main effect and interaction offset each other, so the overall coefficients of REM variables for firms with stock option plans are close to zero.

2.6 Robustness Tests

(1) Overproduction in the manufacturing industry

Overproduction as an earnings management strategy is only available to firms in the manufacturing industry. To increase the test power, I run the regression model that examines the effect of overproduction on bond yield spread in the manufacturing industry only. Following Roychowdhury (2006), industries represented by two-digit SIC codes between 20 and 39 are classified as manufacturing. The results (not tabulated) show that neither *Ab_Prod* nor its interaction term with *OptionD* is statistically significant. Altogether, the results suggest that, in my sample, overproduction does not have a statistically significant impact on bond pricing.

(2) Additional control for Fama-French risk factors

Elton et al. (2001) find that the Fama and French risk factors are priced in the corporate bond markets. Hence, as a robustness check, I also add three Fama-French risk factors, $RMRF_t$, SMB_t and HML_t, to the regression models. $RMRF_t$ is the CRSP value weighted market index return minus the one-month Treasury-bill return; SMB_t is the return on a portfolio of small stocks minus the return on a portfolio of large stocks; and HML_t, is the return on a portfolio of stocks with high book-to-market ratios minus the return on a portfolio of stocks with low book-to-market ratios. [7] The estimated coefficients of these factors are generally insignificant. Including Fama-French risk factors does not change the inference from the primary tests.

(3) Control for the volatility of earnings

The primary test model controls for a firm's profitability. Prior research finds that the volatility of earnings is an important determinant of credit risk. As a sensitivity test, I replace *Prof* with the standard deviation of ROA over three years prior to bond issuance (*SdROA*). The estimated coefficient of *SdROA* is positive and statistically significant when *Ab_CFO* or *Ab_Prod* is used in the model specification. The sign, magnitude, and significance level of REM variables and their interaction terms are similar to those in the primary tests.

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[7] Fama-French risk factors are from Kenneth R. French's website:
(http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html).

(4) Use of weighted average bond yield spread for annual multiple bond issues

Prior bond studies handle multiple bond issues in different ways. First, bonds are separately observed. This method is used in my primary tests for firms with multiple bond issues in a given year. All unconvertible bond issues with available data are included in the sample. This approach allows for more information but violates the assumption of independence of observations. Using robust cluster standard errors reduces this concern. Second, the largest bond issue for each firm is used. However, for many firms, the sizes of several bond issues are the same. Prior research using this approach does not illustrate how to deal with ties. If all bond issues with the same largest offering amount are included in the sample, the violation of the independence assumption still remains. Third, the most recent bond issue or the first bond issue for each firm in a given year is chosen. This approach introduces sample selection bias, as it is not clear whether the most recent bond issue or the first bond issue is representative. Fourth, multiple bond issues of a firm are treated as a portfolio and the weighted average bond yield spread is used. This approach reduces cross-correlation problems, but the aggregation process loses detailed information on various bond features, which are expected to influence the bond yield spread.

As an additional test, I also calculate weighted average bond yield spreads for firms that have multiple bond issues in a given year, using relative offering amounts as the weights. This aggregation process significantly reduces the sample

size. I repeat the regression analyses of Model (2.4).[8] The OLS estimation results are provided in Table 2.5. The results of four REM variables and their interaction terms are qualitatively similar to those in Table 2.4.

[Insert Table 2.5 Here]

(5) Alternative test approach

Table 2.2 shows that real earnings management variables are significantly correlated with some firm-level control variables. For example, *Cov* shows a significant, negative association with all four real earnings management proxies. These significant correlations may affect the estimated coefficients of the main test variables. To mitigate this concern, as a robustness check, I perform an alternative two step test. In the first step, I run a regression of bond yield spreads on the firm-level and bond-level control variables.[9] The residuals from this regression represent the residual bond yield spreads that are not explained by these explanatory variables. In the second step, I run a regression of the residual bond yield spreads on *OptionD*, each of the four REM variables, and the interactions of REM variable and *OptionD*. The results on the four REM variables and their interaction terms with *OptionD* are qualitatively similar.

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[8] The dummy variable, *Put*, is dropped from the regressions, because the aggregation process makes this variable meaningless. I also replace *Call* with *Calldis* (see Appendix for the variable definition) because *Call* is not meaningful after the aggregation process.
[9] In the first step regression, the firm-level and bond-level control variables are the same set of variables as used in Model (2.4), except that the residual bond rating (*Rating*) is replaced with *lnSPR*.

2.7 Concluding Remarks

Prior research reports that executives would rather take economic actions that could have long-term consequences to manage earnings. However, there has not been a systematic study examining the economic consequences of real earnings management in the bond market. In this chapter, I investigate whether bondholders see through REM and thus require higher bond yields for firms engaging in real activities manipulation. I also examine whether bondholders demand higher risk premiums in response to REM for firms that use stock options to compensate managers than for firms that do not use stock option compensation.

Using a sample of firms with new corporate bond issues from 1993 to 2004, I find that sales manipulation and a higher level of abnormal discretionary expense cuts are associated with lower borrowing costs in firms that do not use option compensation. This evidence suggests that bondholders do not perceive real earnings management as opportunistic behavior; instead, they mistake real earnings management for operational efficiency. However, when managerial compensation is linked to stock options, bondholders respond to REM activities by requiring a higher cost of debt, compared to those firms without executive stock option plans. Overproduction does not show a statistically significant effect on bond yield spread. The results are robust when taking annual multiple bond issues of a firm as a portfolio and using a weighted average bond yield spread as the dependent variable. Overall, the findings suggest that bondholders do not see through real earnings management in firms that do not adopt stock option compensation; thus, mispricing exists in the bond market. Accounting information

plays an important role in the capital allocation process. In the United States, debt is a major source of external financing. Accordingly, understanding the bond market consequences of real earnings management is a relevant and important issue. The findings of this chapter will be of interest to academicians, managers, credit agencies, and bondholders alike.

Appendix 2.1: Variable definition and measurement

YieldSpread	=	The yield to maturity at the issuance date minus the Treasury bond yield with similar maturity, measured in percent points;
Ab_CFO	=	Abnormal cash flow from operations, measured as the product of negative one and deviations from the predicted values of the corresponding industry-year regression: $$\frac{CFO_t}{A_{t-1}} = \alpha_0 \frac{1}{A_{t-1}} + \alpha_1 \frac{S_t}{A_{t-1}} + \alpha_2 \frac{\Delta S_t}{A_{t-1}} + \varepsilon_t$$
Ab_Prod	=	Abnormal production cost, measured as the deviations from the predicted values of the corresponding industry-year regression: $$\frac{\Pr od_t}{A_{t-1}} = \alpha_0 \frac{1}{A_{t-1}} + \alpha_1 \frac{S_t}{A_{t-1}} + \alpha_2 \frac{\Delta S_t}{A_{t-1}} + \alpha_3 \frac{\Delta S_{t-1}}{A_{t-1}} + \varepsilon_t$$
Ab_Dexp	=	Abnormal discretionary expenses, measured as the product of negative one and the deviations from the predicted values of the corresponding industry-year regression: $$\frac{DisExp_t}{A_{t-1}} = \alpha_0 \frac{1}{A_{t-1}} + \alpha_1 \frac{S_{t-1}}{A_{t-1}} + \varepsilon_t$$
RealEM	=	$Ab\_CFO + Ab\_Prod + Ab\_Dexp$;
OptionD	=	Dummy variable, takes value of 1 if firms use managerial stock option compensation, 0 otherwise;
Size	=	Firm size, measured as *ln*(total assets (Compustat data #6));
MB	=	Market to book ratio;
Lev	=	Leverage, measured as long-term debt(#9)/total assets(#6);
Cov	=	Interest coverage ratio, measured as operating income after depreciation(#178) /interest expense(#15);
Prof	=	Profitability variable, measured as operating income after depreciation(#178) /total assets(#6);
SdRET	=	The standard deviation of firm *i*'s daily stock returns;
SP_Rating	=	S&P bond rating scores, calculated using the numerical conversion process provided in Mergent FISD Codes Table, 1, 2,…8,…27 for bonds rated AAA, AA+, …, BBB+, …, NR respectively. When the S&P rating is "NR", the *SP_Rating* is replaced with the Moody rating if available, or replaced with the Fitch rating if the Moody rating is not available;
lnSPR	=	*ln*(*SP_Rating*);
Rating	=	The residual bond ratings, measured as the residuals from the regression of the *lnSPR* on the REM variable, firm-level and bond-level control variables;

Appendix 2.1: Variable definition and measurement (Continued)

Offering amount	=	The offering amount of the bond (in millions of dollars);
IssueSize	=	The natural log of the offering amount of the bond (in thousands of dollars);
Maturity (year)	=	The number of years from issuance to maturity date of the bond;
Maturity	=	The natural log of the maturity period of the bond in months;
Call	=	Dummy variable, 1 if a new bond issue has a call option, 0 otherwise;
CallDis	=	The ratio of the number of years to first call divided by the number of years to maturity. It takes the value 1 if there is no call provision, and 0 if it is callable from the date of issuance;
Put	=	Dummy variable, 1 if a new bond issue has a put option, 0 otherwise;
RMRF	=	The CRSP value weighted market index return minus the one-month Treasury-bill return;
SMB	=	The return on a portfolio of small stocks minus the return on a portfolio of large stocks;
HML	=	The return on a portfolio of stocks with high book-to-market ratios minus the return on a portfolio of stocks with low book-to-market ratios.

Table 2.1: Descriptive statistics of key variables

Variable	N	Mean	SD	Median	Min	Max
Panel A: Lagged REM variables						
Ab_CFO	2163	-0.05	0.20	-0.04	-0.80	0.70
Ab_Prod	2120	-0.03	0.19	-0.02	-0.51	0.68
Ab_Dexp	1894	-0.11	0.99	0.01	-6.74	2.20
RealREM	1779	-0.18	0.93	-0.07	-6.33	2.67
Panel B: Bond-specific variables						
YieldSpread	2200	1.65	1.42	1.15	0.00	7.32
Offering amount	2200	463.22	3032.33	250.00	0.00	1.00e+5
IssueSize	2200	12.45	0.72	12.43	0.00	14.51
Maturity (year)	2199	13.61	12.80	10.02	1.52	100.12
Maturity	2199	4.83	0.64	4.79	2.90	6.18
SP_Rating	2200	9.47	4.17	9	1	27
lnSPR	2200	2.14	0.50	2.20	0.00	3.30
Call	1427	0.97	0.16	1	0	1
Put	2200	0.03	0.18	0	0	1
Panel C: Lagged firm-specific variables						
Size	2197	8.58	1.33	8.60	4.50	13.26
MB	2169	3.23	3.48	2.37	-9.05	19.4
Lev	2197	0.27	0.15	0.26	0.00	1.02
Cov	2175	6.93	7.81	4.52	-5.52	40.37
Prof	2182	0.12	0.08	0.11	-0.31	0.37
SdRET	2152	0.02	0.01	0.02	0.01	0.07
Panel D: Lagged compensation variables						
OptionD	2200	0.88	0.33	1	0	1

See Appendix 2.1 for variable definitions.

Table 2.2: Pearson correlations between bond yield, lagged REM variables, lagged firm-specific variables and bond-specific variables

	Yield Spread	Ab_ CFO	Ab_ Prod	Ab_ Dexp	RealEM	Size	MB	Lev	Cov	Prof	SdRET	IssueSize	Maturity	Call	Put	lnSPR	OptionD
YieldSpread	1																
Ab_CFO	**0.06**	1															
Ab_Prod	**0.08**	0.03	1														
Ab_Dexp	0.01	**-0.22**	-0.02	1													
RealEM	0.03	**0.06**	**0.18**	**0.90**	1												
Size	**-0.33**	-0.01	**0.04**	**-0.09**	**-0.07**	1											
MB	**-0.20**	**-0.09**	**-0.31**	**-0.18**	**-0.23**	**0.12**	1										
Lev	**0.30**	0.04	**0.05**	0.04	0.05	**-0.14**	**-0.17**	1									
Cov	**-0.23**	**-0.14**	**-0.25**	**-0.15**	**-0.21**	0.02	**0.33**	**-0.50**	1								
Prof	**-0.23**	**-0.19**	**-0.28**	**-0.06**	**-0.14**	-0.02	**0.39**	**-0.20**	**0.59**	1							
SdRET	**0.54**	**0.05**	0.03	-0.04	0.00	**-0.22**	**-0.13**	**0.22**	**-0.12**	**-0.15**	1						
IssueSize	0.01	-0.01	0.02	**-0.16**	**-0.12**	**0.55**	**0.15**	**-0.06**	**0.08**	0.03	**0.10**	1					
Maturity	**-0.12**	0.00	0.00	**0.07**	0.05	**0.07**	-0.05	-0.03	**-0.06**	-0.05	**-0.23**	**-0.10**	1				
Call	-0.03	-0.02	**-0.08**	-0.03	-0.04	-0.02	-0.01	-0.04	0.04	0.00	-0.01	0.03	**0.09**	1			
Put	**-0.12**	0.01	0.00	0.01	0.01	0.01	0.00	-0.04	0.01	0.00	**-0.11**	**-0.07**	**0.22**	-0.05	1		
lnSPR	**0.43**	0.04	**0.18**	**0.19**	**0.22**	**-0.39**	**-0.36**	**0.29**	**-0.36**	**-0.30**	**0.30**	**-0.18**	-0.03	-0.04	0.00	1	
OptionD	-0.05	-0.03	-0.05	-0.03	-0.03	**0.16**	0.03	**-0.07**	**0.09**	**0.08**	-0.07	**0.06**	0.00	**0.12**	0.00	**-0.10**	1

Note: All the correlations that are significant at less than the 1% level are bold-faced.
See Appendix 2.1 for variable definitions.

