

ACCOUNTING-BASED EARNINGS MANAGEMENT AND REAL
ACTIVITIES MANIPULATION

A Dissertation
Presented to
The Academic Faculty

by

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In Partial Fulfillment
of the Requirements for the Degree
Doctor of Philosophy in the
School of Management

Georgia Institute of Technology
August 2008

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**ACCOUNTING-BASED EARNINGS MANAGEMENT AND REAL
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Date: May 23, 2008

ACKNOWLEDGEMENTS

I am grateful for the guidance from my thesis advisor, Bryan Church and from my thesis committee members, Eugene Comiskey, Arnold Schneider, Xi Kuang and Haizheng Li. I appreciate the comments from the workshop participants at Georgia Institute of Technology, Iowa State University and South Carolina University. I am grateful to the financial support from Bryan Church. On my personal note, I again thank Bryan Church who has been so much more than an advisor as a true model of intellectual excellence. I also would like to thank my parents, Feng Yu and Wengu Zheng, for their constant support.

TABLE OF CONTENTS

	Page
Acknowledgements	iii
List of Tables	viii
List of Figures	x
Summary	xi
<u>Chapter</u>	
I Auditor Industry Specialization and Real Activities Manipulation	1
1.1 Introduction	1
1.2 Literature Review and Hypotheses Development	3
1.2.1 Motives to Hire Industry Specialist Auditors	3
1.2.2 The Impact of Auditor Industry Specialization on Earnings Quality	5
1.2.3 Consequences of Real Activities Manipulation	7
1.3 Measurement of Auditor Industry Specialization and Real Activities Manipulation and Sample Selection	10
1.3.1 Measures of Auditor Industry Specialization	10
1.3.2 Measures of Real Activities Manipulation	11
1.3.3 Sample Selection	14
1.3.4 Descriptive Statistics	15
1.4 Research Method and Empirical Results for Hypothesis 1	19
1.4.1 Research Method for Testing Hypothesis 1a	19
1.4.2 Empirical Results of Hypothesis 1a from the First Sample (Firms that Just Meet Analysts' Forecasts)	20
1.4.3 Empirical Results of Hypothesis 1a from the Second Sample (Firm-years before New Equity Issuance)	21
1.4.4 Research Method for Testing Hypothesis 1b	22

1.4.5 Empirical Results of Hypothesis 1b from the First Sample (Firms that Just Meet Analysts' Forecasts)	24
1.4.6 Empirical Results of Hypothesis 1b from the Second Sample (Firm-years before New Equity Issuance)	25
1.4.7 Summary of the Empirical Results for the First Set of Hypotheses from Both Samples	26
1.4.8 Additional Tests for Robustness of Findings	27
1.5 Research Method and Empirical Results for Hypothesis 2	27
2.5.1 Research Method for Testing Hypothesis 2	27
2.5.2 Empirical Results	28
1.6 Conclusions	30
1.7 References	32
II The Influence of Accounting Standards and Institutional Investors on Earnings Management	35
2.1 Introduction	35
2.2 Literature Review	40
2.2.1 Earnings Management	40
2.2.1.1 Differences between Accounting-based Earnings Management and Real Activities Manipulation	40
2.2.1.2 Evidence of Real Activities Manipulation	42
2.2.1.3 Costs of Real Activities manipulation	43
2.2.2 Managers Compensation Schemes and Earnings Management	45
2.2.3 Accounting Standards	47
2.2.3.1 Costs and Benefits of Principles-based Standards	48
2.2.3.2 Costs and Benefits of Rules-based Standards	49
2.2.4 The Role of Institutional Governance	51
2.2.4.1 Institutional Investor and Accounting-based Earnings Management	51

2.2.4.2	Effects of Institutional Investor on Corporate Myopia	52
2.2.4.3	Types of Institutional Investors	55
2.2.4.4	Do Preferences of Institutional Investors Affect Managerial Decisions?	57
2.3	Research Framework	59
2.3.1	Background	59
2.3.2	Two Types of Earnings Management	59
2.3.3	Type of Manager	61
2.3.4	Investment Time Horizon of Institutional Investors	65
2.3.5	Flexibility of Accounting Standards	68
2.4	Research Method	72
2.4.1	Why Use an Experimental Approach?	72
2.4.2	Basic Setting	73
2.4.3	Experimental Predictions	75
2.4.4	Experiment Overview	77
2.4.5	Procedures	78
2.5	Results	80
2.5.1	Long-term-oriented Institutional Investors' Monitoring Activities	80
2.5.1.1	Effects of Accounting Standards	85
2.5.1.2	Effects of Type of Manager	85
2.5.2	Managers' Earnings Management Choices	86
2.5.2.1	Effects of Flexibility of Accounting Standards and Type of Manager on Managers' Earnings Management Choices	86
2.5.2.1.1	Effects of Accounting Standards	90
2.5.2.1.2	Effects of Type of Manager	91
2.5.2.2	Further Analysis – Results for Each Condition	92

2.6 Summary and Conclusion	96
2.7 References	99
APPENDIX A: Variable Required for My Analysis and Corresponding COMPUSTAT Data Items	104
APPENDIX B: All Conditions and Corresponding Equilibrium	106
APPENDIX C: Payoff Tables	107
APPENDIX D: Parameter Selections	109
APPENDIX E: Instructions	111

LIST OF TABLES

	Page
Table 1.1: Descriptive Statistics on Companies Audited by Industry Specialist Auditors and Non-specialist Auditors (Firms that Just Meet Analysts' Forecasts)	17
Table 1.2: Descriptive Statistics on Companies Audited by Industry Specialist Auditors and Non-specialist Auditors (Firm-years before New Equity Issuance)	18
Table 1.3: The OLS Regression of Absolute Abnormal Discretionary Accruals on Industry Specialist Auditors over 1989-2004 (Firms that Just Meet Analysts' Forecasts)	21
Table 1.4: The OLS Regression of Absolute Abnormal Discretionary Accruals on Industry Specialist Auditors over 1989-2004 (Firm-years before New Equity Issuance)	22
Table 1.5: 2SLS Regression of Abnormal Cash Flow from Operations on Absolute Discretionary Accruals over 1989-2004 (Firms that Just Meet Analysts' Forecasts)	25
Table 1.6: 2SLS Regression of Abnormal Cash Flow from Operations on Absolute Discretionary Accruals over 1989-2004 (Firm-years before New Equity Issuance)	26
Table 1.7: Change in Abnormal Operating Performance for Companies Suspected of Engaging in Real Activities Manipulation in the Subsequent Three Years	30
Table 2.1: Summary of Notations and Parameter Value	74
Table 2.2 (Panel A): Empirical Frequency Table for Observed Behavior of Long-term-oriented Institutional Investors	82
(Panel B): Statistical Tests on the Difference between Investigating Accounting-based Earnings Management and Real Activities Manipulation	82
Table 2.3: Multinomial Logit Regression of Long-term-oriented Institutional Investors' Monitoring Activities	84
Table 2.4 (Panel A): Empirical Frequency Table for Observed Behavior of Managers' Earnings Management Choices with Long-term-oriented Institutional Investors	87
(Panel B): Statistical Tests on the Difference between Accounting-based Earnings Management and Real Activities Manipulation	87

Table 2.5 (Panel A): Multinomial Logit Regression of Managers' Earnings Management Choices	89
(Panel B): Multinomial Logit Regression of Managers' Earnings Management Choices – Short-term Managers	89
(Panel C): Multinomial Logit Regression of Managers' Earnings Management Choices – L-term Managers	89
Table 2.6: Managers' Favorable Earnings Management Choices	93

LIST OF FIGURES

	Page
Figure 2.1: Empirical Frequency Graph of Institutional Investors' Monitoring Activities for All Conditions with Long-term-oriented Institutional Investors	83
Figure 2.2: Empirical Frequency Graph of Managers' Earnings Management Choices for All Conditions with Long-term-oriented Institutional Investors	88

SUMMARY

In the first essay, I examine the association between auditor industry specialization and earnings management choices. Prior research suggests that industry specialist auditors constrain accounting-based earnings management. But such actions may cause client companies to seek alternative means to manage earnings. Specifically, companies that hire industry specialist auditors may alter operating decisions to meet earnings targets, referred to as real activities manipulation. This essay investigates whether clients of industry specialist auditors that have an incentive to manage earnings are constrained from managing earnings through accruals manipulation and, therefore, are more likely to engage in real activities manipulation. Further, I examine whether operating performance declines for firms suspected of real activities manipulation. My findings indicate that clients of industry specialist auditors with incentives to manage earnings have lower absolute value of accruals relative to firms with incentives to manage earnings that do not hire industry specialist auditors. These clients of industry specialist auditors are also more likely to engage in real activities manipulation, suggesting this is a possible unintended consequence of hiring an industry specialist auditor. I also document evidence that firms suspected of real activities manipulation have lower future operating performance relative to firms not suspected of real activities manipulation.

In the second essay, I examine the association between the tightness of accounting standards and earnings management choices. Prior studies suggest that managers switch from accounting-based earnings management to real activities manipulation in response

to tightening accounting standards. My study investigates this line of reasoning. I develop an analytical model and conduct an experimental examination of the effect of flexibility of accounting standards under different institutional environments. I find that managers switch from accounting-based earnings management to real activities manipulation with tightening accounting standards *only* when the institutional investors have a *short-term* investment horizon. In contrast, when managers are monitored by institutional investors with a *long-term* investment horizon, they do not engage in such behavior.

CHAPTER I

AUDITOR INDUSTRY SPECIALIZATION AND REAL ACTIVITIES MANIPULATION

1.1 Introduction

Healy and Wahlen (1999) document two forms of earnings management. The first form involves choosing appropriate accounting methods to reach desired levels of earnings (i.e., accounting-based earnings management), and the second uses the timing and/or magnitude of operating decisions to reach desired earnings (i.e., real activities manipulation). The former is relatively transparent in the year of the change; it may be flagged by the auditor in a public way and may receive footnote disclosure. The latter, which, merely contributes to operating decisions, may be harder for an outsider to observe (Schipper 1989) and is unlikely to be judged to be violations of securities law.

A body of literature (e.g., Maletta and Wright 1996; Solomon et al. 1999; Krishnan 2003) shows that industry specialist auditors have the abilities and incentives to detect and constrain accounting-based earnings management and, thus, enhance the quality of earnings.¹ My paper follows this line of reasoning, but extends to earnings management that encompasses real activities manipulation. Most prior studies that investigate the effect of auditor industry specialization (e.g., Krishnan 2003) focus on the opportunistic use of accruals to window-dress financial statements, and, for the most part, do not

¹ Earnings increases that are accompanied by high accruals, suggest low-quality earnings.

consider that firms may alter *operating decisions* to meet earnings targets. In contrast, my study builds on the definition of earnings management discussed by Healy and Wahlen (1999) and focuses on how an industry specialist auditor affects a client's choices of two earnings management vehicles: earnings management through changing operating decisions (i.e., real activities manipulation) and through manipulating accounting accruals (i.e., accounting-based earnings management). This paper contributes to the body of literature on the effects of auditor industry specialization on earnings management through changing operating activities. It also adds to the literature on the consequences of such behaviors.

I investigate whether the constraint imposed by an industry specialist auditor on accounting-based earnings management indirectly increases real activities manipulation. When the manager's ability to employ accounting-based earnings management is limited, only real activities are available to manipulate earnings. Hence, the fact that an industry specialist auditor constrains accounting-based earnings management may force firms to *switch to* real activities manipulation if the firm faces a strong incentive² to adjust earnings. Further, I investigate whether real activities manipulation is harmful in the long run. Real activities manipulation is accomplished by a wide variety of operating decisions. These operating decisions may be suboptimal and weaken the firms' operating performance in the long run. For example, price discounts offered to boost current year earnings may lead to lower cash inflows in the future. I examine the association between real activities manipulation and the firms' long-run operating performance.

² Incentives may come from managers' compensation contracts and/or investment incentives.

I find that the clients of industry specialist auditors with strong incentives to manage earnings have lower accounting-based earnings management and higher real activities manipulation. The results suggest that as auditors' market share increases, clients use less accounting-based earnings management and more real activities manipulation to achieve earnings targets. Moreover, I provide some evidence that firms engaged in real activities manipulation produces lower operating performance in future years relative to the matched firm not engaged in real activities manipulation.