Table 2.3: Sample distribution across industries

2-Digit SIC Code	Industry Title	Frequency	Percent
	AGRICULTURE	**14**	**0.63**
1	Agriculture Production - Crops	10	
7	Agriculture Services	4	
	MINING	**140**	**6.37**
10	Metal Mining	14	
12	Coal/Lignite Mining	1	
13	Oil And Gas Extraction	118	
14	Forestry	7	
	CONSTRUCTION	**73**	**3.32**
15	General Building Contractors	72	
16	Heavy Construction Contractors	1	
	MANUFACTURING	**1263**	**57.42**
20	Food And Kindred Products	163	
21	Tobacco Manufacturing	5	
22	Textile Mill Products	12	
23	Apparel And Other Textile Products	21	
24	Lumber And Wood Products	29	
25	Furniture And Fixtures	18	
26	Paper And Allied Products	117	
27	Printing And Publishing	44	
28	Chemicals And Allied Products	247	
29	Petroleum And Coal Products	50	
30	Rubber/Misc. Plastic Products	21	
32	Stone, Clay, Glass And Concrete Products	9	
33	Primary Metal Industries	59	
34	Fabricated Metal Products	36	
35	Industrial And Commercial Machinery And Computer Equip	103	
36	Electrical Equipment And Components	68	
37	Transportation Equipment	158	
38	Measurement Analyzing, Control Instr And Related Prod.	89	
39	Misc. Manufacturing Industries	14	
	TRANSPORTATION	**89**	**4.05**
40	Railroad Transportation	81	
41	Local, Suburban Transit & Interurban Hwy Pass Transit	1	
42	Motor Freight Transportation	7	

Table 2.3: Sample distribution across industries (Continued)

2-Digit SIC Code	Industry Title	Frequency	Percent
	WHOLESALE TRADE	**81**	**3.69**
50	Durable Goods	36	
51	Non-Durable Goods	45	
	RETAIL TRADE	**279**	**12.67**
52	Building Materials, Hardware, Garden Supplies And Mobile Home Dealers	10	
53	General Merchandise Stores	109	
54	Food Stores	63	
55	Automobile Dealers & Gasoline Service Stations	12	
56	Apparel & Accessory Stores	19	
57	Home Furniture, Furnishings And Equipment Stores	3	
58	Eating & Drinking Places	19	
59	Miscellaneous Retail	44	
	SERVICES	**255**	**11.59**
70	Hotels, Rooming Houses, Camps And Other Lodging Places	15	
72	Personal Services	16	
73	Business Services	84	
75	Automotive Repair Services & Parking	9	
78	Motion Pictures	16	
79	Amusement And Recreation Services	46	
80	Health Services	63	
87	Engineering, Accounting, Research Management & Related Services	6	
	PUBLIC ADMINISTRATION	**6**	**0.27**
99	Nonclassifiable Establishments	6	
Total		**2,200**	**100**

Note: Industries with 2-Digit SIC codes 7 and 99 are dropped in the regression analyses because some variables have missing values.

Table 2.4: OLS regression of Model (2.4): 1993-2004
Dependent variable: *YieldSpread*

VARIABLES	Prediction	(1)	(2)	(3)	(4)
Constant		0.50	0.70	1.10	1.23
		(0.56)	(0.43)	(0.21)	(0.18)
OptionD	+	0.45**	0.31**	0.41***	0.42***
		(0.01)	(0.04)	(0.01)	(0.01)
Ab_CFO	+/-	**-2.48****			
		(0.01)			
Ab_CFO*OptionD	+	**2.59*****			
		(0.01)			
Ab_Prod	+/-		0.55		
			(0.50)		
Ab_Prod*OptionD	+		-0.38		
			(0.65)		
Ab_Dexp	+/-			**-0.30*****	
				(0.00)	
Ab_Dexp*OptionD	+			**0.30*****	
				(0.01)	
RealEM	+/-				**-0.30****
					(0.02)
RealEM*OptionD	+				**0.31****
					(0.02)
Size	-	-0.40***	-0.42***	-0.39***	-0.40***
		(0.00)	(0.00)	(0.00)	(0.00)
MB	?	-0.03***	-0.02**	-0.03**	-0.02**
		(0.01)	(0.03)	(0.02)	(0.04)
Lev	+	1.05***	1.09***	1.23***	1.18***
		(0.01)	(0.00)	(0.00)	(0.01)
Cov	-	-0.02***	-0.02***	-0.01**	-0.01**
		(0.00)	(0.01)	(0.02)	(0.02)
Prof	-	-1.82***	-1.88***	-2.31***	-2.25***
		(0.00)	(0.00)	(0.00)	(0.00)
SdRET	+	53.73***	54.20***	53.17***	54.68***
		(0.00)	(0.00)	(0.00)	(0.00)
IssueSize	?	0.31***	0.30***	0.25***	0.24***
		(0.00)	(0.00)	(0.00)	(0.00)
Maturity	+	-0.04	-0.04	-0.06	-0.05
		(0.33)	(0.43)	(0.19)	(0.33)
Call	+	-0.31	-0.21	-0.18	-0.21
		(0.27)	(0.43)	(0.49)	(0.45)
Put	-	-0.80***	-0.72***	-0.70***	-0.70***
		(0.00)	(0.00)	(0.00)	(0.00)
Rating	+	0.86***	0.87***	0.97***	0.95***
		(0.00)	(0.00)	(0.00)	(0.00)
Observations		1368	1357	1207	1137
Adjusted R^2		40%	41%	41%	40%

*** p<0.01, ** p<0.05, * p<0.1; Robust p values in parentheses;
See Appendix 2.1 for variable definitions.

Table 2.5: OLS results of Model (2.4): 1993-2004
Dependent variable: weighted average bond yield spread

VARIABLES	(1)	(2)	(3)	(4)
Constant	6.30***	6.71***	7.24***	7.37***
	(0.00)	(0.00)	(0.00)	(0.00)
OptionD	0.88***	0.69***	0.92***	0.94***
	(0.00)	(0.01)	(0.00)	(0.00)
Ab_CFO	**-3.05****			
	(0.03)			
*Ab_CFO*OptionD*	**3.38****			
	(0.02)			
Ab_Prod		0.77		
		(0.44)		
*Ab_Prod*OptionD*		-1.19		
		(0.28)		
Ab_Dexp			**-0.54****	
			(0.00)	
*Ab_Dexp*OptionD*			**0.48****	
			(0.00)	
RealEM				**-0.53****
				(0.00)
*RealEM*OptionD*				**0.47****
				(0.01)
Size	-0.20**	-0.23***	-0.13	-0.17*
	(0.02)	(0.01)	(0.17)	(0.09)
MB	-0.05**	-0.05**	-0.07**	-0.06**
	(0.03)	(0.05)	(0.01)	(0.05)
Lev	0.86	0.97	1.25*	1.26*
	(0.18)	(0.13)	(0.05)	(0.07)
Cov	0.04**	0.04***	0.05***	0.05***
	(0.01)	(0.01)	(0.00)	(0.01)
Prof	-2.97**	-3.03**	-3.31**	-3.11**
	(0.01)	(0.02)	(0.01)	(0.03)
SdRET	38.10***	37.84***	38.83***	40.19***
	(0.00)	(0.00)	(0.00)	(0.00)
IssueSize	0.41**	0.41**	0.32*	0.3
	(0.01)	(0.02)	(0.07)	(0.10)
Maturity	-1.69***	-1.69***	-1.80***	-1.75***
	(0.00)	(0.00)	(0.00)	(0.00)
CallDis	-0.95**	-0.97**	-0.82*	-0.68
	(0.05)	(0.04)	(0.07)	(0.15)
Rating	0.40*	0.39	0.44*	0.40
	(0.09)	(0.11)	(0.07)	(0.13)
Observations	374	365	329	305
Adjusted R^2	39%	39%	41%	42%

*** $p<0.01$, ** $p<0.05$, * $p<0.1$; Robust p values in parentheses;
See Appendix 2.1 for variable definitions.

Chapter 3

Board, Takeover Protection
and Real Earnings Management

3.1 Introduction

Recent corporate scandals have raised concerns about the reliability and credibility of financial reporting (Jain et al. 2003; Rezaee and Jain 2003; Arya et al. 2003; Rezaee 2002). In order to restore investor confidence in corporate disclosures, the U.S. Congress, the SEC and stock exchanges have placed more emphasis on the role of corporate governance for managerial behavior and organizational performance. Most of this recent attention has focused on improving the reliability of accounting numbers by strengthening corporate governance. The passage of Sarbanes-Oxley Act is such an example. Managers can manipulate earnings by making accounting choices (accrual-based earnings

management) or by changing the timing or structuring of transactions (real earnings management). Both types of earnings management increase information asymmetry between managers and outsiders and hide a firm's unmanaged economic performance, thereby diminishing financial reporting reliability and credibility. Prior studies examining the effect of corporate governance on financial reporting reliability have concentrated on accrual-based earnings management. To date, there is little evidence about whether corporate governance constrains the alternative earnings management technique, real earnings management. This study attempts to fill that void.

Real earnings management involves changing a firm's underlying operations in an effort to boost current period earnings. The use of real earnings management is demonstrated by anecdotal evidence. Top executives of BP Oil are being criticized in U.S. Congressional hearings for neglecting pipeline maintenance and safety to present a more favorable bottom line to shareholders and investors. "BP field managers were being asked to choose between saving money and critical maintenance," said Bart Stupak, the chairman of the Energy and Commerce investigations subcommittee. He said that cost-cutting from 1999 through 2005 occurred while London-based BP PLC made more than $106 billion in profits[10]. A survey and interview with more than 400 executives by Graham et al. (2005) indicate that financial executives would rather take economic actions that could have long-term consequences than make accounting adjustments within-GAAP

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[10] "House Investigation of BP Oil Spills Finds Cost-Cutting at Fault". March 16, 2007. Available at the website of FOXNews.com
(http://www.foxnews.com/story/0,2933,273035,00.html)

guidelines to hit earnings targets. Eighty percent of surveyed executives state that, in order to deliver earnings, they would decrease R&D, advertising, and maintenance expenditures, even though these actions damage firm value in the long run. In addition, Cohen et al. (2008) find that the level of real earnings management increases significantly after the passage of SOX Act, which imposes more stringent requirements on corporate governance. The anecdotal, survey and empirical research evidence suggests that, a favorite earnings management tool, real activities management has been used extensively in practice. Given the widespread use and economic significance of real manipulation, it is important to understand whether corporate governance constrains this type of earnings manipulation.

In this study, I focus on two corporate governance mechanisms: board and anti-takeover provisions. First, I examine the association between quality board and the level of real earnings management. Boards are expected to play an effective monitoring role in constraining managerial opportunistic behavior. Prior studies show that independent boards constrain fraudulent reporting and accrual-based earnings management (e.g., Beasley 1996; Klein 2002, among others). Based on the assumption that boards motivate managers to maximize firm value instead of pursuing personal objectives, I predict that better board governance is associated with a lower level of real earnings management (*Effective Monitoring Hypothesis*). However, since many board members have full-time jobs in other corporations, they rely on the CEO to provide them with relevant firm-specific information. Stronger board monitoring impedes managers' willingness to share

firm-specific information with directors, and therefore enlarges the information gap between managers and board directors (Adams and Ferreira 2007). In addition, board monitoring may put a lot of short-term market pressure on managers. Recent studies show that capital market incentives dominate other earnings management incentives (Dechow and Skinner 2000; Fields et al. 2001; Healy and Wahlen 1999; and Graham et al. 2005). Short-term market pressure may drive managers to engage in real activities manipulation to meet or beat earnings targets or to extract rents because real manipulation is harder to detect and less subject to legal penalty. Under the market pressure assumption, I expect that better board governance is associated with higher levels of real earnings management (*Market Pressure Hypothesis*).

Second, I investigate the effect of anti-takeover provisions (ATPs) on real earnings management. There is on-going debate among researchers and practitioners regarding whether anti-takeover provisions increase or decrease shareholder value. One group of studies argue that takeover protection entrenches the incumbent managers and outside directors of a firm, which in turn encourages managers to behave opportunistically and damage shareholder value. Anecdotal evidence shows that entrenched managers likely expropriate shareholder funds and may manipulate earnings to disguise managerial self-serving actions (e.g., Fama and Jensen 1983; and Shleifer and Vishny 1997). In accordance with the entrenchment theory, I predict that higher takeover protection is associated with a higher level of real earnings management (*Management Entrenchment Hypothesis*). It is more difficult for shareholders to replace board directors or

management in high-ATP firms than in low-ATP firms if shareholders are not satisfied with the firm's current performance. The other group of studies views ATPs as beneficial to firm value, because ATPs protect managers from short-term market pressures so that managers can focus on the long-term interests of shareholders. In other words, ATPs align the interests of managers and shareholders. The alignment theory suggests that ATPs shield managers from short-market pressure and promote management job security. Thus managers are less motivated to perform costly transaction manipulations to obfuscate firm performance. Based on this argument, I hypothesize that a greater extent of takeover protection is associated with a lower level of real earnings management (*Market Pressure Relief Hypothesis*).

The data on corporate governance are from the Institutional Shareholder Services' (ISS) Corporate Governance Quotient. The data are available for the years 2003 to 2005. The ISS dataset contains 44 governance attributes, which are split into four sub-categories: board, audit, anti-takeover and compensation and ownership. I construct sub-category indices, and use board and anti-takeover indices as measures of board governance and takeover protection, respectively.

I use the estimation models proposed in prior research (e.g., Roychowdhuary 2006; Zang 2007) to construct four REM measures: abnormal cash flow from operations (proxy for sales manipulation), abnormal production cost (proxy for overproduction), abnormal reduction of R&D expenses and abnormal reduction of discretionary expenses (other than R&D). I also construct a comprehensive REM

variable by summing these four REM proxies. The accounting data are from the Compustat North America Industrial database.

Using regressions of real earnings management proxies on board index, ATP index and some firm control variables over the post-SOX period (from 2004-2006), I find that board index is positively associated, while ATP index is negatively associated, with REM proxies for abnormal decline in R&D expenses and other discretionary expenses. The results on sales manipulation and overproduction cost are weaker. The results suggest that, after controlling other factors, firms with better board governance schemes have a higher REM level (consistent with *Market Pressure Hypothesis*), and high-ATP firms have lower REM's (consistent with *Market Pressure Relief Hypothesis*). The robustness tests show that these results hold for a sub-sample of firms in the manufacturing industries and for a sub-sample of firms in R&D intensive industries.

This study is related to Osma (2008), who examines whether independent boards are efficiently detecting and constraining myopic R&D cuts in U.K. firms and concludes that more independent boards efficiently constrain the manipulation of R&D expenditures. However, the regression output of his logistic regression model (Table 4) does not support his conclusion. Table 4 in Osma (2008) shows that the level of independent board (*BDIND*) is significantly positively associated with the log odds ratio (and thus the probability of cutting R&D expenses). The interaction terms of *BDIND* with dummy variables *Miss(Zero)* or *Miss(Growth)* have significant, negative coefficients, but the magnitudes of these coefficients are small compared to the coefficient of *BDIND*.

This regression output suggests that the level of independent boards increases the probability of R&D cuts, although this positive association is relatively weaker for firms that reported a loss or reported an earnings decrease in the previous period.

My study differs from Osma (2008) in four important ways[11]. First, there are important differences in the U.K. and U.S. GAAP. For example, U.K. GAAP allows the capitalization of development expenditures when certain criteria are met, so U.K. firms could increase earnings by capitalizing R&D instead of cutting spending. However, R&D expenditures are usually expensed under U.S. GAAP. Second, the legal environment in the U.S. differs from that of the U.K., and U.S. firms are subject to considerably higher litigation risk (Fulbright and Jaworski 2005; Seetharaman et al. 2002), especially in the post-SOX period. U.S. firms may have more incentives to rely on real activities manipulation to deliver earnings, as there are usually smaller legal penalties associated with this type of earnings management. Third, U.K. firms have greater institutional ownership than U.S. firms. U.K. institutional investors meet regularly with top managers and directors to discuss important strategic and governance issues and to assess the quality of management (Black and Coffee 1994; Williams and Conley 2005; Aguilera et al. 2006). More active institutional investor involvement strengthens the monitoring role of boards. These significant differences in accounting and institutional environments between the U.S. and the U.K. suggest that the results in Osma (2008) do not necessarily hold for U.S. firms. Finally, Osma (2008)

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[11] The discussion in this paragraph is enlightened by Ahmed and Duellman (2007).

focuses on one dimension of board governance, board independence, while my study constructs a more comprehensive measure of board governance and also considers another governance mechanism, anti-takeover provisions. Therefore, the scope of my study is broader than that of Osma (2008).

This study makes several contributions.

First, it extends the emerging literature on real earnings management. Current studies document the existence of activities manipulation as an earnings management tool, the motivations of real earnings management (e.g., Graham et al. 2005; Roychowedhury 2006; Zang 2007) and the consequences of such activities (e.g., Gunny 2005; Cohen et al. 2008; Zhang 2008; Kim and Sohn 2008), but there is little empirical evidence showing whether or how corporate governance factors affect real earnings management. This study makes such an addition to the earnings management literature.

Second, it contributes to the literature on boards. Boards have been criticized for being too friendly to managers (e.g., U.S. House (2002)). The recent regulations have required boards to play a more prominent role in firm governance. Many studies provide empirical evidence on the monitoring role of boards and support the proposition that boards protect shareholder interests. However, Adams and Ferreira (2007) show that CEO's may be reluctant to share information with a tougher monitor, which in turn weakens the advising and monitoring roles of boards. Thus, management-friendly boards may be optimal. The findings in this study also show another side effect of board monitoring:

board monitoring may lead to short-sighted decision making and motivate managers to engage in real earnings manipulation.

Third, this study also illuminates the on-going debates over anti-takeover provisions. This is the first study to examine directly the effect of anti-takeover provisions on real earnings management. Inconsistent with entrenchment theory, my results demonstrate that anti-takeover provisions may be beneficial to shareholders, since they improve management job security and mitigate managerial incentives for real earnings management.

Fourth, the findings have important policy implications. In recent years, regulators have attempted to improve financial reporting quality by strengthening corporate governance. The passage of the Sarbanes-Oxley Act is one such effort. Shareholder activists also call for reducing anti-takeover provisions to further reduce fraudulent reporting (Manne 2002; and McGurn 2002). Management groups, however, strongly oppose reducing takeover protection and argue that these reforms may cause distractions and disruptions in management (Koppes et al. 1999; and Lipton and Rosenblum 2003). These findings of this study conclude that there may be unintended consequences to strengthening corporate governance, and that recent regulation aimed at improving firm governance may decrease shareholder value. Regulators need to deliberate over what constitutes quality boards and quality governance. In addition, different governance mechanisms, such as boards and anti-takeover provisions, may have different impacts on real earnings management. Regulators and shareholders need to be aware of trade-offs

when they consider reforms or take actions to strengthen board governance and reduce takeover protection.

Finally, my findings may be of interest to researchers. Several studies use the GOV44 index (constructed from the 44 attributes of the ISS dataset) as a proxy for overall corporate governance quality, where the higher value of the GOV44 index implies better governance. My results suggest that the sub-categories of these 44 factors may have conflicting effects on management behavior and firm performance. Therefore, separating the GOV44 index into sub-category indices may be necessary, depending on the research purpose and context of studies.

The rest of this chapter is organized as follows. Section 3.2 relates my work to the current literature and develops hypotheses. Section 3.3 provides the research design. Section 3.4 describes the sample selection and summary statistics. Section 3.5 summarizes the main regression results. Robustness test results are presented in Section 3.6, and Section 3.7 concludes.

3.2. Literature Review and Hypothesis Development

(1) Motivations and Consequences of Real Earnings Management

Accounting literature finds that managers manipulate real business operations and transactions to meet earnings benchmarks (Baber, Fairfield and Haggard 1991; Bartov 1993; Roychowdhury 2006). Graham et al. (2005) surveyed more than 400 executives of U.S. firms. They report that a majority of managers would rather engage in real earnings management than accrual-based earnings

management to meet or beat earnings benchmarks. Recent studies (reviewed by Dechow and Skinner 2000, Fields et al. 2001, Healy and Wahlen 1999) show that capital market incentives dominate other earnings management incentives. Consistent with this finding, the survey evidence by Graham et al. (2005) suggests that the dominant reason to meet or beat earnings benchmarks relate to stock prices. More than 80% of the survey participants agree that meeting benchmarks builds credibility with the capital market and helps maintain or increase a firm's stock price. The survey evidence also uncovers another very important motivation: career concerns. "Most survey respondents feel that their inability to hit the earnings target is seen by the executive labor market as a 'managerial failure.' Repeatedly failing to meet earnings benchmarks can inhibit the upward or intra-industry mobility of the CFO or CEO because the manager is seen either as an incompetent executive or a poor forecaster" (Graham et al. 2005, p.24). In sum, the survey results clearly show that stock prices and managers' concern about their external reputation are the two most important factors that drive managers to manipulate earnings.

Real earnings management may benefit managers at the expense of a firm's long-term value. There is a constant tension between the short-term and long-term objectives of a firm. Managers appear to be willing to take value-decreasing actions and burn "real" cash flows for the sake of reporting desired accounting numbers (Graham et al. 2005). Several studies find that real earnings management leads to adverse subsequent performance, such as lower future abnormal ROA, abnormal CFO and Tobin's Q (Gunny 2005; Zang 2007; and Zhang 2008). This

evidence suggests that real earnings management deviates from optimal business operations, hides a firm's unbiased earnings, and jeopardizes its competitive advantage in the long run (Wang and D'Souza 2006; Zang 2007).

(2) Quality Board and Real Earnings Management

Effective Monitoring Hypothesis

The separation of owners and managers may increase the level of opportunistic management behavior. Managers can use earnings management to extract rents from shareholders. Such private gains for managers could include increased earnings-based compensation (Healy 1985; and Holthausen et al. 1995) or the reduced likelihood of dismissal over poor performance (Weisbach 1988). Corporate governance is a mechanism used to oversee the managers of the entity, constrain their opportunistic behavior and look out for the interest of the owners. "Corporate governance structures serve: (1) to ensure that minority shareholders receive reliable information about the value of firms and that a company's managers and large shareholders do not cheat them out of the value of their investments, and (2) to motivate managers to maximize firm value instead of pursuing personal objectives" (Bushman and Smith 2003). Fama and Jensen (1983) theorize that the board of directors is the highest internal control mechanism responsible for monitoring the actions of top management. It assumes the right to ratify and monitor important decisions, and to choose, dismiss and reward important decision agents. The findings of several accounting and finance

empirical studies also indicate that boards play an important role in reducing the incidence of financial statement fraud or constraining accrual-based earnings management. For example, Beasley (1996) finds that the inclusion of larger proportions of outside members on a board of directors significantly reduces the likelihood of financial statement fraud. Consistent with this finding, Dechow et al. (1996) also report that alleged violations of GAAP are associated with weakness in corporate internal governance structures, such as allowing management to dominate the board of directors, placing a CEO as Chairman of Board, or having the firm's founder as a CEO. In addition, several studies document that institutional investor representation on the board of directors and the presence of independent outside directors on the board reduce the use of discretionary accruals in earnings management within GAAP (Klein 2002; Xie et al. 2002; Peasnell et al. 2005; and Cornett et al. 2006). These findings suggest that better board structure helps to curb accrual-based earnings management within and outside the bounds of GAAP. To summarize, one major function of boards is to mitigate agency problems, thereby realigning the interests of managers and shareholders. Empirical findings indicate that quality boards play an effective monitoring role in constraining managerial opportunistic behavior and contributing towards the integrity of financial statements. To the extent that real earnings management impairs firm value in the long run and imposes costs on shareholders, I expect that stronger board governance is associated with lower levels of real earnings management.