The remainder of the paper is organized as follows: Section 1.2 discusses the motivation for firms to hire industry specialist auditors, how such decisions can impact managers' earnings management behaviors and the consequences of such behaviors. Further, I develop the testable hypotheses. Section 1.3 describes how to measure auditor industry specialization and real activities manipulation, as well as the sample selection procedure and descriptive statistics. Section 1.4 provides the estimation models and empirical results for the association between auditor industry specialization and real activities manipulation. Section 1.5 documents the methodology for testing the consequences of real activities manipulation and presents the results. Section 1.6 offers concluding remarks.

1.2 Literature Review and Hypotheses Development

1.2.1 Motives to Hire Industry Specialist Auditors

Research on the demand for quality-differentiated audits has drawn on the agency and contracting literature. The argument is that as agency costs increase, a demand for higher quality audits arises, either voluntarily undertaken by managers as a bonding mechanism or externally imposed as a monitoring mechanism by stockholders and/or debtholders (Watts and Zimmerman 1986). The demand for auditing in general, and for quality-differentiated auditing in particular, is assumed to be the efficient resolution of costly contracting problems.

Industry specialization undoubtedly affects the nature of auditing experience and the development of expertise, which may permit individual specialists to better identify and address industry specific problems and issues (Solomon and Shields 1995). An increase in industry expertise at the individual level is correlated with an increase in industry expertise at the firm level. Benefits at the audit-firm level accrue because industry specialization facilitates the transfer of learned knowledge and developed technology from one client to other similar clients. Therefore, industry specialist auditors are expected to provide higher quality audits than non-specialists.

Two main factors may influence clients' decisions to hire auditors with industry specialization. One factor is the complexity of client operations—companies with complex operations are more likely to hire industry specialist auditors because many operations are related to unique features of the industry. Industry specialists are capable of providing a cost-efficient audit for such companies.

A second factor is a firm's intent to seek additional financing either from the credit or equity markets. For example, debt contracts are usually written with financial covenants such that the borrower must maintain certain financial ratios. Creditors may feel more confident in making loans to firms if the numbers used to monitor the loan are audited by industry specialist auditors. In addition, the company that plans to tap the capital markets is likely to choose an industry specialist auditor as a means of convincing capital suppliers that the firm's earnings quality is high.

1.2.2 The Impact of Auditor Industry Specialization on Earnings Quality

Prior research suggests that auditor industry specialization³ constrains earnings management through pure accruals manipulation. Krishnan (2003) examines the association between auditor industry expertise and a client's level of absolute discretionary accruals. He finds that clients of non-specialist auditors report absolute discretionary accruals that are, on average, 1.2 percent of total assets higher than the discretionary accruals reported by clients of specialist auditors.

Balsam et al. (2003) compare discretionary accruals (DAC) and earnings response coefficients⁴ (ERC) of firms audited by industry specialists with those of firms not audited by industry specialists. They find clients of industry specialist auditors have lower DAC and higher ERC than clients of non-specialist auditors.

³ Industry specialists can be measured in terms of both auditor market share in an industry and the industry share in the auditor's portfolio of client industries.

⁴ The earnings response coefficient indicates the investors' response to an earnings surprise and reflects a user's view of financial reporting credibility. The intuition underlying this line of research is that an earnings surprise will result in a greater stock price reaction when investors perceive the reported earnings to be more informative.

Francis et al. (2004) examine the association between earnings quality and auditor industry leadership at the city-specific level. They define earnings quality as the magnitude of abnormal accruals and the likelihood of meeting or just beating analysts' earnings forecast. Earnings quality is judged to be lower if abnormal accruals are larger, or if firms are more likely to manipulate reported earnings to meet or beat forecasted earnings targets. They report that earnings quality is higher when the auditor is the city-specific industry leader.

The extant evidence suggests that industry specialist auditors constrain accounting-based earnings management. However, managers still have incentives to adjust earnings to maximize their wealth. These incentives are created by contracts that are “explicitly” based on reported earnings (e.g., management compensation plans and debt agreements); contracts that are “implicitly” based on reported earnings (e.g., implicit contracts between the firm and its customers and suppliers); and specific situations (such as import relief negotiations, and management buyouts) where reported earnings also play an important role (Becker et al. 1998). Therefore, the constraints of accruals-based manipulation from industry specialist auditors may motivate managers to alter real activities during the year with the specific objective of meeting earnings targets.

Hypothesis 1a: Clients of industry specialist auditors with incentives to manage earnings are constrained to engage in accounting-based earnings management by their auditors.

Hypothesis 1b: The constraints of accounting-based earnings management imposed by industry specialist auditors indirectly increase the clients with incentives to manage earnings to switch to real activities manipulation.

1.2.3 Consequences of Real Activities Manipulation

Schipper (1989) defines earnings management as the purposeful intervention in the external financial reporting process with the intent of obtaining some private gain. The desire to achieve a high stock price and/or to meet the earnings benchmark induces corporate managers to engage in earnings management, inflating current earnings at the expense of the firms' economic values.⁵

To meet a certain earnings target, managers can wait until the year-end to use discretionary accruals to manage reported earnings. But this strategy runs the risk that the amount of earnings that needs to be manipulated is greater than the available discretionary accruals because the discretion on accruals is bounded by GAAP (Barton and Simko 2002). Given the underlying economic transactions of a firm, manager's ability to report accrued earnings is limited. As a result, the earnings target may not be

⁵ Although managers themselves, as well as policy makers and members of the media, have voiced concern over this issue, many academics dismiss these worries as unfounded. The argument (e.g., Jensen 1986) is based on the tenet of efficient markets. Because it is unlikely that the market can be systematically fooled by inflated earnings, managers who undertake actions that are not in the best long-run interests of their companies will see stock price suffer. Hence, managers who are concerned with high stock prices will not sacrifice long-run performance to inflate current earnings. However, Stein (1989) argues that even a fully efficient market can lead managers to behave myopically. The situation is analogous to the prisoner's dilemma. The preferred cooperative equilibrium would involve no myopia on the part of managers and no conjecture of myopia by the stock market. Unfortunately, this cannot be sustained as a Nash equilibrium. If the market conjectures no myopia, managers will have an incentive to fool it by boosting current earnings.

reached using discretionary accruals at year end. Managers can reduce this risk by manipulating real operating activities during the year. Real activities manipulations are less subject to this constraint. Another advantage of altering real activities to manipulate earnings is that auditors and regulators are less likely to be concerned with such behaviors.⁶ However, real activities manipulation is costly, including the possibility that cash flows in future periods are affected negatively by the actions taken currently to increase earnings.

If a manager engages in real activities manipulation and deviates from the optimal level of operating activities, long run economic consequences may arise. Stein (1989) shows that, in the face of a rational stock market, managers sacrifice total cash flows to boost near-term income in an effort to influence the market's current assessment of the firm's value. Along similar lines, Jensen and Murphy (1990) point out that on average, CEOs enjoyed a \$3 rise in their own wealth for every \$1000 decrease in shareholders' wealth. An implication of their finding is that a CEO might choose to undertake a project that would cost shareholders \$1.00 but bring \$0.003 in private benefits.

Most evidence on real activities manipulation centers on the opportunistic reduction of discretionary expenses such as R&D expenses (e.g., Bushee 1998; Baber et al. 1991). Although cutting these discretionary expenses can boost earnings to meet certain targets,

⁶ The rise of accounting-based earnings management in recent years has prompted calls for reforms to restore investor confidence in reported accounting information. Regulators and standard setters make every effort to improve the transparency of financial statements and to enhance the monitoring mechanisms of discretionary accruals.

it entails the risk of lower future cash flow from operations (CFO) because this action generally reduces cash outflows and, in turn, has a positive effect on current CFO. In the subsequent years, this positive effect may be reversed.

Thomas and Zhang (2002) provide evidence on real activities manipulation through overproduction. That is, managers produce more than the quantity required to meet sales and normal target inventory levels to decrease reported COGS, resulting in increases in reported earnings. Although it improves the profitability margin, the firm incurs costs and lower than normal CFO.

The recent study (i.e., Roychowdhury 2006) finds that managers offer price discounts to boost sales. Managers provide deep discounts towards fiscal year end to increase sales. The increased sales volume that is generated is likely to disappear when the firm re-establishes the old prices. This action, in fact, moves the future profitability to the current period. As a result, the future profitability may be harmed by sales management.

In all, a firm is typically harmed when managers manipulate earnings through real activities. First, when managers manipulate earnings to meet earnings targets, contracts require firms to deliver larger financial rewards to these managers. Second, the time and effort managers devote to manipulation are often time and effort they might otherwise devote to productive activities. Third, Bar-Gill and Bebchuk (2003) have shown that the possibility of manipulating real activities has real economic costs. That is, companies might not pursue efficient projects to maximize the firm's value. It is corroborated by Bhojraj and Libby's (2005) experimental study, which suggests that managers more often choose projects that they believe will maximize short-term earnings (and price) as opposed to

total cash flows in response to increased capital market pressure. Although prior studies suggest that managers will sacrifice long-term performance if they have an incentive to adjust near-term earnings, little research directly tests this issue empirically. Hence, in the second hypothesis, I examine whether real activities manipulation affects firms' future performances. Specifically, I investigate the extent to which subsequent operating performance is affected by real activities manipulation.

Hypothesis 2: Firms with incentives to hire a specialist and to engage in earnings management undertake real activities manipulation, lowering future operating performance.

1.3 Measurement of Auditor Industry Specialization and Real Activities Manipulation and Sample Selection

1.3.1 Measures of Auditor Industry Specialization

Market share⁷ and portfolio share⁸ approaches are frequently used as proxies for auditor industry specialization. Hogan and Jeter (1999) find evidence of an unstable relationship between market share and portfolio approaches. They report a positive relation between these two measures for two firms, a negative relation for two firms, and no relation for

⁷ The market share approach defines an industry specialist as an audit firm that has differentiated itself from its competitors in terms of market share within a particular industry. This approach assumes that by observing the relative market shares of the accounting firms serving a particular industry, one can deduce industry specific knowledge. The firm with the largest market share has developed the largest knowledge base within the particular industry. Moreover, significant market share within an industry reflects significant investment by audit firms in developing industry-specific audit technologies, with the expected benefits being increased economies of scale and improved audit quality.

⁸ The portfolio share approach considers the relative distribution of audit services across the various industries for each audit firm. This approach is related more to audit firm strategies. The audit firm's client industries with the largest portfolio shares reflect industries where the audit firms have developed significant knowledge bases and large portfolio shares reflect significant investments by audit firms in developing industry audit technologies. Using this approach, firms presumably have devoted the most resources into developing industry-specific knowledge, even if they do not maintain a leading market share in that industry. In this sense, the portfolio share approach measures the auditor's self-identified market specialization, but not the relative advantage over other auditors.

one firm. Little research provides justification on which method is more appropriate to use as a proxy for auditor industry specialization.

In this paper, I use market share as a proxy for auditor industry specialization because it represents industry superiority over other auditors. The higher the market share, the more industry expertise and experience the auditor has relative to its competitors. Having high market share (dominant market share) also implies that the auditor successfully differentiates itself from competitors in terms of audit quality (Mayhew and Wilkins 2002).⁹

Auditors market shares are computed as follows: auditors market share = sum of assets of all clients of a particular audit firm in a certain industry / total assets of clients in this industry.¹⁰ Following Palmrose (1986), I designate audit firms as industry specialists if they have within-industry market shares in excess of $(1 \text{ firm}/N \text{ firms} * 1.20) \%$. The Palmrose measure modified for the big auditors seems to capture the spirit of differentiation (Neal and Riley 2004).

1.3.2 Measures of Real Activities Manipulation

⁹ In contrast, an auditor with a high portfolio share in an industry is not necessarily an industry specialist auditor. For instance, in an extreme case, a small auditor with a very high portfolio share in a certain industry is very likely not an industry specialist compared to its competitors (e.g., other Big N auditors). It indicates that this auditor is not an industry expert relative to others although it spends a large amount of resources on developing a high portfolio share in that industry.

¹⁰ The auditor's industry share in each two-digit SIC code is computed using the population of available observations comprising only Big N auditors from COMPUSTAT for each year.

Following the prior studies on real activities manipulation (e.g., Roychowdhury 2006; Gunny 2005; Zang 2005), I examine the following real activities manipulation: sales manipulation, reduction of discretionary expenditures, and overproduction. I measure the abnormal level of each type of real activities manipulation as the residual from the relevant estimation model.

Roychowdhury (2006) defines sales manipulation as managers' attempts to temporarily increase sales during the year by offering price discounts or more lenient credit terms, which lowers the cash inflow per sale. Hence, sales manipulation is expected to lead to lower current-period CFO. I use Roychowdhury's (2006) model to estimate the normal level of CFO:

$$CFO_t / A_{t-1} = \alpha_0 + \alpha_1 * (1 / A_{t-1}) + \beta_1 (S_t / A_{t-1}) + \beta_2 (\Delta S_t / A_{t-1}) + \varepsilon_t$$

where CFO= Cash flow from operations;
 S = Net sales;
 A= Total assets.

This model is developed based on Dechow et al. (1998). The normal level of CFO is expressed as a linear function of sales and change in sales. For every firm-year, abnormal cash flow from operations (ABCFO) is the difference between the actual CFO and the expected CFO calculated using the corresponding industry-year model.

Another type of real activities manipulation is the reduction of discretionary expenses. If managers reduce discretionary expenditures (e.g., R&D, advertising, and SG&A expenses) to boost earnings to the targets, abnormally low discretionary expenses are

expected. Following Roychowdhury (2006), I estimate the normal level of discretionary expenses using the equation below:

$$EXP_t / A_{t-1} = \alpha_0 + \alpha_1 * (1 / A_{t-1}) + \beta (S_{t-1} / A_{t-1}) + \varepsilon_t$$

where EXP = Discretionary expenses = R&D + Advertising + Selling, General and Administrative expenses;
 S = Net sales;
 A = Total assets.

Roychowdhury (2006) develops this model under the assumptions in Dechow et al. (1998) and assumes that discretionary expenditures are a linear function of sales. For every firm-year, abnormal discretionary expenditure (ABEXP) is the difference between the actual discretionary expenses and the expected discretionary expenses calculated using the corresponding industry-year model.¹¹

The third type of real activities manipulation is to produce more goods than necessary to meet expected demand (i.e., overproduction). Overproduction reduces cost of goods sold (COGS), which results in higher operating margin. However, additional holding and production costs may be incurred and are very likely to increase marginal costs, which results in higher annual production costs relative to sales. I use Roychowdhury's (2006) model to estimate the normal level of production costs:

$$PROD_t / A_{t-1} = \alpha_0 + \alpha_1 * (1 / A_{t-1}) + \beta_1 (S_t / A_{t-1}) + \beta_2 (\Delta S_t / A_{t-1}) + \beta_3 (\Delta S_{t-1} / A_{t-1}) + \varepsilon_t$$

where PROD = Production costs = COGS + Δ Inventory;
 S = Net sales;

¹¹ I also break down the discretionary expenses. Specifically, I examine the discretionary R&D expenses and discretionary SG&A expenses. Zang's (2005) models are used to calculate the abnormal R&D expenses and the abnormal SG&A expenses.

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

This model is based on Dechow et al. (1998). The paper find that COGS and changes in inventory are associated with sales and changes in sales. For every firm-year, abnormal production cost (ABPROD) is the difference between the actual production costs and the expected production costs calculated using the corresponding industry-year model.

1.3.3 Sample Selection

My tests employ data from two sources. Financial data is obtained from COMPUSTAT. Analyst forecast data is obtained from the I/B/E/S summary file. I study the sample period from 1989 to 2004. Consistent with previous studies (e.g., Krishnan 2003), I exclude the financial services industry (SIC 6000-6999) and the utilities industry (SIC 4400-5000) to improve the comparability of results among sample firms. My sample is constrained to Big N auditors to eliminate brand name effect. In addition, I require at least 15 observations for each industry-year grouping to ensure there are sufficient data to compute each proxy for earnings management (e.g., ABDAC and ABCFO).

My tests are conducted based on the firms that have incentives to manipulate earnings. Specifically, I focus on the two groups of firms that are well identified by the prior literature as the firms with strong incentives to manage earnings: (1) firms that just meet analysts' forecasts and (2) firms that are issuing new equities.¹²

¹² Healy and Wahlen (1999) show that the capital market provides the major incentive for managers to manipulate reported earnings in an attempt to influence short-term stock prices. Many recent studies focus on two types of capital market incentives: meeting earnings benchmark (e.g., analyst consensus estimate) and issuing new equities. For example, Burgstahler and Eames (1998) find that firms manage earnings to meet analysts' forecasts. Teoh et al. (1998) present evidence that earnings management occurs before the issuance of new equities.

I form the sample that includes firms that just meet analysts' forecasts consistent with Dechow et al. (2000). Forecast errors (FE) are computed by subtracting forecast earnings¹³ from realized earnings reported by I/B/E/S. The benchmark beater class includes all firm-years that exactly meet the consensus analysts' forecasts. The equity issuance group includes the firms that are going to issue new equities in the next year. If the firm issues new equity in the current year, I identify the firm in the past year as the firm-year that the managers have strong incentives to manipulate earnings.

1.3.4 Descriptive Statistics

Table 1.1 reports the descriptive statistics for sample firms that just meet the analysts' forecasts. Seven hundred and twenty-five of 2,190 firms (33%) are audited by specialist auditors. The results of Table 1.1 indicate that clients of specialist auditors are larger, and have lower market-to-book ratio than clients of non-specialist auditors. More important, clients of specialist auditors report lower ABDAC, lower ABCFO, lower ABEXP¹⁴, and higher ABPROD than clients of non-specialist auditors. Table 1.2 documents the descriptive statistics for firms before new equity issuance.¹⁵ It shows that clients of industry specialist auditors are generally larger and have lower ABDAC and

¹³ I use the most recent median I/B/E/S forecasts of annual earnings for the current year as forecast earnings.

¹⁴ The result is not significant for ABEXP. I also examine the two specific kinds of discretionary expenditures (i.e., R&D expenses and SG&A expenses). Generally, clients of industry specialist auditors and clients of non-specialists have the same level of ABRD and ABSGA.

¹⁵ The final sample size is 23,079. Six thousand six hundred and thirty-seven firm-years (29%) are audited by industry specialist auditors.

higher ABPROD than clients of non-specialists.¹⁶ The descriptive statistics from both samples are consistent with Hypothesis 1a that industry specialist auditors constrain accounting-based earnings management. The results also support Hypothesis 1b, showing that clients of industry specialists have more real activities manipulation.

¹⁶ ABCFO and ABEXP are not significantly different between clients of specialist auditors and clients of non-specialists.

Table 1.1: Descriptive Statistics on Companies Audited by Industry Specialist Auditors and Non-specialist Auditors (Firms that just meet analysts' forecasts)

	Specialist	Non-specialist	Test Statistics
	Mean [Median] (S.D.)	Mean [Median] (S.D.)	Z-Stat. [Z-Stat.]
SIZE	6.2506 [5.8797] (2.0656)	5.6409 [5.4812] (1.7925)	5.9846*** [3.8588***]
MTB	3.6031 [2.4728] (7.6113)	3.7071 [2.5231] (10.0963)	-0.0171 [-0.8628]
ROA	0.0313 [0.0608] (0.2057)	0.0150 [0.0602] (0.3690)	0.4308 [0.1362]
ABDAC	0.2696 [0.0936] (0.4567)	0.3138 [0.1145] (0.4956)	-2.0852*** [-2.4969**]
ABCFO	0.1198 [0.0965] (0.3297)	0.1447 [0.1241] (0.3294)	-1.9863** [-2.4969**]
ABPROD	-0.0846 [-0.0672] (0.3731)	-0.1005 [-0.0967] (0.4130)	2.2909** [2.2260**]
ABEXP	0.01903 [-0.0702] (1.1206)	0.0928 [-0.0654] (1.5059)	-0.4128 [-0.3178]
ABRD	-0.0030 [-0.0112] (0.1397)	-0.0122 [-0.0168] (0.1073)	1.4749 [2.0429**]
ABSGA	0.0061 [0.0014] (0.1943)	0.0178 [0.0099] (0.2006)	-1.4541 [-1.4981]

*** significant at the 1% level ** significant at the 5% level *significant at the 10% level
Two-tailed.

For variable definitions, refer to Appendix A.

Table 1.2: Descriptive Statistics on Companies Audited by Industry Specialist Auditors and Non-specialist Auditors (Firm-years before New Equity Issuance)

	Specialist	Non-specialist	Test Statistics
	Mean [Median] (S.D.)	Mean [Median] (S.D.)	Z-Stat. [Z-Stat.]
SIZE	5.4893 [5.2891] (2.1432)	4.5785 [4.4810] (2.0727)	27.9117*** [21.1052***]
MTB	4.4685 [2.2236] (71.2632)	3.9105 [2.2704] (70.2587)	-0.0833 [-1.5270]
ROA	-0.0293 [0.0429] (0.3161)	-0.0757 [0.0325] (0.5707)	7.3117*** [6.4465***]
ABDAC	0.2471 [0.0927] (0.4181)	0.2780 [0.1077] (0.4544)	-6.8199*** [-6.3508***]
ABCFO	0.0680 [0.0639] (0.3362)	0.0546 [0.0656] (0.3593)	0.8760 [-0.5339]
ABPROD	-0.0524 [-0.0461] (0.3531)	-0.0698 [-0.0580] (0.3794)	3.4173*** [3.7432***]
ABEXP	-0.0163 [-0.0637] (1.0924)	0.0368 [-0.0623] (1.3285)	-1.1043 [-0.3303]
ABRD	-0.0011 [-0.0059] (0.0992)	-0.0034 [-0.0112] (0.1178)	5.9369*** [7.1736***]
ABSGA	0.0096 [0.0014] (0.2238)	0.0042 [0.0000] (0.2466)	1.6509 [1.1821]

*** significant at the 1% level ** significant at the 5% level *significant at the 10% level
Two-tailed.

For variable definitions, refer to Appendix A.

1.4 Research Method and Empirical Results for Hypothesis 1

1.4.1 Research Method for Testing Hypothesis 1a

Hypothesis 1a predicts that industry specialist auditors constrain clients' abilities to use accounting-based earnings management to manipulate earnings. It has been addressed in the prior literature, but I am confirming the results using my samples (i.e., firms with strong incentives to manage earnings). Consistent with the prior studies, I use both a dichotomous and a continuous measure of auditor industry specialization. Clients of industry specialist auditors (SPEL) are expected to have lower ABDAC. In the regression with the continuous measure for auditor industry specialization, a non-linear relation between auditor's market share and ABDAC is examined. Both auditor's market share (Mktshare) and its squared term (Mktsharesq) are included because Balsam et al. (2003) find a non-linear relationship between the auditor's industry specialization and earnings quality. Their findings are consistent with the notion that benefits to auditor industry specialization begin only after the auditor achieves a certain threshold level of industry knowledge. Hence, I predict a positive sign on Mktshare and a negative sign on Mktsharesq. The following regressions are adopted to test Hypothesis 1a:

$$ABDAC_t = \beta_0 + \beta_1 \times SIZE_t + \beta_2 \times MTB_t + \beta_3 \times NI_t + \beta_4 \times SPEL_t + \mu_t$$

$$ABDAC_t = \beta_0 + \beta_1 \times SIZE_t + \beta_2 \times MTB_t + \beta_3 \times NI_t + \beta_4 \times Mktshare_t + \beta_5 \times Mktshare_t^2 + \mu_t$$

To control for size effects, size (SIZE) defined as the natural logarithm of total assets is included. I expect a negative sign on SIZE because large firms are more likely to be "value firms" which are shown to have lower accruals. The logarithm of market-to-book

ratio (MTB) is included to control for growth opportunities and/or the life cycle of the firm. Firms with high MTB are typically growth firms which have higher accruals. So a positive sign is expected on MTB. I also include net income scaled by market value (NI) as a control variable for a firm's profitability.