Market Pressure Hypothesis

Boards assume a dual role of advisor and monitor of management. The effective monitoring of a board over top management relies on several conditions. Directors must possess sufficient incentives to monitor a company, obtain information that helps them to assess managerial actions and understand the consequences of managerial actions over the financial reporting system (Osma 2008). Independent directors depend largely on the company's top management for information (*The Economist* [February 10, 2001, p. 68]). Top management receives better advice from directors by revealing key information. However, an informed board will monitor management more intensively and will interfere in decision making. Therefore, managers that face tougher monitoring by boards will not share firm-specific information with the directors and are less likely to rely on the board for advice (Adams and Ferreira, 2007). As a result, top management will then have a monopoly over information and greater control in setting the board's agenda when a majority of board members are independent (Langevoort, 2001). This monitoring role of boards exacerbates the information asymmetry between the management and directors.

In addition, stronger board governance may expose managers to short-term market pressure. Fudenberg and Tirole (1995) argue that firms cannot commit themselves to long-term incentive contracts, because when a manager's division performs poorly, a firm will shut the division down, fire the manager or both.

Therefore, poor performance will lead a firm to "intervene" in the division's operations in some way that reduces the manager's private benefit. Short-term market pressure may affect corporate disclosure policies adversely, which may reduce firm transparency and increase the information gap between firm insiders and outsiders (Fu and Liu 2007). Furthermore, managers under short-term market pressure may have more incentives to meet or beat earnings targets in order to maintain or increase the firm's stock price. Managers with short-term objectives may also manipulate earnings to extract rents and pursue goals that are not in shareholder interests (Christie and Zimmerman 1994). Contradicting the conventional wisdom that weak governance facilitates managerial entrenchment, Zhao and Chen (2008) find that staggered boards (a type of weak governance) are associated with lower likelihoods of committing fraud and smaller magnitudes of absolute unexpected accruals. Their results imply that good governance intended to maximize managers' efforts and increase shareholder value may also expose managers to pressures for earnings management.

As prior studies show, real earnings management boosts current earnings but may damage firm value in the long-term. For example, discretionary expenditures (such as R&D, employee training and advertising expenses) are incurred in the current period while payoffs are often realized over the long-term (David et al. 2001). Cutting discretionary expenses inflates earnings immediately at the expense of future payoffs. Also, overproduction results in an inventory level more than necessary to meet sales. The excessive inventory may turn out to be obsolete so that a loss may occur as a result of obsolescence of inventory in the future.

These examples show that real earnings management reserves earnings in the current period while its negative effects are deferred to the future. In addition, real earnings management is less subject to external scrutiny and more difficult to detect. Given the information asymmetry between managers and directors, it is entirely possible that, even when some business operation decisions are motivated by short-term goals and may have negative long-term value effects, managers can withhold relevant information or can use their superior knowledge in convincing the boards that these actions are optimal (Osma 2008). Directors' judgment may be compromised by their lack of information or lack of specialized technical expertise. Therefore, to temper the likelihood of being detected and to avoid subsequent legal penalty or other undesirable consequences, market pressure may reduce managers' commitment to long-term goals, and drive managers to manipulate real operating activities to reach desired accounting numbers. The market pressure view implies that stronger board governance structure is associated with a higher level of real earnings management.

The effective monitoring view and the market pressure view of boards lead to opposing predictions of the association between board governance and real earnings management:

H_{1A}: Stronger board governance is associated with lower levels of real earnings management (*Effective Monitoring Hypothesis*).

H_{1B}: Stronger board governance is associated with higher levels of real earnings management (*Market Pressure Hypothesis*).

69

(3) Takeover Protection and Real Earnings Management

Management Entrenchment Hypothesis

Economists have long argued that the rigors of competition in labor and capital markets discipline self-interested managers (Scharfstein 1988). Takeover schemes provide some assurance of competitive efficiency among corporate managers and discipline managers' self-interested actions that lower firm value (Manne 1965; Grossman and Hart 1980; Scharfstein 1988). Anti-takeover provisions reduce the discipline value of takeovers, give more discretion and power to management, and shelter management from the market for corporate control. Management may become more entrenched and be more likely to pursue private benefits of control at the expense of shareholders (Manne 1965; Jensen and Meckling 1976; Jensen and Ruback 1983). Several studies support the proposition that entrenchment allows managers to take inefficient actions and to divert some of the firm's value to themselves (e.g., Fama and Jensen 1983; Shleifer and Vishny 1997). Recent financial scandals are also indicative of the expropriation of shareholder funds by entrenched managers. For example, the Rigas family was charged in 2004 with expropriating corporate funds for personal use. To minimize shareholder detection and to avoid subsequent legal penalties, managers likely manipulate accounting numbers by modifying operating activities to disguise such behavior. For example, Hollinger Inc. was sued in 2004 for manipulating earnings to conceal managerial self-serving actions through a series

of related party transactions. Furthermore, highly-entrenched managers may disclose less information to the market to make it a difficult task for outsiders to distinguish real activities management from normal business operations. The information gap also makes it harder for outsiders to estimate the gains from replacing current managers (Shleifer and Vishny 1989). According to the entrenchment theory, takeover protection may increase managerial incentives to engage in opportunistic earnings management. Therefore, I predict that a greater extent of takeover protection is associated with a higher level of real earnings management.

Market Pressure Relief Hypothesis

As mentioned earlier, short-term capital market pressure and career concerns are the most important motivations for earnings management. After a hostile takeover of a firm, incumbent managers likely lose their current positions (Morck et al. 1989; and Kennedy and Limmack 1996). Some academic studies argue that short-term market pressures are harmful to a firm's capital budgeting process, and the threat of a hostile takeover and possible job loss may move management toward "short-sighted" decision making (Jensen and Meckling 1976; Jensen and Ruback 1983; Scherer 1988). Less-protected managers are under greater pressure to deliver short-term results. To maximize their expected length of tenure or to lessen the threat of takeover, they may attempt to obfuscate firm performance by boosting reported earnings through structuring operating activities.

Anti-takeover provisions can protect management from short-term market pressure, promote managers' job security, and give managers more discretion to maximize long-run shareholder value. For example, Stein (1988) argues that, without takeover protection, managers may become overly concerned about boosting the stock price through myopic actions in order to make it costly for a raider to acquire the firm. Therefore, anti-takeover provisions may benefit shareholders by mitigating managerial myopia. Pugh et al. (1992) report that, upon passage of anti-takeover amendments, managers adopt a longer-term view with respect to capital expenditures, and research and development. In addition, Bates et al. (2008) find anti-takeover, measured by classified boards, neither entrench managers in the context of takeover bidding nor facilitate managerial self-dealing in completed bids. This evidence is inconsistent with the view that anti-takeover schemes are associated with managerial entrenchment, but instead shows that target managers utilize relative bargaining power on behalf of their constituent shareholders. Furthermore, firms highly protected from takeovers have lower levels of discretionary accruals, and hence better earnings quality (Fu and Liu 2007; Zhao and Chen 2008 (a), (b)). Therefore, according to the alignment theory, anti-takeover provisions align the long-term interests of incumbent managers and shareholders (Knoeber 1986; Shleifer and Summers 1988), and thus, reduce managerial incentives to engage in expropriation-related behavior and opportunistic real earnings manipulation. The alignment theory suggests that a higher level of takeover protection is associated with a lower level of real earnings management.

The above discussions imply contrary predictions of the relationship between takeover protection and real earnings management. These predictions are summarized below:

H$_{2A}$: Higher takeover protection is associated with higher levels of real earnings management (*Management Entrenchment Hypothesis*).

H$_{2B}$: Higher takeover protection is associated with lower levels of real earnings management (*Market Pressure Relief Hypothesis*).

3.3 Research Design

Real earnings management regression models

In this chapter, I consider four real earnings management activities: sales manipulation, overproduction, cutting discretionary R&D expenses and cutting discretionary expenses other than R&D.

Following Roychowdhury (2006) and Cohen et al. (2008), I use regression model (3.1) to estimate the normal level of cash flow from operations:

$$\frac{CFO_t}{A_{t-1}} = \alpha_0 \frac{1}{A_{t-1}} + \alpha_1 \frac{S_t}{A_{t-1}} + \alpha_2 \frac{\Delta S_t}{A_{t-1}} + \varepsilon_t \tag{3.1}$$

where, CFO_t = Cash flow from operations (Compustat data #308);

      A_t = Total assets at the end of period t (Compustat data #6);

      S_t = Net sales during period t (Compustat data #12);

      $\Delta S_t = S_t - S_{t-1}$.

Prior research (e.g., Roychowdhury 2006; Zang 2007; Cohen et al. 2008; and Carcello et al. 2006) expresses production cost as a linear function of sales and change in sales. I use regression model (3.2) to estimate the normal level of production costs:

$$\frac{Prod_t}{A_{t-1}} = \alpha_0 \frac{1}{A_{t-1}} + \alpha_1 \frac{S_t}{A_{t-1}} + \alpha_2 \frac{\Delta S_t}{A_{t-1}} + \alpha_3 \frac{\Delta S_{t-1}}{A_{t-1}} + \varepsilon_t \qquad (3.2)$$

where, $Prod_t$ = COGS$_t$ (Compustat data #41) + ΔInventory$_t$ (Δ Compustat data #3)

S_t = Net sales (Compustat data #12);

ΔS_t = S$_t$ − S$_{t-1}$.

The normal level of discretionary expenses (excluding R&D expense) is estimated in model (3.3):

$$\frac{DisExp_t}{A_{t-1}} = \alpha_0 \frac{1}{A_{t-1}} + \alpha_1 \frac{S_{t-1}}{A_{t-1}} + \varepsilon_t \qquad (3.3)$$

where, $DisExp_t$ = Discretionary expenses

= Advertising expense (Compustat data #45) + SG&A expense

(Compustat data #189);

S_t = Net sales (Compustat data #12).

Following Berger (1993), Gunny (2005) and Zang (2007), I estimate the normal level of R&D expenditure using regression model (3.4):

$$\frac{RD_t}{A_{t-1}} = \alpha_0 + \alpha_1 \frac{RD_{t-1}}{A_{t-1}} + \alpha_2 \frac{Funds_t}{A_{t-1}} + \alpha_3 TobinsQ_t + \alpha_4 \frac{CaptialExp_t}{A_{t-1}} + \varepsilon_t$$

(3.4)

where, RD_t = R&D expense = Compustat data #46; Following Roychowdhury (2006), as long as SG&A (Data 189) is available, R&D is set to zero if it is missing.

$Funds_t$ = Internal funds = IBEI + R&D + Depreciation = Data #18 + Data #46 + Data #14;

$TobinsQ_t$ = (MVE + Book value of preferred stock + Long-term debt + Short-term debt)/ Total assets = (Data #199 * Data #25 + Data #130 + Data #9 + Data #34)/ Data #6

$CapitalExp_t$ = Capital expenditure = Data #128

Lagged R&D expense (RD_{t-1}) is a proxy for the firm's innovation opportunity. Internal fund ($Funds_t$) is included based on the argument that expanding R&D investment is cheaper for firms with more internal funds, since external funds are more expensive for R&D projects than internal funds. Tobin's Q ($TobinsQ_t$) captures the firm's growth potential. Capital expenditure ($CapitalExp_t$) represents a firm's investing activities in the current year.

The above regressions are estimated cross-sectionally for each 2-digit SIC industry-year with at least 15 observations from 2004 to 2006. The residuals from the corresponding regressions capture the abnormal level of real earnings management activities. I multiply the residuals from models (1), (3) and (4) by negative one, such that higher values indicate a higher probability of taking real decisions to increase earnings (Zang 2007). I do not multiply residuals from the overproduction model by negative one, since a higher production cost indicates

overproduction in an effort to reduce the cost of goods sold. All these REM proxies have been scaled by total assets lagged one period (A_{t-1}). Hence, the proxies are unitless fractions of assets and can be summed, i.e., the REM proxies are commensurate. In order to capture the effects of earnings management through these four activities in a comprehensive measure, consistent with Cohen and Zarowin (2008), I also construct an overall real earnings management proxy (*REM_All*) by summing up these four real earnings management measures: *Ab_CFO*, *Ab_Prod*, *Ab_Dexp* and *Ab_RD*.