Research documents that clients of industry specialist auditors have higher earnings quality. Higher earnings quality can be represented by lower level of absolute value of discretionary accruals. That is, clients of industry specialist auditors have less discretion on accruals, consistent with Krishnan (2003) and Balsam et al. (2003). Both studies suggest that industry specialist auditors constrain both high discretionary accruals and low discretionary accruals. Hence, the absolute value of discretionary accruals is used in my study. The absolute value of discretionary accruals (ABDAC) represents accounting-based earnings management. ABDAC is determined using the cross-sectional version of the Jones (1991) model.¹⁷

1.4.2 Empirical Results of Hypothesis 1a from the First Sample (Firms that Just Meet Analysts' Forecasts)

I test the Hypothesis 1a with sample firms that just meet analysts' forecasts. Table 1.3 documents the results of the regressions of ABDAC on auditor industry specialization

¹⁷ I use the absolute value of discretionary accruals as a proxy for accounting-based earnings management. $ACCR_t/A_{t-1} = \alpha * (1/A_{t-1}) + \beta_1 * (\Delta S_t/A_{t-1}) + \beta_2 * (PPE_t/A_{t-1}) + \varepsilon_t$ where A_{t-1} is the total assets at the end of the prior period, ΔS_t is the change in sales over last period's sales and PPE_t denotes property, plant and equipment. This equation is estimated for every industry and year. $ACCR_t$ is the total accruals for each firm in year t. The model is estimated separately for each combination of two-digit SIC codes and calendar years. Fitted values are defined as expected accruals. The error term in the model represents the unexplained or discretionary component of accruals.

measured by both a continuous variable and a dichotomous variable. The results indicate that clients of industry specialist auditors have lower ABDAC. In addition, the results show that Mktshare and Mktsharesq have positive and negative coefficients, respectively. This finding is consistent with prior study that threshold levels of industry knowledge must be reached before benefits accrue. In general, the findings are consistent with the notion that industry specialist auditors mitigate accounting-based earnings management more than non-specialist auditors.

Table 1.3: The OLS Regression of Absolute Abnormal Discretionary Accruals on Industry Specialist Auditors over 1989-2004 (Firms that just meet analysts' forecasts)

$$ABDAC_t = \beta_0 + \beta_1 \times SIZE_t + \beta_2 \times MTB_t + \beta_3 \times NI_t + \beta_4 \times SPEL_t + \mu_t$$

$$ABDAC_t = \beta_0 + \beta_1 \times SIZE_t + \beta_2 \times MTB_t + \beta_3 \times NI_t + \beta_4 \times Mktshare_t + \beta_5 \times Mktshare_t^2 + \mu_t$$

Independent Variables	Predicted Sign	Coefficients	t value	Coefficients	t value
Intercept	?	0.3172	9.18***	0.1457	3.44***
SIZE	-	-0.0104	-1.91**	-0.0131	-2.37***
MTB	+	0.0533	3.98***	0.0525	3.96***
NI	?	-0.1321	-7.07***	-0.1260	-6.81***
Mktshare	+			1.8299	6.77***
Mktsharesq	-			-3.4014	-6.82***
SPEL	-	-0.0374	-1.70**		
Adjusted R ² (%)		2.97		4.88	
*** significant at the 1% level ** significant at the 5% level *significant at the 10% level One- tailed where signs are predicted, two-tailed otherwise. For variable definitions, refer to Appendix A.					

1.4.3 Empirical Results of Hypothesis 1a from the Second Sample (Firm-years before New Equity Issuance)

I test Hypothesis 1a using the sample including firm-years that are issuing new equities. The results are generally consistent with those in the first sample (i.e., firms that just meet analysts' forecasts). Table 1.4 presents the results from the regression of ABDAC on

auditor industry specialization. The results are consistent with both Hypothesis 1a and the results in the first sample that industry specialist auditors constrain accounting-based earnings management.

Table 1.4: The OLS Regression of Absolute Abnormal Discretionary Accruals on Industry Specialist Auditors over 1989-2004 (Firm-years before New Equity Issuance)

$$ABDAC_t = \beta_0 + \beta_1 \times SIZE_t + \beta_2 \times MTB_t + \beta_3 \times NI_t + \beta_4 \times SPEL_t + \mu_t$$

$$ABDAC_t = \beta_0 + \beta_1 \times SIZE_t + \beta_2 \times MTB_t + \beta_3 \times NI_t + \beta_4 \times Mktshare_t + \beta_5 \times Mktshare_t^2 + \mu_t$$

Independent Variables	Predicted Sign	Coefficients	t value	Coefficients	t value
Intercept	?	0.2803	34.10***	0.2351	25.55***
SIZE	-	-0.0104	-7.27***	-0.0152	-10.23***
MTB	+	0.0411	12.74***	0.0405	12.60***
NI	?	-0.0000	-1.15	-0.0000	-1.06
Mktshare	+			0.6975	10.29***
Mktsharesq	-			-1.2116	-9.20***
SPEL	-	-0.0157	-2.40***		
Adjusted R ² (%)		1.05		1.50	
*** significant at the 1% level ** significant at the 5% level *significant at the 10% level One- tailed where signs are predicted, two-tailed otherwise. For variable definitions, refer to Appendix A.					

1.4.4 Research Method for Testing Hypothesis 1b

Hypothesis 1b predicts that the constraints of accounting-based earnings management result in clients of the industry specialists engaging in more real activities manipulations.

The OLS regression is not appropriate to test Hypothesis 1b. One of the central methodological issues in the OLS regression is the endogenous character of the abnormal discretionary accruals: it is true that the abnormal discretionary accruals can be seen as a key input for the abnormal cash flow from operations, but it is necessary to recognize that the abnormal discretionary accruals is determined to a large extent by the abnormal cash

flow from operations. Therefore, instrumental variables (IV) estimation is used due to endogeneity of the abnormal discretionary accruals.

I include two IVs (i.e., auditor's market share in a certain industry and its squared term) in the model. Since more than one than instruments are selected, various tests for the validity of the instruments and the quality of fit can be performed within this framework. The following two stage least squares (2SLS) regressions are used to test Hypothesis 1b:

First Stage:

$$ABDAC_t = \beta_0 + \beta_1 \times SIZE_t + \beta_2 \times MTB_t + \beta_3 \times NI_t + \beta_4 \times Mktshare_t + \beta_5 \times Mktshare_t^2 + \mu_t$$

Second Stage (Sales Manipulation):

$$ABCFO_t = \beta_0 + \beta_1 \times SIZE_t + \beta_2 \times MTB_t + \beta_3 \times NI_t + \beta_4 \times ABDAC_t + \mu_t$$

Second Stage (Reduction of Discretionary Accruals):

$$ABEXP_t = \beta_0 + \beta_1 \times SIZE_t + \beta_2 \times MTB_t + \beta_3 \times NI_t + \beta_4 \times ABDAC_t + \mu_t$$

Second Stage (Overproduction):

$$ABPROD_t = \beta_0 + \beta_1 \times SIZE_t + \beta_2 \times MTB_t + \beta_3 \times NI_t + \beta_4 \times ABDAC_t + \mu_t$$

Building on the finding from Hypothesis 1a that industry specialist auditors constrain accounting-based earnings management, Hypothesis 1b predicts that such constraints force firms with strong incentives to manage earnings to switch to real activities manipulation. Thus, lower ABDAC is expected to be associated with lower ABCFO, lower ABEXP, and/or higher ABPROD in the second stage.¹⁸

¹⁸ In addition, I adopt the following OLS regressions to directly test the association between auditor industry specialization (both a continuous and a dichotomous variables are examined) and real activities manipulation.

$$ABCFO_t / ABEXP_t / ABPROD_t = \beta_0 + \beta_1 \times SIZE_t + \beta_2 \times MTB_t + \beta_3 \times NI_t + \beta_4 \times SPEL_t + \mu_t$$

$$ABCFO_t / ABEXP_t / ABPROD_t = \beta_0 + \beta_1 \times SIZE_t + \beta_2 \times MTB_t + \beta_3 \times NI_t + \beta_4 \times Mktshare_t + \beta_5 \times Mktshare_t^2 + \mu_t$$

1.4.5 Empirical Results of Hypothesis 1b from the First Sample (Firms that Just Meet Analysts' Forecasts)

Table 1.5 presents the results from the estimation of the second stage of 2SLS.¹⁹ Three separate models are reported for each type of real activities manipulation. I find that ABDAC is positively and significantly associated with ABCFO and ABEXP. The results suggest that the constraints of accounting-based earnings management increase real activities manipulation such as sales manipulation and reduction of discretionary expenses, when firms face a strong incentive to meet analysts' forecasts.²⁰

If the constraints of industry specialist auditors on ABDAC force the firms to engage in real activities manipulation, clients of industry specialist auditors with strong incentives to manage earnings are expected to show lower ABCFO, lower ABEXP, and/or higher ABPROD. Moreover, I investigate the non-linear relation between auditors' market shares and real activities manipulation. If accounting-based earnings management and real activities manipulation have a substitution effect, auditors' market shares are expected to have a concave (convex) relation with ABCFO and/or ABEXP (ABPROD) because the association between auditors' market shares and ABDAC is a concave function.

¹⁹ A test for relevance of the instrument is conducted using the Anderson Canonical correlations LR test of whether the equation is identified. The test is a check of the excluded instrument (the exogenous variable not included in the second stage regression). The instrument variable here is the auditor market share. The test statistic is a measure of the instrument relevance, so a rejection of the null indicates that the model is identified and that the auditor market share is a relevant instrument. Next, a test for the validity of the instrument is applied (a test for no correlation of the instrument with the error term and the endogeneity problem of the instrument), by means of a Sargan test of over-identifying restrictions. The null is that the excluded instrument (e.g., the auditor market share) is not correlated with the error term in the second-stage (i.e., that is the instrument variable is correctly excluded from the ABCFO/ABPROD/ABEXP equations). Under this null, the statistic is distributed as chi-squared with degrees of freedom equal to the number of over-identifying restrictions. The result indicates that the auditor market share is an exogenous variable in the second stage regressions and is a valid instrument. Both tests suggest that the auditor market share is a valid instrument. Moreover, the result of the over-identification test mitigates the concern of self-selection. That is, the auditor market share is not an endogenous variable in the ABCFO equation.

²⁰ The results from the regressions of ABCFO/ABEXP/ABPROD on auditor industry specialization support the expectation that clients of industry specialist auditors have lower ABCFO and ABEXP than clients of non-specialists. Moreover, the coefficients on Mktshare and Mktsharesq are positive and negative, respectively. The findings are consistent with my expectation that when auditors' market shares are lower than a certain threshold, clients have lower real activities manipulation because their abilities to use accounting-based earnings management are not mitigated. However, when auditors' market shares exceed the threshold, clients exhibit higher real activities manipulation because their abilities to use accounting-based earnings management are constrained.

Table 1.5: 2SLS Regression of Abnormal Cash Flow from Operations on Absolute Discretionary Accruals over 1989-2004 (Firms that just meet analysts' forecasts)

$$ABCFO_t = \beta_0 + \beta_1 \times SIZE_t + \beta_2 \times MTB_t + \beta_3 \times NI_t + \beta_4 \times ABDAC_t + \mu_t$$

$$ABEXP_t = \beta_0 + \beta_1 \times SIZE_t + \beta_2 \times MTB_t + \beta_3 \times NI_t + \beta_4 \times ABDAC_t + \mu_t$$

$$ABPROD_t = \beta_0 + \beta_1 \times SIZE_t + \beta_2 \times MTB_t + \beta_3 \times NI_t + \beta_4 \times ABDAC_t + \mu_t$$

Independent Variables	ABCFO		ABEXP		ABPROD	
	Coefficients	t value	Coefficients	t value	Coefficients	t value
Intercept	-0.0179	-0.46	-0.1707	-1.02	-0.1163	-2.47**
SIZE	0.0112	2.90***	-0.0133	-0.80	0.0227	4.87***
MTB	0.0148	1.40	0.0718	1.58	-0.1226	-9.59***
NI	0.0370	2.02**	0.1293	1.64	-0.0125	-0.56
PDAC	0.2625	2.62***	0.8177	1.90**	0.0299	0.25
Adjusted R ² (%)	0.92		0.46		5.86	
*** significant at the 1% level ** significant at the 5% level *significant at the 10% level One- tailed where sings are predicted, two-tailed otherwise. For variable definitions, refer to Appendix A.						

1.4.6 Empirical Results of Hypothesis 1b from the Second Sample (Firm-years before New Equity Issuance)

The results reported in Table 1.6 support the notion that the constraints imposed by industry specialist auditors indirectly increases real activities manipulation.²¹ That is, firms with strong incentives to manage earnings are more likely to switch to real activities manipulation (i.e., sales manipulation, reduction of discretionary expenses,

²¹ As predicted, the results show that ABDAC is significantly and positively associated with ABCFO and ABEXP, and is significantly negatively associated with ABPROD.

and/or overproduction) to reach the desired levels of earnings when their abilities to use accounting-based earnings management are limited by industry specialist auditors.²²

Table 1.6: 2SLS Regression of Abnormal Cash Flow from Operations on Absolute Discretionary Accruals over 1989-2004 (Firm-years before New Equity Issuance)

$$ABCFO_t = \beta_0 + \beta_1 \times SIZE_t + \beta_2 \times MTB_t + \beta_3 \times NI_t + \beta_4 \times ABDAC_t + \mu_t$$

$$ABEXP_t = \beta_0 + \beta_1 \times SIZE_t + \beta_2 \times MTB_t + \beta_3 \times NI_t + \beta_4 \times ABDAC_t + \mu_t$$

$$ABPROD_t = \beta_0 + \beta_1 \times SIZE_t + \beta_2 \times MTB_t + \beta_3 \times NI_t + \beta_4 \times ABDAC_t + \mu_t$$

Independent Variables	ABCFO		ABEXP		ABPROD	
	Coefficients	t value	Coefficients	t value	Coefficients	t value
Intercept	-0.1117	-5.18***	-0.2259	-2.84***	0.0213	0.91
SIZE	0.0314	23.19***	-0.0149	-3.00***	0.0029	1.96**
MTB	-0.0146	-3.72***	0.0155	1.07	-0.0546	-12.78***
NI	0.0000	0.18	0.0000	0.08	0.0000	1.51
PDAC	0.1495	2.02**	1.1547	4.24***	-0.1938	-2.40***
Adjusted R ² (%)	3.40		0.52		2.51	
*** significant at the 1% level ** significant at the 5% level *significant at the 10% level One- tailed where sings are predicted, two-tailed otherwise. For variable definitions, refer to Appendix A.						

1.4.7 Summary of the Empirical Results for the First Set of Hypotheses from Both Samples

Overall, the results suggest that (1) clients of industry specialist auditors show less accounting-based earnings management and more real activities manipulation than clients of non-specialist auditors; (2) industry specialist auditors constrain their clients' abilities

²² Consistent with my expectation and the results from the first sample, the direct tests of the association between auditor industry specialization and real activities manipulation suggest that clients of industry specialist auditors have lower ABCFO, lower ABEXP, and higher ABPROD after controlling for firm size, growth rate, and profitability. The quadratic relations between auditors' market shares and ABCFO/ABEXP/ABPROD are found.

to engage in accounting-based earnings management; and (3) the constraints imposed by industry specialist auditors force the companies to use more real activities manipulations to meet the desired levels of earnings. The findings are consistent with the expectations of Hypothesis 1a and Hypothesis 1b.

1.4.8 Additional Tests for Robustness of Findings

I apply additional tests to examine the sensitivity of my results. First, I use different measures for auditor industry specialization to re-estimate the model that tests the first hypotheses. In this study, I measure auditor's market share by using total assets. Danos and Eichenseher (1982) suggest that audit fees tend to vary linearly with the square root of client size. Therefore, the auditor market share measure can also be calculated using the square root of total assets. I re-estimate the models using this alternate measure and find that inferences are unaffected. Moreover, I use the OLS regressions to test Hypothesis 1b. The results of the OLS regressions are consistent with the 2SLS estimations.²³ Hence, the results appear to be robust to different measures of auditor industry specialization and to a change in the estimation method.

1.5 Research Method and Empirical Results for Hypothesis 2

1.5.1 Research Method for Hypothesis 2

To test whether real activities manipulation results in lower future operating performance, return on assets (ROA) is used to capture operating performance. ROA is a commonly used proxy for a firm's operating performance and is defined as earnings before

²³ The coefficient on PDAC in ABCFO regression of 2SLS is not significant. But the result of OLS regression still indicates that ABCFO increases as ABDAC increases (i.e., ABCFO is significantly positively associated with ABDAC).

extraordinary items divided by average total assets. Then, I examine the operating performance one, two and three years after the firm-year suspected of manipulating earnings through real activities manipulation. In order to test whether the firms with incentives to hire a specialist and to engage in earnings management using real activities manipulation show significantly lower future operating performance, I adopt a performance-matched sample technique.

I construct a sample by the following procedures: (1) the firm-year is either in the sample that firms just meet analysts' forecasts or in the sample that firms are going to issue equities; (2) the firm-year is audited by the industry specialist auditor; (3) the firm-year is in the lowest two quintiles of ABDAC; and (4) the firm-year that is in the lowest two quintiles of ABCFO/,in the lowest two quintiles of ABEXP/, or in the highest two quintiles of ABPROD. I name these samples as suspect RM_CFO, suspect RM_EXP and suspect RM_RPOD samples, respectively.

Then, I identify the performance-matched sample by the following procedures: (1) I require the control firm be in the same two-SIC industry as the suspect firm; (2) the control firm-year is matched with the suspect firm-year; and (3) I require the ROA of the control firm is within +/- 10% of the ROA of the suspect firm. If there is more than one control firm within this range, I randomly select one. If there is no firm within this range, I choose the control firm with the closest ROA to that of the suspect firm. I expect that the suspect firms have lower subsequent operating performance after real activities manipulation than their matched samples.

1.5.2 Empirical Results

Table 1.7 reports the results for changes in operating performance after real activities manipulation. Although performance matched technique is used, the performance in year t between the suspected sample and the control sample is different. Therefore, I examine changes in ROA scaled by ROA in year t (Scaled_ΔROA) to control for the performance difference in year t between two samples. The results show Scaled_ΔROA of the suspected firm is generally lower than that of the matched firm. The non-parametric matched-pair test is employed to compare the operating performance for years subsequent to real activities manipulation between the suspected firms and firms in the matched sample.²⁴ The results indicate that the suspected firm's operating performance is worse than its matched firm one year after real activities manipulation. These findings suggest that suspected firms show a lower operating performance in the long run relative to the control firms. The findings provide support for Hypothesis 2 that firms with incentives to hire industry specialist auditors and to engage in earnings management undertake real activities manipulation, which results in lower future operating performance in the long run. That is, changing operating decisions with the intent to reach the desired level of earnings may be suboptimal and can have detrimental effects to the firm in the long run.

²⁴ The normality tests suggest that Scaled_ΔROA is not normally distributed. The non-parametric test is used to compare Scaled_ΔROA for groups (here the suspected group and the control group). The test makes no assumptions about the shape of the distributions.

Table 1.7: Change in Abnormal Operating Performance for Companies Suspected of Engaging in Real Activities Manipulation in the Subsequent Three Years

	ABCFO		ABEXP		ABPROD	
Year	Difference in ROA		Difference in ROA		Difference in ROA	
	Firms before New Equity Issuance	Firms that Just Meet Analysts' Forecasts	Firms before New Equity Issuance	Firms that Just Meet Analysts' Forecasts	Firms before New Equity Issuance	Firms that Just Meet Analysts' Forecasts
$\Delta t+1$	0.1700**	0.2040***	0.1327*	0.1286***	0.1842***	-0.0992***
$\Delta t+2$	0.1593	-0.0276	-0.0094	0.0450	-0.0535**	-0.0349
$\Delta t+3$	-0.2498***	-0.1199**	-0.0543**	-0.0628*	-0.0668	-0.0427
N	337	118	458	91	539	131
% of control firms audited by industry specialist auditors	26	34	24	29	30	31
*** significant at the 1% level ** significant at the 5% level *significant at the 10% level Difference in ROA = Suspected firm's Scaled_ΔROA – Control firm's Scaled_ΔROA Scaled_ΔROA = ΔROA/ROA _t Δt+1 = ROA _{t+1} - ROA _t ; Δt+2 = ROA _{t+2} - ROA _{t+1} ; Δt+3 = ROA _{t+3} - ROA _{t+2} .						

1.6 Conclusions

Much of the prior research on the effects of auditor industry expertise on earnings management has focused on the detection of abnormal level of discretionary accruals. This paper extends the literature and examines the effects of auditor industry expertise on earnings management through real activities manipulation. The findings suggest that firms with strong incentives to manage earnings are more likely to manipulate real activities when they are audited by industry specialist auditors. Further analysis illustrates that such behavior results in clients' lower future operating performances, which is an unintended effect of hiring industry specialist auditors.

This research has important implications for researchers, practitioners, and regulators. First, the constraints imposed by industry specialist auditors over accounting-based

earnings management force managers to switch to real activities manipulation, which could burn the firms' economic values in the long run. It, in fact, implies that high audit quality (measured by auditor industry expertise) is not necessary to benefit clients in the long run.

Second, industry specialist auditors should be aware of the fact that their abilities to constrain accounting-based earnings management indirectly force the client companies to make operating decisions that deviate from optimal, long-run decisions. In order to mitigate this problem, industry specialist auditors are encouraged to communicate with the clients' managers and make the managers have a better understanding of the harmful consequences of real activities manipulation. Otherwise, hiring industry specialist auditors can have an undesirable effect, which is detrimental to firm value in the long run.

Third, most managers have already realized that misleading stakeholders about the true economic performance of their company by using accounting-based earnings management is unethical. But many of them do not view real activities manipulation as misbehavior.²⁵ Therefore, educating managers that taking suboptimal operating activities with the intent to reach the desired level of earnings is also considered as unethical is a major issue for the regulators now.

²⁵ Bruns and Merchant's (1990) survey report that managers view managing earnings via operating decisions as more ethical than employing accounting-based earnings management.

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CHAPTER II

THE INFLUENCE OF ACCOUNTING STANDARDS AND INSTITUTIONAL INVESTORS ON EARNINGS MANAGEMENT

2.1 Introduction

Accounting standards in the United States have come under scrutiny in the past few years. Several accounting failures have led many inside and outside the profession to call for change. These changes have centered on a shift from rules-based accounting (i.e., stringent accounting standards)²⁶ to a more principles-based accounting system (i.e., flexible accounting standards)²⁷. For example, PriceWaterhouseCoopers (PWC) placed a full-page advertisement in the *Wall Street Journal* in April 2003 which stated:

“Rules-based systems encourage creativity (not the good kind) in financial reporting. They allow some to stretch the limits of what is permissible under the law, even though it may not be ethically or morally acceptable. A principles-based system requires companies to report and auditors to audit the substance or business purpose of transactions; not merely whether they can qualify as acceptable under incredibly complex or overly technical rules...A rules-based system allows managers to ignore the substance and, instead ask, ‘Where in the rules does it say I can’t do this?’”²⁸

²⁶ Rules-based accounting standards are referred to as stringent accounting standards because they leave no flexibility to accountants in terms of accounting treatment.

²⁷ Principles-based accounting standards are referred to as flexible accounting standards because they leave accountants flexibility to apply accounting standards.

²⁸ “Principles-Based Accounting. It’s Not New, It’s Not the Rule, It’s the Law”, Ronald M. Mano, Matthew Mouritsen, and Ryan Pace, *The CPA Journal* February 2006

Section 108(d) of the Sarbanes-Oxley Act (SOX) of 2002 also directed the Securities and Exchange Commission (SEC) to study the feasibility of adopting a principles-based accounting system.

Although the accounting profession has been buzzing about the rules-based accounting standards, it is unclear whether a widespread breakdown of the reliability of financial reporting was caused by the current rules-based accounting standards. The proponents of rules-based accounting standards argue that if financial statement preparers and auditors feel unconstrained by clearly defined rules, they are unlikely to follow even broader principles. So changing accounting standards is a controversial idea, and such a change would have a wide reaching affect on financial reporting.