Real earnings management and governance regression model

I use the following cross-sectional regression model to test the hypotheses:

$$REM_t = \beta_0 + \beta_1 Board_{t-1} + \beta_2 ATP_{t-1} + ControlVariables + \varepsilon_t \qquad (3.5)$$

In Model (3.5), the dependent variable, *REM*, represents each of the five measures of real earnings management activities (*Ab_CFO*, *Ab_Prod*, *Ab_Dexp*, *Ab_RD* and *REM_All*). The primary variables of interest are *Board* and *ATP*. *Board* is the board index, and *ATP* is the takeover protection index, constructed from the Institutional Shareholder Services' (ISS) Corporate Governance Quotient database. As shown in Appendix 3.1, the ISS dataset contains 44 governance attributes, which are split into four sub-categories: (i) board (25 attributes related to board independence, board size, transparency, and effectiveness); (ii) audit (3 attributes related to audit fees, audit ratification and the independence of the audit committee); (iii) anti-takeover (6 attributes related to charters and bylaws); and (iv) compensation and ownership (10 attributes related to options, stock

ownership, and the monitoring of director compensation). I assign a value of one to a governance attribute if the company meets or exceeds minimum satisfactory standards in a specific category, and 0 otherwise. The total score of each sub-category is divided by the total non-missing scores of all 44 attributes and then multiplied by 100 to construct a sub-category index, e.g., board index, audit index, anti-takeover index and compensation index. The predictions of these two test variables are summarized in Figure 3.1.

Figure 3.1. Predictions of Test Variables

	Board		**ATP**
Effective Monitoring Hypothesis (H_{1A})	(-)	Management Entrenchment Hypothesis (H_{2A})	(+)
Market Pressure Hypothesis (H_{1B})	(+)	Market Pressure Relief Hypothesis (H_{2B})	(-)

I include the following variables as control variables:

(1) *NOA*: I include Barton and Simko (2002)'s balance sheet measure of level of abnormal accruals in previous periods (*NOA*) to control for accounting flexibility. It is defined as net operating assets at the beginning of the year scaled by lagged sales. Firms with less accounting flexibility may be more likely to engage in real earnings management activities in order to deliver earnings, so I expect the coefficient of this variable to be positive.

(2) *Audit*: Audit index from ISS dataset. Although real earnings management may reduce economic value, it is not a violation of financial reporting rules and thus beyond the scope of the external auditor or audit committee's responsibility. In this sense, there should be no relation between *Audit* and *REM*. In addition,

there is mixed evidence on the effect of the brand name auditors or audit committees on accrual-based evidence. Some studies (e.g., Xie et al. 2002; Carcello et al. 2006) find that the Big 5 or audit committees constrain accruals manipulation, while some other studies find that the presence of an audit committee has no significant impact on the likelihood of financial statement fraud (Beasley 1996) or accrual-based earnings management (Peasnell et al. 2005). Therefore, the effect of *Audit* on the earnings management proxies is not clear.

(3) *MB*: Market to book ratio at the beginning of the fiscal year. This variable is included to control for growth opportunity. Dechow et al. (2008) find that firms involved in manipulating earnings have abnormally high price-to-earnings and market-to-book ratios. However, growth firms may be less likely to take real economic actions to manipulate earnings, since real actions damage a firm's competitive edge in the long run and impede its growth potential. Therefore, I do not predict the sign of the coefficient for this variable.

(4) *Size*: Watts and Zimmerman (1990) argue that large firms face higher political costs and therefore may have a stronger incentive to engage in income-decreasing earnings management to reduce visibility and political costs. Therefore, large firms may be less likely to inflate earnings via structuring transactions. I include the natural logarithm of the opening total asset value to control for firm size.

(5) *MKShare*: Market share is measured as the percentage of a company's sales to the total sales of its industry. Within an industry, different firms likely face different levels of competition and, therefore, different pressures when

deviating from optimal business strategies. Managers in market leader firms may perceive REM as less costly, because the erosion to their firms' competitive advantage is relatively small (Zang 2007). *MKShare* captures a company's leadership in the industry and is included in the model to control for REM cost.

(6) Year and industry dummy variables. Model (3.5) is estimated for unbalanced panel data from 2004 to 2006. Year and industry dummy variables are included in the model to control for year fixed effects and industry fixed effects.

In the test model (3.5), the dependent variables are in year t, and governance and other firm-specific variables are in year t-1. Using lagged governance variables reduces the potential endogeneity[12].

3.4 Sample Description

The data on corporate governance are from the Institutional Shareholder Services' (ISS) Corporate Governance Quotient. The data are available for the years from 2003 to 2005. There are 5500 firms in 2003, 5259 firms in 2004, and 5296 firms in 2005. The accounting data used to construct the real earnings management variables and other control variables are from the Compustat North

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[12] One may argue that managers can use real earnings management (REM) and accrual-based earnings management (AEM) as substitute earnings management tools, indicating the need to account for the endogeneity of REM and AEM. However, the empirical evidence from prior studies does not support this argument. Zang (2007) investigates whether managers use real and accrual manipulations as substitutes in managing earnings, and the order in which managers make these decisions. She finds that REM and AEM are determined sequentially; more specifically, managers choose real manipulation before accrual manipulation. Her findings indicate that managers do not use multiple choices (REM and AEM) simultaneously, and thus it is not appropriate to treat REM and AEM as endogenous. Given its widespread use in practice and its economic significance, REM is the focus of this study.

America Industry Annual database. I collect accounting data from 2002 to 2006 (two years of lagged data are needed to derive some independent variables in the real earnings management regressions). I eliminate observations with negative sales numbers (Data #12) and observations where the total assets number (Data #6) is equal to zero or missing. I also exclude financial institutions (SIC 6000-6999) and utility industries (SIC 4400-4999) because the accounting rules in highly regulated industries differ from those in other industries. The four real earnings management samples are a subset of the full sample of data available to calculate the normal level of each real earnings management activity.

Table 3.1 presents the descriptive statistics of variables used in the primary test[13]. By construction, the mean and median values of real earnings management proxies are close to zero, except that the mean value of *Ab_Dexp* is large with a large standard deviation. Untabulated results show that the ratio of discretionary expenses (say, SG&A expenses) to lagged total assets both in the original sample used to generate the REM variables and in the final sample for the hypothesis test have similar statistical properties. The summary statistics of *REM_All* is similar to that of *Ab_Dexp*, since *Ab_Dexp* plays a dominant role in the overall REM measure. The average board index (*Board*) is 30.89% of the total score of all governance attributes with non-missing values, with a relatively large standard deviation of 6.82%. The descriptive statistics of this variable suggest that the

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[13] After merging governance and accounting data, I drop observations where governance data are missing and winsorize continuous accounting variables at the top and bottom one percent, except variables that are expressed as percentage. The actual sample used for each regression is a subset of this general sample, depending on the availability of the variables required for each regression.

Board index varies widely across the sample firms. The mean value of the takeover protection index (*ATP*) is 7.81, ranging from 0 to 18.15. There are only three audit-related attributes, so it is not surprising that the mean (median) value and the standard deviation of the audit index (*Audit*) are of small magnitude. The mean value of the market to book ratio (*MB*) is 3.3, with a standard deviation of 6.81. A closer look at the data finds that 369 firms have a negative book value of stockholders' equity. The descriptive statistics of *Size* show that the sample firms include both small and large firms. The mean and median values of the market share (*Mkshare*) are 0.88% and 0.06% of the total sales of the industry to which the firm belongs. The small magnitudes imply that, on average, a firm's market share is not large in its industry.

[Insert Table 3.1 Here]

Table 3.2 provides the Pearson correlations between real earnings management variables, lagged governance variables and other firm-specific variables. Four REM variables (*Ab_CFO*, *Ab_Prod*, *Ab_Dexp* and *Ab_RD*) and the comprehensive REM variable (*REM_All*) are generally positively correlated with one another, except that the correlation between *Ab_Dexp* and *Ab_CFO* are negative, and the correlation between *Ab_Dexp* and *Ab_RD* is not statistically significant. Cutting discretionary expenses generally saves cash and thus has a positive effect on cash flows from operations, which may counter the negative effect of sales manipulation on abnormal cash flows. The insignificant association between *Ab_Dexp* and *Ab_RD* suggests that firms with the flexibility to reduce

other discretionary expenditures may be unlikely to rely on cutting R&D expenses to boost earnings. *Board* shows a significant positive correlation with *Ab_CFO*, but significant negative correlations with *Ab_Dexp* and *REM_All*. The signs of the correlations between *ATP* with each REM variable are opposite of those between *Board* and REM variables (except *Ab_Prod*). These opposite signs suggest that *Board* and *ATP* may affect real earnings management in opposing directions. *ATP* is also negatively correlated with *Board*. The negative association implies that firms with higher takeover protection generally have lower board governance scores.

[Insert Table 3.2 here]

Table 3.3 reports the sample distribution across 2-digit SIC industries. Sixty-two percent of the observations are from the manufacturing industry and twenty-two percent are from service industries. Firms in other industries are less abundant in the final sample.

[Insert Table 3.3 here]

3.5 Results of Testing H$_{1A}$ vs. H$_{1B}$, and H$_{2A}$ vs. H$_{2B}$

As in many empirical accounting studies, some accounting variables have unexpected properties. To alleviate concerns over potential problems arising from unreasonable distributions, I perform robust regression analysis on Model (3.5).

Table 3.4 reports the OLS results of key variables, where the *P*-values of estimated coefficients are based on the robust standard errors. Columns (1) – (5) report the results where each of the five real earnings management proxies (*Ab_CFO, Ab_Prod, Ab_Dexp, Ab_RD* and *REM_All*) serves as the dependent variable, respectively. *Board* has a positive coefficient in all model specifications. Its estimated coefficient is significant at the 1% level in the models where *Ab_Dexp*, *Ab_RD*, or *REM_All* is the dependent variable, and is marginally significant in the model that examines the association between governance factors and sales manipulation (Column 1). The positive coefficients are consistent with *Market Pressure Hypothesis* (H_{1B}). This implies that better board governance is associated with more real earnings management via sales manipulation and abnormal cuts of R&D expenses or other discretionary expenses. In contrast, *ATP* has a negative coefficient (except in Column 2), significant at the 5% level in Columns (4) and (5), and is marginally significant when *Ab_CFO* or *Ab_Dexp* is the dependent variable. The negative coefficient is consistent with *Market Pressure Relief Hypothesis* (H_{2B}), which indicates that highly protected managers are less likely to engage in sales manipulation or to cut discretionary expenses (especially R&D expenses) to boost earnings. The effect of *Board* and *ATP* on some real earnings management variables is economically significant as well. Take the coefficient of *Board* in Column (4) as an example, and consider the regression model with full controls. The sample mean and median values of the ratios of R&D to opening assets are 0.09 and 0.02 respectively (not tabulated). Recall from Table 3.1 that the standard deviation of *Board* index is 6.82. A

change of one standard deviation in *Board* index is associated with an expected change in *Ab_RD* of 0.01, the product 0.0015*6.82. The magnitude of 0.01 is not small given that the mean value of the ratio of R&D expenses to opening assets is 0.09 and the median is 0.02[14].

With respect to other control variables, the *Audit* index is negatively associated with *Ab_Prod*, but positively associated with *Ab_RD*. On average, firms with more independent audit committee members or external auditors are less likely to use overproduction as a technique to inflate earnings, probably because managers do not like an unusually high level of inventory to draw the attention of audit committee members or external auditors. It is more difficult for auditors to question R&D expense cuts since managers could use "eliminating negative NPV projects" as an excuse. The significant, negative coefficients of NOA in Columns (3) and (5) contradict the prediction that firms with less accounting flexibility are more likely to engage in real earnings management. This result may be due to measurement error in this proxy[15]. The sign of the estimated coefficient of *MB* and *Size* suggests that growth firms (with a higher market-to-book ratio) are less likely to engage in sales manipulation and overproduction, and large firms are less likely to perform real earnings management in general. However, firms with large sales market shares have more

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[14] After dropping observations where R&D expenses (data item #46) is 0, the 25th percentile, median, and 75th percentile values of the ratios of R&D to opening assets are 0.03, 0.08 and 0.16, respectively. Therefore, a change in *Ab_RD* of 0.01 is considered economically significant even after removing observations with zero value for R&D expenses. Overall, however, the adjusted R^2 is not large.

[15] The problem with this proxy is that it does not incorporate the expected magnitude of net operating assets and may be correlated with some aspects of firm performance (DeFond 2002).

incentive to engage in real earnings management, most likely because the cost of real earnings management is lower in these firms.

3.6 Robustness Tests

(1) Results in manufacturing industry

Overproduction as an earnings management technique is available to the manufacturing industry only. To increase the test power, I perform regression analyses on a sub-sample of firms in the manufacturing industry only (2-Digit SIC Codes from 20 to 39). The regression results for key variables are summarized in Table 3.5. Compared with Table 3.4, *Board* and *ATP* become insignificant in the sales manipulation model (Column 1), while they become marginally significant in the overproduction model (Column 2). In addition, the *Board* and *ATP* coefficients are generally of larger magnitude in the manufacturing sample. Overall, the results for these two test variables are consistent with those in Table 3.4. The results concerning control variables are similar except that in Column (1), *Audit* and *NOA* are significantly associated with *Ab_CFO*, while the effects of other control variables (*MB*, *Size* and *Mkshare*) on *Ab_CFO* are insignificant. These results suggest that, in the manufacturing industry, firms with more independent audit committee members or auditors, and firms with less accounting flexibility are more likely to exercise sales manipulation in order to deliver current period earnings. Furthermore, the model's explanatory power is higher in each model specification compared with Table 3.4.

(2) Results in R&D intensive industry

As a robustness check, I also examine the association of corporate governance and real earnings management for a sub-sample of firms in R&D intensive industries. I focus on five R&D-intensive industries with two-digit SIC codes of 28, 35, 36, 37 and 38 as used in Lev and Sougiannis (1996) and Shi (2003). The regression results in Table 3.6 are consistent with those in the manufacturing industry. Overall, the results indicate that, after controlling for some firm-specific variables, quality board is associated with higher levels of real earnings management, while higher takeover protection is associated with lower levels of real earnings management.

3.7 Concluding Remarks

Managers tend to manipulate earnings via changing the timing and/or scales of transactions to obtain personal benefit. Real earnings management activities are sub-optimal and detrimental to firm value. This chapter examines whether quality boards constrain real earnings management and how takeover protection affects this type of earnings manipulation. Using a sample from 2004 through 2006, I find a significant, positive association between board index and the proxies for abnormal cutting of R&D and other discretionary expenditures, but a significant, negative associate between anti-takeover provisions and these two real earnings management proxies. These results are consistent with the view that board monitoring imposes short-term market pressure on managers, which lead to

managerial short-sighted decisions and opportunistic real earnings manipulation. The results also suggest that managers in high-ATP firms are less likely to manipulate earnings by structuring transactions, probably because takeover protection removes short-term market pressure on managers and thus reduces the likelihood of self-serving actions by managers.

The results have some implications for researchers and regulators. Recent regulations on corporate governance reveal the general belief that board monitoring of management actions protects shareholders and contributes to firm value. However, Adams and Ferreira (2007) analyze the negative effects of boards as a rigorous monitor and show that management-friendly boards can be optimal. My results also suggest that emphasis on board monitoring may have adverse consequences, a higher level of real earnings management. In addition, there is a controversy over whether takeover protection benefits shareholders. Some researchers argue that takeover protection entrenches managers while others believe that it allows managers to focus on long-term corporate goals. My results imply that anti-takeover provisions may benefit shareholders since they improve management job security and alleviate managerial incentives for real earnings management. Overall, my findings suggest that there may be some unintended consequences of strengthening corporate governance, and different governance mechanisms may affect real earnings management in different ways. Recent corporate governance regulations have focused on the monitoring role of boards. This study should serve to remind regulators of the trade-offs when they consider reforms to strengthen board governance and reduce takeover protection.

Appendix 3.1. ISS data items

	BOARD
1	All directors attended 75% of board meetings or had a valid excuse
2	CEO serves on the boards of two or fewer public companies
3	Board controlled by a majority of independent outsiders (50% < IO <= 66.7%)
4	Board size is >= 6 and <=8
5	CEO is not listed as having a related-party transaction in the proxy statement
6	No former CEO on the board
7	Compensation committee comprised solely of independent outsiders
8	Chairman and CEO are not separated but there is a lead director
9	Nominating committee comprised solely of independent outsiders
10	Governance committee exists and met in the past year
11	Shareholders vote on directors selected to fill vacancies
12	Governance guidelines are publicly disclosed
13	Annually elected board
14	There is a policy on outside directorships (4 or fewer boards is the limit)
15	Shareholders have cumulative voting rights
16	Shareholder approval is required to increase/decrease the size of the board
17	Majority vote requirement to amend charter/bylaws
18	Board has the express authority to hire its own advisors
19	Performance of the board is reviewed regularly
20	Board approved succession plan in place for the CEO
21	Outside directors meet without the CEO and disclosed the number of times they met
22	Directors are required to submit resignation upon a change in job

	Appendix 3.1. ISS data items (Continued)
23	Board cannot amend bylaws without shareholder approval or can only do so under limited circumstances
24	Does not ignore shareholder proposal
25	Qualifies for proxy contest defenses combination points
	AUDIT
1	Consulting (audit related and other) fees are less than audit fees
2	Committee comprised solely of independent outsiders
3	Auditors ratified at most recent annual meeting
	ANTI-TAKEOVER
1	Single class, common shares only
2	Majority vote required to approve mergers
3	Shareholders may call special meetings
4	Shareholder may act by written consent
5	No poison pill in place but company is authorized to issue blank check preferred stock
6	No poison pill is in place and blank check preferred stock is not authorized
	COMPENSATION AND OWNERSHIP
1	Directors are subject to stock ownership requirements
2	Executives are subject to stock ownership guidelines
3	No interlocks among compensation committee members
4	Directors receive all or a portion of their fees in stock
5	All stock-incentive plans adopted with shareholder approval
6	Options grants align with company performance and the burn rate is reasonable
7	Company expenses options

Appendix 3.1. ISS data items (Continued)

8	All directors with more than one year of service own stock
9	Officers + directors ownership as % of shares outstanding is >= 1% and <= 5%
10	Repricing prohibited

Appendix 3.2: Variable definition and measurement

Ab_CFO	=	Abnormal cash flow from operations, measured as the product of negative one and deviations from the predicted values of the corresponding industry-year regression: $$\frac{CFO_t}{A_{t-1}} = \alpha_0 \frac{1}{A_{t-1}} + \alpha_1 \frac{S_t}{A_{t-1}} + \alpha_2 \frac{\Delta S_t}{A_{t-1}} + \varepsilon_t$$
Ab_Prod	=	Abnormal production cost, measured as the deviations from the predicted values of the corresponding industry-year regression: $$\frac{Prod_t}{A_{t-1}} = \alpha_0 \frac{1}{A_{t-1}} + \alpha_1 \frac{S_t}{A_{t-1}} + \alpha_2 \frac{\Delta S_t}{A_{t-1}} + \alpha_3 \frac{\Delta S_{t-1}}{A_{t-1}} + \varepsilon_t$$
Ab_Dexp	=	Abnormal discretionary expenses, measured as the product of negative one and the deviations from the predicted values of the corresponding industry-year regression: $$\frac{DisExp_t}{A_{t-1}} = \alpha_0 \frac{1}{A_{t-1}} + \alpha_1 \frac{S_{t-1}}{A_{t-1}} + \varepsilon_t$$
Ab_RD	=	Abnormal R&D expense, measured as the deviations from the predicted values of the corresponding industry-year regression: $$\frac{RD_t}{A_{t-1}} = \alpha_0 + \alpha_1 \frac{RD_{t-1}}{A_{t-1}} + \alpha_2 \frac{Funds_t}{A_{t-1}} + \alpha_3 TobinsQ_t + \alpha_4 \frac{CaptialExp_t}{A_{t-1}} + \varepsilon_t$$
REM_All	=	$Ab\_CFO + Ab\_Prod + Ab\_Dexp + Ab\_RD$;
Board	=	Board index. I assign a value of one to the 25 board related attributes in the ISS database if the company meets or exceeds minimum satisfactory standards, and zero otherwise. The total score of board related attributes is divided by the total non-missing scores of all 44 attributes of a firm and then multiplied by 100 to derive the board index.
ATP	=	Takeover protection index. I assign a value of one to the 6 takeover protection related attributes in the ISS database if the company meets or exceeds minimum satisfactory standards, and zero otherwise. The total score of takeover protection related attributes is divided by the total non-missing scores of all 44 attributes of a firm and then multiplied by 100 to derive the ATP index.
Audit	=	Audit index. I assign a value of one to the 3 audit related attributes in the ISS database if the company meets or exceeds minimum satisfactory standards, and zero otherwise. The total score of audit related attributes is divided by the total non-missing scores of all 44 attributes of a firm and then multiplied by 100 to derive the audit index.

Appendix 3.2: Variable definition and measurement (Continued)

NOA	=	Accounting flexibility = (Shareholders' equity – cash and marketable securities + total debt)$_{t-1}$/Sales$_{t-1}$
MB	=	Market to book ratio;
Size	=	Firm size, measured as *ln*(total assets);
MKShare	=	Market share, measured as the percentage of a company's sales to the total sales of its industry

Table 3.1: Descriptive statistics of key variables

Variable	N	Mean	SD	1st Quartile	Median	3rd Quartile
Ab_CFO	7684	-0.08	1.19	-0.18	-0.03	0.12
Ab_Prod	7701	0.02	0.37	-0.16	-0.02	0.14
Ab_Dexp	7038	0.39	2.88	-0.31	-0.04	0.17
Ab_RD	7410	-0.01	0.27	-0.03	0	0.01
REM_All	6690	0.26	2.83	-0.54	-0.13	0.26
Board	7797	30.89	6.82	25.71	30.77	35.71
ATP	7797	7.81	3.18	5.26	7.50	10
Audit	7797	5.31	2.22	3.33	5.26	7.32
NOA	7674	0.71	2.13	0.25	0.46	0.76
MB	7792	3.26	6.62	1.44	2.34	3.93
Size	7797	5.43	2.11	3.97	5.43	6.87
Mkshare	7769	0.88	3.07	0.01	0.06	0.40

See Appendix 3.2 for variable definitions.

Table 3.2: Pearson correlations between REM variables, lagged governance variables and other control variables

	Ab_CFO	Ab_Prod	Ab_Dexp	Ab_RD	REM_All	Board	ATP	Audit	NOA	MB	Size	Mkshare
Ab_CFO	1											
Ab_Prod	**0.18**	1										
	(0.00)											
Ab_Dexp	**-0.34**	**0.04**	1									
	(0.00)	(0.00)										
Ab_RD	0.02	**0.11**	0.02	1								
	(0.08)	(0.00)	(0.17)									
REM_All	**0.10**	**0.23**	**0.89**	**0.11**	1							
	(0.00)	(0.00)	(0.00)	(0.00)								
Board	**0.06**	0.00	**-0.08**	0.00	**-0.06**	1						
	(0.00)	(0.97)	(0.00)	(0.85)	(0.00)							
ATP	-0.03	0.02	**0.04**	-0.01	0.03	**-0.11**	1					
	(0.03)	(0.12)	(0.00)	(0.21)	(0.02)	(0.00)						
Audit	-0.01	**0.03**	0.01	**0.07**	0.01	**0.04**	0.00	1				
	(0.34)	(0.00)	(0.26)	(0.00)	(0.28)	(0.00)	(0.86)					
NOA	0.01	0.01	**-0.06**	**0.05**	**-0.06**	**-0.04**	0.02	-0.02	1			
	(0.51)	(0.28)	(0.00)	(0.00)	(0.00)	(0.00)	(0.09)	(0.09)				
MB	**-0.06**	**-0.04**	0.00	0.02	**-0.05**	0.00	0.00	0.02	**0.03**	1		
	(0.00)	(0.00)	(0.98)	(0.07)	(0.00)	(0.82)	(0.78)	(0.04)	(0.01)			
Size	-0.01	**-0.06**	**-0.14**	**-0.06**	**-0.14**	**0.40**	**-0.29**	**-0.05**	0.02	-0.02	1	
	(0.63)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.11)	(0.04)		
Mkshare	0.01	0.00	**-0.03**	0.00	-0.02	**0.16**	**-0.11**	-0.02	-0.03	0.00	**0.40**	1
	(0.37)	(0.91)	(0.01)	(0.90)	(0.11)	(0.00)	(0.00)	(0.11)	(0.02)	(0.86)	(0.00)	

Note: Bold coefficients are significant at 1% level; See Appendix 3.1 for variable definitions.