This dissertation attempts to explore how the flexibility of accounting standards affects firms' financial reporting practices. Specifically, I examine how earnings management is influenced by the tightness of accounting standards. Earnings management occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports 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).²⁹ This definition indicates two types of earnings management: earnings management through manipulating accounting accruals (i.e., accounting-based earnings management) and through changing operating

²⁹ In this dissertation, I restrict earnings management to legitimate actions. That is, all earnings management choices conform with U. S. GAAP.

decisions (i.e., real activities manipulation). Hence, I examine the prevalence of accounting-based earnings management and real activities manipulation with the different types of the accounting standards.

Further, I examine the effects of accounting standards on managers' earnings management choices across conditions with different institutional investors (short-term-focused versus long-term-oriented institutional investors). The focus on institutional environment is motivated by the lamentation that institutional investors force corporate managers to behave myopically. Porter (1992) argues that the U.S. system may be failing in its ability to move capital to where it is most needed because institutional investors do not have an active voice in the management of firms. He also argues that institutions may force managers to pass up profitable long-term projects in favor of short-term performance. The view that institutions are unwilling to monitor managers is shared by Black (1992). Both of them indicate that an effective institutional monitoring mechanism plays an important role in the U.S. accounting system.

My findings suggest that the monitoring activities of institutional investors are associated with their investment time horizons. I find that institutional investors with a long-term investment time horizon (i.e., long-term-oriented institutional investors) are more likely to take an active role to monitor corporate managers than those with a short-term investment time horizon (i.e., short-term-focused institutional investors).

In addition, the evidence indicates that the institutional monitoring activities have a significant impact on the change of managers' earnings management strategy with the decreased flexibility of accounting standards. Specifically, I find that *with short-term-focused institutional investors*, stringent accounting standards (rules-based accounting standards) force corporate managers to switch to real activities manipulation because tightening accounting standards make it more difficult for the managers to find feasible accounting-based earnings management opportunities. The only earnings management means left is real activities manipulation. However, *with long-term-oriented institutional investors*, corporate managers are less likely to switch to real activities manipulation with stringent accounting standards because shareholders with a long horizon have more incentives to invest their resources in monitoring (even if their stake is not large) and they are likely to reap the corresponding benefits from monitoring (Gaspar et al. 2005).

I also document that, without the long-term institutional investors' monitoring mechanism, managers with a short-term focus favor real activities manipulation more than long-term managers. In contrast, with the presence of long-term institutional investors' monitoring mechanism, short-term managers are less likely to choose real activities manipulation.

This dissertation contributes to the current debate on the impact of the type of accounting standards on the pervasiveness of earnings management by introducing other factors such as investment time horizon of institutional investors. The evidence suggests that managers' earnings-management choices in response to different types of accounting

standards are significantly influenced by institutional investors' monitoring activities. My findings support the argument by Porter (1992) and Black (1992) that the U.S. financial reporting system would be better off if institutional shareholders take greater, more long-term stake in corporations and actively monitor management. This dissertation also sheds lights on how managers' compensation schemes affect their earnings management decisions. Managers with a short-term focus are more sensitive to short-term performance of the company, and can use their discretion to sacrifice future cash flows to boost current period earnings if the monitoring mechanism is weak.

The remainder of the paper proceeds as follows. Section 2.2 reviews the prior literature. Section 2.3 provides a research framework. The research method is presented and hypotheses developed in Section 2.4. The results are discussed in Section 2.5, followed by a summary and conclusion in Section 2.6.

2.2 Literature Review

2.2.1 Earnings Management

Earnings management is defined as “a purposeful intervention in the external financial reporting process, with the intention of obtaining some private gain” (Schipper 1989). Earnings management can be undertaken either by manipulating discretionary accruals (i.e., accounting-based earnings management) or through real activities manipulation (i.e., real activities manipulation). Accounting-based management is not accomplished by changing the underlying economic activities of the firm but through the choice of accounting methods or estimates, whereas real activities manipulation is accomplished by changing the firm’s underlying operations. A large body of prior literature documents accounting-based earnings management. Hence, I focus on the discussion of real activities manipulation.

2.2.1.1 Differences between Accounting-based Earnings Management and Real Activities Manipulation

An important difference between accounting-based earnings management and real activities manipulation is the timing of earnings management. In contrast to accounting-based management, any manipulation of real activities has to occur during the course of the year. Real activities manipulation occurs when managers anticipate that earnings will fail to meet a target unless they undertake actions that deviate from the normal practice and/or when some other factors (e.g., stringent accounting standards) restrict accounting-based earnings management.

To meet a certain earnings target, managers can wait until the year-end to use

discretionary accruals to manage reported earnings. This strategy runs the risk that the amount of earnings that needs to be manipulated is greater than the available discretionary accruals because the accruals discretion is bounded by GAAP (Barton and Simko 2002). Given the underlying economic transactions of a firm, management's ability to report accruals-based earnings is limited. As a result, the earnings target may not be reached using discretionary accruals at year end. Managers can reduce this risk by manipulating real activities during the year. In addition, accruals will reverse as well, so management has to consider the implications of their discretion on current accruals for future earnings. This consideration constrains accounting-based earnings management. In contrast, real activities manipulations are less subject to this constraint.

Another advantage of altering real activities to manipulate earnings is that auditors and regulators are less likely to be concerned with such behavior.³⁰ Accounting-based earnings management is relatively transparent in the year of the change; it may be flagged by the auditor in a public way and may receive footnote disclosure. Real activities manipulation, which, merely contributes to operating decisions, may be harder for an outsider to observe (Schipper 1989) and is less likely to be judged to be violations of securities law. However, real activities manipulation is costly, including the possibility that cash flows in future periods are affected negatively by the actions taken currently to increase earnings.

³⁰ The rise of accounting-based earnings management in recent years has prompted calls for reforms to restore investor confidence in reported accounting information. Regulators and standard setters make every effort to improve the transparency of financial statements and to enhance the monitoring mechanisms of discretionary accruals.

2.2.1.2 Evidence of Real Activities Manipulation

Empirical evidence has shown that firms manage earnings using real activities (i.e., via operating decisions). Most of the evidence centers on the opportunistic reduction of R&D expenses. For example, Bushee (1998) finds that firms reduce R&D more in the presence of lower institutional ownership. He interprets this as evidence that the R&D reductions by this set of firms are potentially value-destroying. Baber et al. (1991) provide evidence that R&D spending is significantly less when spending jeopardizes the ability to report positive or increasing income in the current period. Although cutting these discretionary expenses can boost earnings to meet certain targets, it entails the risk of lower future cash flow from operations (CFO) because this action generally has a positive effect on current CFO. In the subsequent years, this positive effect may be reserved. Evidence exists on firms engaging in other types of real activities manipulation in addition to R&D expense reduction.

Bartov (1993) provides evidence on managers selling fixed assets in order to avoid negative earnings growth and debt covenant violations. Gunny (2005) also documents that the timing of asset sales could be used as a way to manage reported earnings. The timing of asset sales is a manager's choice and the gain/loss is reported on the income statement at the time of the sale. This provides managers opportunities to manipulate earnings. Herrmann et al. (2003) investigate Japanese managers' use of income from the sale of assets to manage earnings. They find that firms increase earnings through the sale of fixed assets and marketable securities when current operating income falls below management's forecasted operating income.

Thomas and Zhang (2002) provide evidence on managers taking advantage of the

absorption costing system required by GAAP to report lower cost of goods sold (COGS). These managers produce more than the quantity required to meet sales and normal target inventory levels to decrease reported COGS, resulting in increases in reported earnings. Although it improves the profitability margin, the firm incurs costs and lower than normal cash flow from operations (CFO).

Roychowdhury (2006) finds that managers offer price discounts to boost sales and engage in over production to reduce reported cost of goods sold. Managers provide deep discounts towards fiscal year end to increase sales. The increased sales volume that is generated is likely to disappear when the firm re-establishes the old prices. This action, in fact, moves the future profitability to the current period. As a result, the future profitability may be harmed by sales management.

Graham et al. (2005) document CFOs admitting to delaying or cutting the travel budget and maintenance expense, postponing or eliminating capital investments (to avoid depreciation charges), asset securitizations and managing the funding of pension plans. Overall, real activities manipulation is accomplished by a wide variety of operating decisions, which could have an economically significant impact on subsequent operating performance.

2.2.1.3 Costs of Real Activities Manipulation

A company is typically harmed when managers manipulate earnings. First, when managers manipulate earnings to meet earnings target, contracts require the company to deliver larger financial rewards to the manager. Second, the time and effort managers

devote to manipulation are often time and effort they might otherwise devote to productive activities. Therefore, manipulation can simultaneously reduce performance and impose greater financial obligations on the company (Demski et al. 2004).

Besides the above costs caused by earnings management (both accounting and real earnings management), real activities manipulation has real economic costs. If a manager deviates from the optimal level of real operating activities and engages in real activities manipulation, then presumably there would be long run economic consequences. Real activities manipulation negatively impacts future firm performance because the manager is willing to sacrifice future cash flows for current period income. Being a single-period measure, accounting numbers or ratios based on income or profit can induce myopic behavior among managers. For example, consider the case of current expenditures such as R&D costs which reduce current income and may not generate revenues until some later period. If the manager is compensated based on current income, she has a disincentive to incur these expenses.

Stein (1989) shows that, in the face of a rational stock market, managers would sacrifice total cash flows to boost near-term income in an effort to influence the market's current assessment of the firm's value. Along similar lines, Bar-Gill and Bebchuk (2003) indicate that real activities manipulation gives rise to potentially significant efficiency costs. Bar-Gill and Bebchuk model the misreporting of corporate performance when a firm is likely to issue stock and the ability to misreport requires sacrificing cash.

Similarly, Roychowhury (2006) recently documents the costs to operation and efficient performance that companies incur in order to report higher earnings. The costs of real activities manipulation include the possibility that cash flows in future periods are affected negatively by the actions taken this period to increase earnings. For example,

price discounts offered in any period to boost total earnings and meet some short-term target can lead customers to expect such discounts in future periods as well, leading to lower cash inflows from sales in the future. Roychowdhury also finds that firms reporting small positive annual earnings have abnormally low cash from operations and abnormally high production costs, providing evidence of manipulation through real activities.

2.2.2 Managers' Compensation Schemes and Earnings Management

Incentives to manage earnings primarily arise from contractual schemes. A number of studies have examined actual compensation contracts to identify managers' earnings management incentives. The evidence reported in these studies is consistent with managers using discretionary judgment to increase performance-based monetary awards. For example, Healy (1985) presents evidence that the accruals policies of managers are related to the non-linear incentives inherent in their bonus contracts. Holthausen et al. (1995) show that firms with caps on bonus awards are more likely to report accruals that defer income when that cap is reached than firms that have comparable performance but which have no bonus cap.

In addition to explicit earnings-based compensation contracts, executives are also rewarded on equity-based contracts. Hall and Liebman (1998) document that the median exposure of CEO wealth to the firm value tripled between 1980 and 1994. The higher exposure is caused by the performance-based compensation such as grants of stock options. Presumably these managers, with their personal wealth more directly tied to the stock prices of their firms, have a greater incentive to engage in earnings management that increases the value of their share holdings.

Bergstresser and Philippon (2006) provide evidence that earnings management is more pronounced at firms where the CEO's potential total compensation is more closely tied to the value of stock and option holdings. They also find that following years of high accruals, companies, on average, see sharp reductions in the total return they deliver to their stakeholders. However, Johnson et al. (2005) conclude that only unrestricted stock holdings are associated with the occurrence of accounting fraud, while the stock option grants are not, while Erickson et al. (2006) find no consistent evidence that executive equity incentives are associated with fraud.

Several other studies have examined whether implicit compensation contracts have any effect on earnings management incentives. These studies have tested whether there is an increase in the frequency of earnings management in periods when top managers' job security is threatened or their expected tenure with the firm is short. DeAngelo (1988) reports that during a proxy contest incumbent managers appear to exercise accounting discretion to improve reported earnings. Dechow and Sloan (1991) show that in their final years CEOs reduce research and development spending, presumably to increase reported earnings. They argue that this behavior is consistent with the short-term nature of many CEOs' compensation combined with their short horizons. Beneish and Vargus (2002) find evidence that managers manipulate earnings during periods when they or their companies are selling shares to capital markets.