Table 3.3: Sample distribution across industries

2-Digit SIC Code	Industry Title	Frequency	Percent
	AGRICULTURE	**20**	**0.26**
1	Agriculture Production - Crops	20	
	CONSTRUCTION	**59**	**0.75**
16	Heavy Construction Contractors	33	
17	Special Trade Contractors	26	
	MANUFACTURING	**4,862**	**62.36**
20	Food And Kindred Products	204	
22	Textile Mill Products	32	
23	Apparel And Other Textile Products	106	
24	Lumber And Wood Products	48	
25	Furniture And Fixtures	63	
26	Paper And Allied Products	91	
27	Printing And Publishing	132	
28	Chemicals And Allied Products	1023	
29	Petroleum And Coal Products	46	
30	Rubber/Misc. Plastic Products	106	
31	Leather and Leather Products	49	
32	Stone, Clay, Glass And Concrete Products	52	
33	Primary Metal Industries	123	
34	Fabricated Metal Products	141	
35	Industrial And Commercial Machinery And Computer Equip	622	
36	Electrical Equipment And Components	937	
37	Transportation Equipment	233	
38	Measurement Analyzing, Control Instr. And Related Prod.	777	
39	Misc. Manufacturing Industries	77	
	TRANSPORTATION	**69**	**0.88**
42	Motor Freight Transportation	69	
	WHOLESALE TRADE	**342**	**4.39**
50	Durable Goods	238	
51	Non-Durable Goods	104	
	RETAIL TRADE	**724**	**9.29**
53	General Merchandise Stores	64	
54	Food Stores	53	
55	Automobile Dealers & Gasoline Service Stations	50	
56	Apparel & Accessory Stores	130	
57	Home Furniture, Furnishings And Equipment Stores	55	
58	Eating & Drinking Places	172	

Table 3.3: Sample distribution across industries (Continued)

2-Digit SIC Code	Industry Title	Frequency	Percent
59	Miscellaneous Retail	200	
	SERVICES	**1,721**	**22.07**
70	Hotels, Rooming Houses, Camps And Other Lodging Places	28	
72	Personal Services	36	
73	Business Services	1305	
78	Motion Pictures	43	
79	Amusement And Recreation Services	108	
80	Health Services	201	
Total		**7,797**	**100**

Table 3.4: Regression Results of Model (3.5)

	(1)	(2)	(3)	(4)	(5)
	Ab_CFO	*Ab_Prod*	*Ab_Dexp*	*Ab_RD*	*REM_All*
Board	0.0045*	0.0003	0.0157***	0.0015***	0.0202***
	(0.07)	(0.65)	(0.01)	(0.00)	(0.00)
ATP	-0.0083*	0.0004	-0.0180*	-0.0022**	-0.0258**
	(0.05)	(0.79)	(0.09)	(0.04)	(0.02)
Audit	-0.002	-0.0061***	-0.0181	0.0037**	-0.0254
	(0.75)	(0.01)	(0.32)	(0.01)	(0.16)
NOA	0.0072	-0.0003	-0.1167***	0.0040*	-0.1032***
	(0.22)	(0.93)	(0.00)	(0.10)	(0.00)
MB	-0.0114***	-0.0039***	-0.0039	0.0006	-0.0241***
	(0.00)	(0.00)	(0.67)	(0.36)	(0.01)
Size	-0.0270**	-0.0121***	-0.1411***	-0.0112***	-0.1654***
	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)
Mkshare	0.0047*	0.0085***	0.0392***	0.0020***	0.0524***
	(0.08)	0.00	(0.00)	(0.00)	(0.00)
Observations	7557	7583	6947	7301	6615
Adjusted R^2	7%	6%	19%	8%	17%

*** p<0.01, ** p<0.05, * p<0.1; Robust p values in parentheses;

See Appendix 3.2 for variable definitions.

Table 3.5: Regression Results of Model (3.5) in Manufacturing Industry

	(1)	(2)	(3)	(4)	(5)
	Ab_CFO	*Ab_Prod*	*Ab_Dexp*	*Ab_RD*	*REM_All*
Board	0.0001	**0.0018***	**0.0298***	**0.0021***	**0.0295***
	(0.96)	(0.06)	(0.00)	(0.00)	(0.00)
ATP	-0.005	**-0.0034***	**-0.0300***	**-0.0038***	**-0.0389****
	(0.22)	(0.07)	(0.06)	(0.00)	(0.01)
Audit	-0.0129**	-0.0059**	0.0076	0.0039**	-0.0121
	(0.04)	(0.04)	(0.78)	(0.02)	(0.65)
NOA	0.0119**	-0.0027	-0.1553***	0.0011	-0.1330***
	(0.04)	(0.42)	(0.00)	(0.64)	(0.01)
MB	-0.0042	-0.0033**	0.0033	-0.0005	-0.0106
	(0.13)	(0.02)	(0.81)	(0.54)	(0.41)
Size	-0.0181	-0.0265***	-0.2030***	-0.0180***	-0.2278***
	(0.13)	(0.00)	(0.00)	(0.00)	(0.00)
Mkshare	0.0005	0.0093***	0.0654***	0.0050***	0.0751***
	(0.91)	(0.00)	(0.00)	(0.00)	(0.00)
Observations	4724	4748	4295	4547	4093
Adjusted R^2	28%	8%	28%	9%	25%

*** p<0.01, ** p<0.05, * p<0.1; Robust p values in parentheses;

See Appendix 3.2 for variable definitions.

Table 3.6: Regression Results of Model (3.5) in R&D Intensive Industries

	(1)	(2)	(3)	(4)	(5)
	Ab_CFO	*Ab_Prod*	*Ab_Dexp*	*Ab_RD*	*REM_All*
Board	0.0028	0.0030**	0.0336***	0.0026***	0.0356***
	(0.29)	(0.01)	(0.00)	(0.00)	(0.00)
ATP	-0.0062	-0.0046*	-0.0451**	-0.0048***	-0.0548***
	(0.25)	(0.06)	(0.04)	(0.00)	(0.01)
Audit	-0.0148*	-0.0080**	0.0015	0.0052**	-0.0249
	(0.07)	(0.03)	(0.97)	(0.02)	(0.48)
NOA	0.0143**	-0.002	-0.1818***	0.0014	-0.1465***
	(0.02)	(0.56)	(0.00)	(0.57)	(0.01)
MB	-0.0035	-0.0026	0.0002	-0.0006	-0.0137
	(0.28)	(0.12)	(0.99)	(0.56)	(0.40)
Size	-0.0231	-0.0350***	-0.2666***	-0.0229***	-0.2971***
	(0.14)	(0.00)	(0.00)	(0.00)	(0.00)
Mkshare	0.0017	0.0309***	0.2223***	0.0143***	0.2487***
	(0.91)	(0.00)	(0.00)	(0.00)	(0.00)
Observations	3474	3493	3085	3416	2999
Adjusted R^2	35%	9%	33%	10%	28%

*** $p<0.01$, ** $p<0.05$, * $p<0.1$; Robust p values in parentheses;

See Appendix 3.2 for variable definitions.

Chapter 4

Conclusion

Anecdotal, survey and empirical research evidence document the widespread use of real earnings management by managers. Although real earnings management may help managers to reach a desired level of earnings, it also impairs firm value in the long run. My thesis examines issues related to the economic consequences of and constraints on real earnings management.

In the first essay, I examine the association between real earnings management and the cost of new corporate bond issues. Using the sample from 1993 to 2004, I find that cost of debt is negatively related to the proxies of sales manipulation, abnormal reduction of discretionary expenses and overall real earnings management for firms that do not use stock options to compensate their managers. However, when managerial compensation is linked to stock options, the negative association between real earnings management and cost of debt is attenuated. Overproduction does not show a significant effect on bond yield

spread. Overall, these results suggest that, in the primary bond market, bondholders do not see through real earnings management.

In the second essay, I investigate the effect of quality board and takeover protection on real earnings management. I perform regression analyses on panel data of U.S. public firms in the post-SOX period (from 2004-2006). Overall, the results show that the level of real earnings management increases with better board governance and decreases with greater takeover protection. The findings suggest that quality boards may pressure managers to resort to earnings management. The findings on the relation between ATP and REM are inconsistent with the entrenchment theory; instead, they support the view that ATPs may benefit shareholders by mitigating managerial myopia.

One caveat is that the interpretation of the results relies on the efficacy of the REM proxies to capture management opportunism rather than the outcome of optimal business decisions. The proxies of abnormal reduction in R&D expenses and overproduction pass the validity test in Zang (2007). The proxies of abnormal CFO, overproduction and abnormal reduction of discretionary expenditures are commonly used in recent real earnings management literature, and appear to be satisfactory measures of real activities manipulation. For example, Gunny (2005), Zang (2007) and Yu (2008) document that real earnings management (measured by some of these proxies) leads to inferior future performance. This evidence suggests that these REM variables seem to capture managerial opportunism. That said, these residuals-based real earnings proxies are not perfect constructs. They may miss important elements of REM activity and

include influences from other economic activities. Refinement of REM measures may be a valuable target for future research in this area.

The corporate governance indices are also imperfect constructs. They may miss important elements that contribute to quality board monitoring and takeover protection. In addition, the attributes within each category are given the same weight, while these attributes may not contribute equally towards quality board monitoring or takeover protection. Also, using an index does not help in discovering the relative importance of the attributes in the governance role. Therefore, readers need to be aware of weaknesses in these measures when interpreting the results.

Several extensions and related topics are worth further research. First, given the weaknesses of the real earnings management measures, there is a need to develop more refined models that better differentiate the outcomes associated with normal business activities and opportunistic activities. Second, the first essay examines the effect of real earnings management on the cost of new bond issues. It would also be interesting to learn whether public bondholders have formulated more stringent debt covenants in response to real earnings management. Third, future research can also extend the first essay by examining the effect of real earnings management on the cost of traded bonds, or studying the consequences of real earnings management in the private debt (bank loan) market. Fourth, the second essay finds that better board governance is associated with higher levels of real earnings management, while higher takeover protection is associated with lower levels of real earnings management. Investigating whether real earnings

management in better-governed firms or in low-ATP firms lead to poorer future performance would be a valuable extension. However, the current financial crisis affects many firms' performance negatively, and it is hard to isolate the effect of severe economic downturns. Therefore, I have to defer such an extension to the future. Finally, more attention needs to be devoted to whether conventionally viewed "good" governance attributes have other adverse consequences, and what constitutes a "quality" board.

In conclusion, real earnings management research is still at the early stage. Given the widespread use of real earnings management and its impact on firm value, more research endeavors and efforts are necessary to measure real earnings management more accurately and to understand such phenomena better.

References

Adams, R., and D. Ferreira. 2007. A theory of friendly boards. *Journal of Finance* 62: 217- 250.

Ahmed, A. S. and S. Duellman. 2007. Accounting conservatism and board of director characteristics: An empirical analysis. *Journal of Accounting and Economics* 43(2-3): 411-437.

Aguilera, R.V., C. A Williams, J. M. Conley, and D. E. Rupp. 2006. Corporate governance and social responsibility: a comparative analysis of the UK and the US. *Corporate Governance: An International Review* 14: 147–158.

Anderson, R.C., S. Mansi, and D.M. Reeb. 2004. Board characteristics, accounting report integrity and the cost of debt. *Journal of Accounting and Economics* 68: 315-342.

Atanassov, J. 2006. Quiet life or managerial myopia: The impact of antitakeover legislation on technological innovation. Working paper, University of Michigan.

Baber, W., P. Fairfield and J. Haggard. 1991. The effect of concern about reported income on discretionary spending decisions: The case of research and development. *The Accounting Review* 66(4): 818-829.

Barton, J. and P. Simko. 2002. The balance sheet as an earnings management constraint. *The Accounting Review* 77, Supplement: 1-27.

Bartov, E. 1993. The timing of assets sales and earnings manipulation. *The Accounting Review* 68(4): 840-855.

Bates, T. W., D. A. Becher and M. L. Lemmon. 2008. Board classification and managerial entrenchment: Evidence from the market for corporate control. *Journal of Financial Economics* 87 (3): 656-677.

Beasley, M. S. 1996. An empirical analysis of the relation between the board of director composition and financial statement fraud. *The Accounting Review* 71: 443-465.

Begley, J. and G. Feltham. 1999. An empirical examination of the relation between debt contracts and management incentives. *Journal of Accounting and Economics* 27: 229-259.

Berger, P. 1993. Explicit and implicit tax effects of the R & D tax credit. *Journal of Accounting Research* 31(2): 131-171.

Bertrand, M., and S. Mullainathan. 2003. Enjoying the quiet life? Managerial behavior following antitakeover legislation. *The Journal of Political Economy* 111: 1043–1075.

Bharath, S., J. Sunder, and S. Sunder. 2008. Accounting quality and debt contracting. *The Accounting Review* 83: 1-28.

Bhojraj, S. and P. Sengupta. 2003. Effect of corporate governance on bond ratings and yields: the role of institutional investors and outside directors. *Journal of Business* 76 (3): 455-475.