The evidence suggests that various mechanisms may be used to try to constrain earnings management, such as efficiency wages, commissions, or fear of firing. An appropriate compensation contract is an effective way to mitigate the manager's myopic behavior. However, compensation contracts that are designed to offset the manager's hyper-myopic

behavior are costly to stakeholders. These costs arise from the increasing share of long-term cash flows that belongs to the manager. To induce the manager not to choose suboptimal operating decisions, the firm has to make incentive payments that add to the accounting-based bonus. Given the fact that the appropriate compensation contracts can be extremely costly to the stakeholders, the monitoring mechanism can be used as a complement to constrain the aberrant behaviors of the managers. The high level of constraints from accounting standards and/or institutional investors is expected to reduce the variance of the manager's performance and to improve the transparency of the firm's operating activities.

2.2.3 Accounting Standards

I examine the costs and benefits of rules-based versus principles-based accounting standards. Rules-based standards include numerous clearly-defined rules known as bright-line tests and numerous exceptions to the underlying principles of the standards that create a need for detailed implementation guidance.³¹ Principles-only standards limit implementation guidance. Principles-based standards provide a clear statement of the accounting principle. The objective of the standard is included with sufficient specificity. It contains few, if any, exceptions to the standard, and it contains a level of implementation guidance that is appropriate for the type of transactions that will be covered by the standard.

³¹ Study Pursuant to Section 108(d) of the Sarbanes-Oxley Act of 2002 on the Adoption by the United States Financial Reporting System of a Principles-Based Accounting System, Office of the Chief Accountant, Office of Economic Analysis, United States Securities and Exchange Commission

However, the degree of details does not distinguish a rule from a principle. The distinction between rules and principles implies a role for professional judgment and is clearly germane to the principles- vs. rules-based debate in accounting. The SEC staff study recognizes that a rules-based approach intentionally minimizes accounting judgment by establishing complicated, finely articulated rules that attempt to anticipate all possible application challenges. Hence, rules-based accounting standards provide more precise accounting standards, resulting in less room to manipulate financial numbers through accounting treatment. I refer to the rules-based accounting standards as stringent accounting standards, whereas principles-based accounting standards are referred to as flexible accounting standards.

2.2.3.1 Costs and Benefits of Principles-based Standards (Flexible Accounting Standards)

Principles-based standards use broad guidelines that focus on the spirit of an underlying principle. The standards are based on underlying principles with the application and implementation in the hands of the preparers. The most compelling argument for a principles-based system is that of presenting substance over form. Application of a principles-based approach would focus on the intent of the principle rather than the bright-line rule, thereby reducing the gamesmanship of circumventing the rules. Another benefit of a principles-based system is reduced complexity. Principles-based standards would not require detailed guidance to deal with increasingly complex transactions. Accordingly, a principles-based system requires professional judgment. Preparers need to focus on applying the core principles rather than searching for or demanding specific

guidance. More important, a principles-based approach focuses financial statement preparers and auditors on the fairness of the overall financial presentation rather than on satisfying detailed provisions.

Concern that a principles-based system creates even greater potential for earnings management is a powerful counterargument. Some fear that if financial statement preparers and auditors feel unconstrained by clearly defined rules, they are unlikely to follow even broader principles. Consequently, U.S. GAAP from the 1930s to the present has become much more details-oriented and stringent. It has evolved over the decades from a more principles-based set of guidelines to an enormously detailed set of prescriptions. Many preparers have become less willing to exercise professional judgment in areas involving accounting estimates, uncertainties, and inherent subjectivity. Increased accountability for the accuracy of financial information under the new requirements related to the SOX further reduces the preparer's willingness to exercise judgment on accounting estimates. Therefore, the reduced accounting discretion may have the unintended consequence of impeding a manager's ability to communicate the firm's prospects to investors.

2.2.3.2 Costs and Benefits of Rules-based Standards (Stringent Accounting Standards)

Given the litigious nature of the U.S., the greatest benefit of rules-based standards is the ability to cite a rule and claim adherence to the rule. It can be expected that the costs of dealing with the myriad of regulatory bodies will be reduced by using rules-based standards. Also, proponents of rules-based standards cite comparability as a benefit of

such standards. They state that greater comparability will be achieved if professional judgment is removed from the application of the standard.

However, no matter how the rules are technically detailed, there are, inevitably, many interpretive actions taken by management in preparing and certifying a company's financial statements. Indeed, the process of preparing the company's financial statements essentially constitutes a translation of economic reality into an accounting framework as defined by a set of standards. Likewise, certifying to the appropriateness of those financial statements requires the managers to make an informed judgment as to whether the financial statements are representative of economic reality, in accordance with a set of standards. This interpretive process necessarily involves judgment.

In addition, rules-based standards lead to engineering of the financial statements. Firms can take advantage of bright-line tests to subvert the intent of the standard for their own gain. An example of this is the much maligned lease standard. When it was issued, the goal was to include more leases on the balance sheet – thereby providing a more faithful representation of the true financial condition of the firm. Because of the bright-line tests included in the standard, firms have been able to exclude more leases from the balance sheet than they could prior to the issuance of the standard.

Accounting standards that are developed under a rules-based approach must be continuously updated. Whenever a new transaction is engineered, or a variation of an existing transaction occurs, guidance or a new amendment must be added. Therefore, a

rules-based approach is always at least one step behind. The detailed level of interpretative guidance, amendments to existing guidance, and rulings issued by various bodies add to the complexity and have caused a rules explosion. As business processes have become more complex, accounting rules have rapidly changed and expanded. Many standards are so complex that their application, implementation, and implications require explanation. Rules-based GAAP has become more complicated because of the numerous exceptions woven into the standards. These exceptions make applying a standard to a given transaction even more difficult.

2.2.4 The Role of Institutional Governance

2.2.4.1 Institutional Investor and Accounting-based Earnings Management

Several prior studies investigate the monitoring role of institutional investors by searching for evidence of pure accounting earnings management and find inconsistent results. Perry and Williams (1994) examine earnings management in anticipation of a management buyout. In this situation, management has incentives to reduce current earnings and thereby achieve a favorable purchase price. The results indicate evidence of earnings management prior to a management buyout. The same results hold for both low and high institutional ownership firms. Because the management of firms with higher institutional ownership is no less likely to adopt an earnings management strategy, this study does not support the monitoring role of institutional investors. However, Dechow et al. (1996) indicate that the presence of institutional investors has been found to mitigate managerial incentives to report aggressively. Rajgopal and Venkatachalam (1998) support this assertion and find evidence that institutional ownership is associated

with less income increasing discretionary accruals. Along a similar line, Cheng and Reitenga (2000) show the same result that active institutional shareholders mitigate income increasing discretionary accruals when there is pressure to increase earnings. In all, there are no consistent results on whether institutional investors can constrain pure accounting earnings management. The inconsistent results may be due to the limitation that these studies are unable to distinguish between long-term-oriented institutional investors and short-term-focused institutional investors.

2.2.4.2 Effects of Institutional Investor on Corporate Myopia

A number of prior empirical studies examine institutionally induced management myopia. One of the earliest studies is by Jarrell et al. (1985). Jarrell et al. estimate a cross-sectional regression for the years 1980-1983 with a sample of 324 firms in which R&D expenditure is the dependent variable and institutional share ownership is the independent variable. They find a positive association between R&D expenditures and institutional ownership and, therefore, reject the contention that institutional investors depress corporate expenditures for R&D. A shortcoming of this paper is that it does not include control variables that might also be correlated with R&D spending, nor do they account for endogeneity in their regressions.

Subsequent studies refine the Jarrell et al. regression by including various control variables. Baysinger et al. (1991) and Hansen and Hill (1991) find a positive relation between institutional ownership and R&D spending, but their samples are limited. Baysinger et al. (1991) examine 174 firms, while Hansen and Hill (1991) limit

themselves to four industries. However, both studies do not control for unobserved firm heterogeneity, which could significantly affect inferences. Moreover, none of these studies account for endogeneity or attempt to disentangle cross-sectional correlations from a causal relationship.

A later study by Bushee (1998) examines reductions in R&D spending to determine whether firms with higher institutional ownership are more likely to cut R&D spending in response to an earnings decline. He specifically examines whether managers of firms with high institutional ownership are more or less likely to cut R&D spending to manage short-term earnings. His sample encompasses firms that experienced an earnings decline during a year, which could subsequently be reversed by a cut in R&D expenditures. He estimates a logistic regression in which the dependent variable is one if the firm cut R&D expenditure, and zero otherwise. The key independent variable is the fraction of shares owned by institutional investors. The results suggest that institutional investors fulfill a monitoring role by reducing management's incentive to cut research and development expenses.

Although Bushee's (1998) paper makes a substantial improvement compared to the previous work, it has potential limitations. First, Bushee (1998) makes an implicit assumption that a firm's current level of R&D expenditure is optimal, which may not be true, which indicates that cutting R&D expenses may not be a suboptimal decision. Second, even though Bushee's tests can examine the issue of real activities manipulation (i.e., assuming cutting R&D expenses is indeed a real activities manipulation), he does

not address whether institutional ownership leads to a reduction of other types of real activities manipulation, e.g., lower spending for projects with long-term payoffs (e.g., PP&E).

Bange and De Bondt (1998) examine the management of R&D expenditures and the association with institutional shareholders. They conclude there is less earnings management related to R&D when institutional shareholdings are high. A later study by Wahal and McConnell (2000) analyzes corporate expenditures for PP&E and R&D for over 2,500 U.S. firms from 1988 to 1994. They find a positive relation between industry-adjusted expenditures for PP&E and R&D and the fraction of shares owned by institutional investors. Again, both studies have the same limitations as Bushee (1998).

Inconsistent with other studies, Graves (1988) finds a negative relation between institutional ownership and R&D spending, suggesting that institutional investors encourage managerial myopic behavior. But this study has several limitations. It is restricted to the computer industry, which limits generalizability. In addition, it fails to control for several key variables and suffers from an endogeneity problem, which undermines the validity of the analysis.

Overall, the prior literature does not show consistent evidence on the role of institutional investors in attenuating managerial myopic behavior. The inconsistency may be due to that these studies do not distinguish short-term-focused versus long-term-oriented institutional investors.

2.2.4.3 Types of Institutional Investors

In the behavioral finance literature, short-termism is most commonly referred to as myopic behavior and the resulting tendency to over-emphasize the present (near term earnings) at the expense of longer horizons (Frederick et al. 2002). Some institutional shareholders are inherently short-term oriented. They are often referred to as myopic or transient investors who focus excessively on current earnings rather than long-term earnings in determining stock prices (Bushee 1998; Porter 1992).

Prior literature identifies several factors that provide institutional investors incentives to focus on a short-term horizon. For instance, regular performance assessments and industry performance ranking of institutional investors create incentives for some institutional investors to adopt a short investment horizon (Black and Coffee 1994; Stapledon 1996a). A short horizon deters institutional investors from incurring monitoring costs, as the benefits of governing the portfolio firms are unlikely to accrue to investors in the short run (Porter 1992). In addition, the need to rebalance their portfolio to maintain or to improve their own performance does not allow sufficient time or resources for institutional investors to be actively involved in monitoring of their portfolio firms beyond their performance assessment cycle (Black and Coffee 1994; Stapledon 1996a).

Consistent with these arguments, Bushee (2001) finds that transient institutional investors exhibit a strong preference for near-term earnings, which translates into mis-evaluation of

stock prices where the long-term earnings are under-weighted. Institutional investors are found to sell their shares as a result of the under-performance of current earnings (Pound and Shiller 1987; Lang and McNichols 1997). The excessive focus on current earnings by such institutional investors creates incentives for firm managers to manage short-term earnings upwards (Graves and Waddock 1990; Porter 1992; Stapledon 1996b; Tomasic and Bottomley 1993).