Black, B., J. Coffee 1994. Hail Britannia: institutional investor behavior under limited regulation. *Michigan Law Review* 92: 1997-2087.

Bushman, R. M., and A. J. Smith. 2003. Transparency, financial accounting information, and corporate governance. *FRBNY Economic Policy Review* 65-87

Carcello, J.V., C. W. Hollingsworth, A. Klein, and T. L. Neal. 2006. Audit committee financial expertise, competing corporate governance mechanisms, and earnings management. Working paper, University of Tennessee.

Carter, M., L. Lynch, and I. Tuna. 2007. The role of accounting in the design of CEO equity compensation. *The Accounting Review* 82: 327-357.

Cohen, D. A., A. Dey and T. Z. Lys. 2008. Real and Accrual-based Earnings Management in the Pre- and Post-Sarbanes Oxley Periods. *The Accounting Review* 82 (3): 757-787.

Cohen, D. A. and P. Zarowin. 2008. Accrual-based and real earnings management activities around seasoned equity offerings. Working paper, New York University.

David, P., M. A. Hitt, and J. Gimeno. 2001. The influence of activism by institutional investors on R&D. *Academy of Management Journal* 44: 144–157.

Dechow, P. 1994. Accounting earnings and cash flows as measures of firm performance: The role of accruals. *Journal of Accounting and Economics* 18 (1): 3-42.

Dechow, P. M., R. G. Sloan and A. P. Sweeney. 1996. Causes and consequences of earnings manipulation: An analysis of firms subject to enforcement actions by the SEC. *Contemporary Accounting Research* 13 (1): 1-36.

Dechow, P. and D. Skinner. 2000. Earnings management: Reconciling the views of accounting academics, practitioners, and regulators. *Accounting Horizon* 14(2): 235-250.

DeFond, M., 2002. Discussion of the balance sheet as an earnings management constraint. *The Accounting Review* 77: 29-33.

DeFusco, R. A., R. R. Johnson, and T. S. Zom. 1990. The effect of executive stock option plans on stockholders and bondholders. *Journal of Finance* 45: 617-627.

Ederington, L., and J. Yawitz. 1987. The rating process. In Handbook of Financial Markets and Institutions, 6th edition, edited by E. Altman. New York, NY: John Wiley & Sons.

Elton, E., M. Gruber, D. Agrawal, and C. Mann. 2001. Explaining the rate spread on corporate bonds. *Journal of Finance* 56: 247-277.

Ewert, R. and A. Wagenhofer. 2005. Economic Effects of Tightening Accounting Standards to Restrict Earnings Management. *The Accounting Review* 80 (4): 1101-1124.

Fama, U., and M. Jensen. 1983. Separation of ownership and control. *The Journal of Law & Economics* 26: 301–325.

Fama, E., and M. Miller. 1972. The theory of finance, Holt, Reinhart and Winston, Inc: New York.

Fields, T., T. Lyz and L. Vincent. 2001. Empirical research on accounting choice. *Journal of Accounting and Economics* 31(1-3): 255-308.

Fischer, P. and R. Verrecchia. 1997. The effect of limited liability on the market response to disclosure. *Contemporary Accounting Research* 14 (3): 515-541.

Francis, J., R. LaFond, P. Olsson, and K. Schipper. 2005. The market pricing of accruals quality. *Journal of Accounting and Economics* 39: 295-327.

Frankel, R. M. and L. P. Litov. 2007. Financial accounting characteristics and debt covenants. Working paper, Washington University, St. Louis.

Fu, H. and H. Liu. 2007. Anti-Takeover Provisions and Corporate Disclosure. Working paper, Texas Christian University and University of Kentucky.

Fudenberg, D. and J. Tirole. 1995. A theory of income and dividend smoothing based on incumbency rents. *Journal of Political Economy* 103 (1): 75-93.

Fulbright & Jaworski. 2005. Second Annual Litigation Trends Survey Findings. </http://www.fulbright.com/mediaroom/files/FJ0536-UK-V13.pdf>

Galai, D., and R. W. Masulis. 1976. The option pricing model and the risk factor of stock. *Journal of Financial Economics* 3: 53-81.

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

Grossman, S. and O. Hart. 1980. Takeover bids, the free-rider problem, and the theory of the corporation. *Bell Journal of Economics* 11: 42-64.

Gunny, K. 2005. What are the consequences of real earnings management? Working paper, University of Colorado at Boulder.

Healy, P. 1985. The effect of bonus schemes on accounting decisions. *Journal of Accounting and Economics* 7 (1–3): 85-107.

Healy, P. M., and J. M. Wahlen. 1999. A review of the earnings management literature and its implications for standard setting. *Accounting Horizons* 3: 365-383.

Ho, C. and R. Rao. 1993. Bond ratings and their determinants in a changing environment. *Journal of Applied Business Research* 9: 132-139.

Holthausen, R.W., D. Larcker and R. Sloan. 1995. Annual bonus schemes and the manipulation of earnings. *Journal of Accounting and Economics* 19 (1): 29–74.

Jensen, M. C. and W. H. Meckling. 1976. Theory of the firm: managerial behavior, agency costs and ownership structure. *Journal of Financial Economics* 3: 305-360.

Jensen, M. C. and R. Ruback. 1983. The market for corporate control: The scientific evidence. *Journal of Financial Economics* 11: 5-50.

Jiang, J. 2008. Beating earnings benchmarks and the cost of debt. *The Accounting Review* 83 (2): 377-416.

Kennedy, V. and R. Limmack. 1996. Takeover Activity, CEO Turnover, and the Market for Corporate Control. *Journal of Business Finance & Accounting* 23 (2): 267–293.

Kim, J., Y. Kim, and Y. Shi. 2008. Management earnings guidance and the cost of debt. Working paper, Concordia University.

Kim, J. and B. C. Sohn. 2008. Real versus accrual-based earnings management and implied cost of equity capital. Working paper, Concordia University.

Khurana, I. and K. Raman. 2003. Are fundamentals priced in the bond market? *Contemporary Accounting Research* 20 (3): 465-494.

Klein, A. 2002. Audit Committee, Board of Director Characteristics, and Earnings Management. *Journal of Accounting and Economics* 33: 375-400.

Knoeber, C. 1986. Golden Parachutes, Shark Repellents, and Hostile Tender Offers. *The American Economic Review* 76 (1): 155-167.

Koppes, R., R. Ganske and C. Hagg. 1999. Corporate Governance Out of Focus: The Debate Over Classified Boards. *The Business Lawyer* 54 (3): 1023-1055.

Lipton, M. and S. Rosenblum. 2003. Election Contests in the Company's Proxy: An Idea Whose Time Has Not Come. *The Business Lawyer* 59 (6): 67-94.

Langevoort, D. 2001. The Human Nature of Corporate Boards: Law, Norms, and the Unintended Consequences of Independence and Accountability. *Georgetown Law Journal* 89: 797-832.

Lev, B. and T. Sougiannis. 1996. The capitalization, amortization, and value-relevance of R&D. *Journal of Accounting and Economics* 21: 107-138.

Manne, H. 1965. Mergers and the Market for Corporate Control. *Journal of Political Economy* 73 (2): 110-120.

Manne, H. 2002. Bring Back the Hostile Takeover. *Wall Street Journal* (January 28), FP11.

Mansi, S., W. Maxwell, and D. Miller. 2004. Does auditor quality and tenure matter to investors? Evidence from the bond market. *Journal of Accounting Research* 42 (4): 755-793.

McGurn, P. 2002. Classification Cancels Corporate Accountability. *Stanford Law Review* 55 (3): 839-844.

Matsunaga, S. R. 1995. The effects of financial reporting costs on the use of employee stock options. *The Accounting Review* 70: 1-26.

Merton, R. 1973. The theory of rational option pricing. *Bell Journal of Economics and Management Science* 4: 141-183.

Merton, R. 1974. On the pricing of corporate debt: the risk structure of interest rates. The *Journal of Finance* 29: 449-470.

Mizik, N. and R. Jacobson. 2007. Earnings inflation through accruals and real activity manipulation: its prevalence at the time of an SEO and the financial market consequences. Working paper, Columbia University.

Morck, R., A. Shleifer, and R. Vishny. 1989. Alternative mechanisms for corporate control. *The American Economic Review* 79: 842-852.

Ortiz-Molina, H. 2006. Top management incentives and the pricing of corporate public debt. *Journal of Financial and Quantitative Analysis* 42 (2): 317-340.

Osma, B. G. 2008. Board independence and real earnings management: The case of R&D expenditure. *Corporate Governance: An International Review* 16 (2): 116-131.

Parrino, R. and M. Weisbach. 1999. Measuring investment distortions arising from stockholder-bondholder conflicts. *Journal of Financial Economics* 53: 3-42.

Peasnell, K. V., P. F. Pope, and S. Young. 2005. Board monitoring and earnings management: Do outside directors influence abnormal accruals? *Journal of Business Finance and Accounting* 32 (7)&8: 1311-1346.

Prevost, A. K., R. P. Rao, and C. J. Skousen. 2008. Earnings management and the cost of debt. Working paper, Ohio University.

Pugh, W. N., D. E. Daniel, and J. S. Jahera Jr. 1992. Antitakeover charter amendments: Effects on corporate decisions. *Journal of Financial Research* 15 (1): 57-67.

Roychowdhury, S. 2006. Earnings Management through Real Activities Manipulation. *Journal of Accounting and Economics* 42: 335-370.

Scharfstein, D. 1988. The disciplinary role of takeovers. *Review of Economic Studies* 55 (182): 185-199.

Scherer, F. 1988. Corporate takeovers: The efficiency arguments. *Journal of Economic Perspectives* 2: 69-82.

Seetharaman, A., F. A. Gul, S. G. Lynn. 2002. Litigation risk and audit fees: evidence from UK firms cross-listed on US markets. *Journal of Accounting and Economics* 33: 91-115.

Sengupta, P. 1998. Corporate disclosure quality and the cost of debt. *The Accounting Review* 73: 459-474.

Shi, C. 2003. On the trade-off between the future benefits and riskiness of R&D: A bondholders' perspective. *Journal of Accounting and Economics* 35: 227-254.

Shi, C., and S. Zhang. 2008. Accounting Restatements and the Cost of Debt Capital. Working paper, University of California - Irvine and McGill University.

Shleifer, A, and R. W. Vishny. 1989. Management Entrenchment: The Case of Manager-Specific Investments. *Journal of Financial Economics* 25 (1): 123-140.

Shleifer, A., and R. Vishny. 1997. A survey of corporate governance. *The Journal of Finance* 52: 737-783.

Shleifer, A. and L. Summers. 1988. 'Breach of Trust in Hostile Takeovers', in A. Auerbach (ed.), Corporate Takeovers: Causes and Consequence (Chicago, University of Chicago Press), 65-88.

Standard & Poor's. 1998. Corporate ratings criteria. New York: Standard & Poor's.

Stein, J. 1988. Takeover Threats and Managerial Myopia. *Journal of Political Economy* 96: 61-80.

U.S. House, Committee on Governmental Affairs, Permanent Subcommittee on Investigations, 2002, The role of the board of directors in Enron's collapse, 107th Cong., 2d sess., Committee Print.

Wang, S. and J. M. D'Souza. 2006. Earnings management: the effect of accounting flexibility on R&D investment choices. Working paper, Cornell University.

Weisbach, M. 1988. Outside directors and CEO turnover. *Journal of Financial Economics* 20 (1&2): 413–60.

West, R. 1970. An alternative approach to predicting corporate bond ratings. *Journal of Accounting Research* 8: 118-125.

White. 1980. A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica* 48: 817-838.

Williams, C., and J.Conley. 2005. An merging third way? The erosion of the Anglo- American shareholder value construct. *Cornell International Law Journal* 38, 493-551.

Xie, B., W. N., Davidson III and P. J. DaDalt. 2002. Earnings management and corporate governance: the role of the board and the audit committee. *Journal of Corporate Finance* 9: 295-316.

Yu, W. 2008. Auditor industry specialization and real activities manipulation. Working paper, Leigh University.

Zang, A. Y. 2007. Evidence on the tradeoff between real manipulation and accrual manipulation. Working paper, Duke University.

Zhang, W. 2008. Real activity manipulation to meet analyst cash flow forecast. Working paper, University of Texas at Dallas.

Zhao, Y. and K. H. Chen. 2008 (a). Staggered boards and earnings management. *The Accounting Review* 83 (5): 1347-1381.

Zhao, Y. and K. H. Chen. 2008 (b). The influence of takeover protection on earnings management. *Journal of Business Finance & Accounting* 35 (3/4): 347-375.