However, not all institutions are short-term focused. As institutional shareholding grows, selling shares becomes more expensive, since large block sales generally entail large discounts (Black and Coffee 1994; Rajgopal and Venkatachalam 1998). Hence, some institutions are becoming long-term investors who will take a more active role in corporate governance matters because their shares cannot be sold without adversely affecting the sale price.³² Long-term-oriented institutional investors ameliorate agency problems by monitoring managerial decisions because only institutional shareholders with long-term focus have sufficient incentives to undertake monitoring activities on firms' long-term performance. That is, when institutional investors have substantial shareholdings, it becomes difficult to sell the shares immediately at the prevailing market price. This lack of marketability implies institutional investors become long-term investors and, thus, they have incentives to closely monitor companies (Maug 1998), especially those with potential costly agency problems. Furthermore, when institutions become long-term investors, given the large monetary value tied to these institutional

³² Wahal (1996) shows that an active fund does not reduce its holding in poorly performing firms, while other individual investors do.

investors, institutional investors stand to lose more than individual investors if they remain passive, or choose to be less informed about their portfolio firms when their portfolio is under-performing (Pound 1992).

2.2.4.4 Do Preferences of Institutional Investors Affect Managerial Decisions?

The market separation theorem divorces the equity investor's (owner's) investment choice decision from the manager's operating decision about how to run the firm. The separation theorem has substantive implications for decision making by both managers and investors. Fama and Miller (1972) define the principle of separation as optimal production decisions that are independent of the details of owner tastes. That is, the separation theorem indicates that managers should manage the firm irrespective of the tastes and preferences of their shareholders. However, later, Bushee (1998) proposes an earnings timing clienteles hypothesis, which argues that it is plausible that managers respond to the preferences of their ownership base when making operating, investment, and financing decisions.

The clienteles hypothesis seems to persist because institutional investors have influential power to monitor corporate managers. The preference of institutional investors can be communicated to corporate managers either explicitly through corporate governance practices or implicitly through information gathering and correctly pricing the impact of managerial decisions (Bushee 1998). The Business Week Harris Poll reveals that 60 percent of the 400 CEOs surveyed indicate that institutional investors exert the most pressure on firms to focus on short-term performance (Nussbaum 1987). It provides

evidence that myopic demand for short-term institutional investors causes managers to take very short-term perspectives that have adverse consequences in the long run. Corporate managers are expected to be sensitive to stock price performance and manage their firms so as to avoid the appearance of any sag in short-term earnings (Wahal and McConnell 2000).

2.3 Research Framework

2.3.1 Background

The paper extends the studies by Demski (2004) and Ewert and Wagenhofer (2005). Demski (2004) sketches a model with substitution between accounting and real earnings management. He assumes that tighter standards reduce accounting earnings management, but increases real earnings management. Along a similar line, Ewert and Wagenhofer (2005) examine the substitution effect between accounting earnings management and real manipulation. Their model distinguishes between accounting and real earnings management and assume that a standard setter can only influence accounting earnings management by the tightness of standards. They predict that managers increase costly real earnings management because higher earnings quality increases the marginal benefit of real earnings management.

The focus of this study is on comparisons of stringent and flexible accounting standards by adding other factors such as types of managers (short-term vs. long-term managers) and investment horizons of institutional investors (short-term-focused vs. long-term-oriented institutional investors). I consider two strategic players, a risk neutral manager and a risk neutral institutional investor. I use two periods to represent a multi-period setting. In the first period, the strategic interaction occurs, and in the second period earnings management activities unwind.

2.3.2 Two Types of Earnings Management

The firm operates an accounting system which records transactions and events, according to a certain set of accounting standards in force, and produces the base information for a periodic financial report. The base information is an unbiased signal of the realized earnings e_i . After observing a private signal on earning e_i , a manager can either report truthfully or manage earnings to a desired level. Two types of earnings management activities are available to the manager: accounting-based earnings management and real activities manipulation. The manager chooses d_A (the amount of accounting-based earnings management) and/or d_R (the amount of real activities manipulation) to manage the reported earning f_i relative to e_i in the following way:

$$f_1 = e_1 + d_A + d_R \text{ and}$$

$$f_2 = e_2 - d_A - d_R - cd_R$$

f_i = reported earning in period i ; $i = 1, 2$,

e_i = privately observed earnings by the manager before any manipulation,

d_A = amount of accounting-based earnings management, and

d_R = amount of real activities manipulation.

Most accounting-based earnings management involves shifting accounting earnings from one period to another. I assume that if the manager changes reported earning in the first period, the reported earning in the second period change by $-d_A$. In contrast, real activities manipulation occurs when the manager undertakes actions that are sub-optimal from the shareholder's perspective, but generate a desired level of earnings for the first period. Thus, real activities manipulation imposes costs on the firm by an amount over and above d_R in the second period. For example, real activities manipulation of earnings

upward through delaying desirable training or maintenance expenditures or cutting prices to boost sales has real consequences and can impose costs beyond today's benefits. I model these costs as a linear function of real activities manipulation, cd_R , where $c \geq 0$, and it is incurred in the second period.

2.3.3 Type of Manager

I adopt Ewert and Wagenhofer's (2005) utility function of the manager that depends on accounting earnings and market price. Managers' incentives to manage earnings are mainly due to compensation schemes, including accounting-based bonuses and stock-option based contracts (such as employee stock options, ESO, programs). In practice, bonus- and stock/option-based contracts provide different incentives to manage earnings. Managers with accounting-based bonus compensation contracts are perceived to be short-term focused while managers with stock/option-based compensation contracts are long-term focused. With a bonus program, managers have an incentive to move earnings to the period when a (higher) bonus can be achieved. That is, managers have incentives to inflate current-period performance because managers' compensation is only tied to current-period earnings and price. Hence, short-term managers have the following utility function:

$$U_{shortmgr} = sf_1 + pP_1 - v(d_A, d_R).$$

With a stock/stock option program, managers have concerns on both short-term performance and long-term value of the firm because managers also have ownership

interests in the firm. Based on these preferences, long-term managers have a different utility function than short-term managers.

$$U_{longmgr} = sf_1 + pP_1 + f_2 + P_2 - v(d_A, d_R),$$

P_1 = market price in period 1,

P_2 = market price in period 2,

s = the relative weight on current period reported earnings, the weight attached on the accounting report f_1 relative to f_2 , $s \geq 0$,

p = the relative weight on current period price, the weight attached on the price P_1 relative to P_2 , $p \geq 0$, and

v = manager's disutility from engaging in earnings management.

The disutility v is convex in both accounting-based earnings management and real activities manipulation because it becomes increasingly cumbersome for the manager to find more opportunity for either type of earnings management. The disutility also incorporates manager's effort on doing/planning earnings management.

$$v(d_A, d_R) = \frac{ad_A^2}{2} + \frac{rd_R^2}{2}$$

The parameters, a and r , capture the disutility of accounting-based earnings management and real activities manipulation, respectively. Disutility includes manager's effort to engage in earnings management, constraints from accounting standards and other regulations, and litigation risk.

Following Ewert and Wagenhofer (2005), I restrict the pricing function to be linear in

reported earnings:

$$P_1 = \alpha_1 + \hat{\beta}_1 f_1 \text{ and}$$

$$P_2 = \alpha_2 + \hat{\beta}_2 f_1 + \hat{\gamma}_2 f_2.$$

α captures the magnitude of the market's adjustment for expected bias. In this study, I set $\alpha < 0$ because the conventional view in prior work suggests that the manager often biases reported earnings upward; consequently, the adjustment for expected bias is negative. Given the inability to discern the manager's precise objective, the market can only conjecture the extent to which the manager has an incentive to inflate expectations. I hold market conjecture of the manager's incentive to inflate expectations constant across different types of accounting standards. β and γ capture the value relevance of reported earnings ($0 < \beta < 1$; $0 < \gamma < 1$). A caret (i.e., “^”) denotes a conjecture. I also require that $\beta_2 < \gamma_2$ because I assume that current period reported earnings receive more weight. In addition, I assume that the conjectures of the market and manager are met, i.e.,

$$\alpha = \hat{\alpha}, \beta = \hat{\beta}, \gamma = \hat{\gamma}.$$

Therefore, the short-term manager's utility function is presented below:

$$U_{shortmgr} = s(e_1 + d_A + d_R) + p(\hat{\alpha}_1 + \hat{\beta}_1(e_1 + d_A + d_R)) - \frac{ad_A^2}{2} - \frac{rd_R^2}{2}.$$

The long-term manager's utility function is as follows:

$$U_{longmgr} = s(e_1 + d_A + d_R) + E[e_2 | e_1] - d_A - d_R - cd_R + p(\hat{\alpha}_1 + \hat{\beta}_1(e_1 + d_A + d_R)) \\ + \hat{\alpha}_2 + \hat{\beta}_2(e_1 + d_A + d_R) + \gamma_2(E[e_2 | e_1] - d_A - d_R - cd_R) - \frac{ad_A^2}{2} - \frac{rd_R^2}{2}.$$

The linear contract assumption in my design captures the pay-for-performance essence of these compensation schemes. It does not, however, fully capture their richness and complexity.

The manager has an incentive to maximize her/his utility:

$$\max sf_1 + pP_1(f_1) + E[f_2] + P_2(f_1, f_2) - \frac{ad_A^2}{2} - \frac{rd_R^2}{2}.$$

The first-order conditions for the short-term managers' utility function with respect to d_A and d_R yield:

$$\frac{\partial U_{shortmgr}}{\partial d_A} = s + p\hat{\beta}_1 - ad_A^* = 0 \text{ and}$$

$$\frac{\partial U_{shortmgr}}{\partial d_R} = s + p\hat{\beta}_1 - rd_R^* = 0.$$

Therefore, each type of optimum earnings management for short-term managers is:

$$d_A^* = (s + p\hat{\beta}_1) \bullet \frac{1}{a} \text{ and}$$

$$d_R^* = (s + p\hat{\beta}_1) \bullet \frac{1}{r}.$$

The first-order conditions for the long-term managers' utility function with respect to d_A and d_R yield:

$$\frac{\partial U_{longmgr}}{\partial d_A} = (s-1) + p\hat{\beta}_1 + \hat{\beta}_2 - \hat{\gamma}_2 - ad_A^* = 0 \text{ and}$$

$$\frac{\partial U_{longmgr}}{\partial d_R} = (s-1) + p\hat{\beta}_1 + \hat{\beta}_2 - \hat{\gamma}_2 - c - c\hat{\gamma}_2 - rd_R^* = 0.$$

Therefore, each type of optimum earnings management for long-term focused managers is:

$$d_A^* = [(s-1) + p\hat{\beta}_1 + \hat{\beta}_2 - \hat{\gamma}_2] \cdot \frac{1}{a} \text{ and}$$

$$d_R^* = [(s-1) - c(1 + \hat{\gamma}_2) + p\hat{\beta}_1 + \hat{\beta}_2 - \hat{\gamma}_2] \cdot \frac{1}{r}.$$

Based on managers' utility functions, short-term managers are more likely to engage in real activities manipulation than long-term managers because the detrimental effects of real activities manipulation in the second period are less likely to affect short-term managers' payoffs.

2.3.4 Investment Time Horizon of Institutional Investors

Apart from managers, institutional investors have the potential to impact a company's corporate governance, as well as managers' decisions, due to their power in the capital market and ability to understand financial information. Institutional investors are sophisticated and better informed than individual investors and have stronger incentives

to monitor their investments. An institutional investor can influence managerial decisions through the capital market in two ways: vote with his or her feet by selling holdings in the firm or take an active role to constrain myopic managerial decisions. Hirschman (1971) characterizes these alternatives as exit and voice.

Institutional investors with different investment time horizons are expected to respond differently when there is a disagreement with management depending on their investment horizons. Institutional investors with short-term investment horizon have limited incentive to get involved in corporate governance issues because they are always ready to dump the shares, whereas long-term-oriented institutions are more likely to serve a monitoring role by reducing pressures for managers to behave myopically. That is, long-term-oriented institutional investors discourage managers from engaging in real earnings management by voicing their concerns, while short-term-focused institutional investors are not willing to perform a monitoring role.

Since short-term-focused investors are defined as investors who prefer current earnings to long-term earnings and prefer to sell shares of firms (i.e., exit) with current earnings that are under-performing (e.g., Bushee 1998, 2001), short-term-focused investors' utility function is only related to the short-term price (P_1) because they sell shares in a short-period of time. Short-term-focused institutional investors' utility function is presented below:

$$U_{shortinv} = w_1 P_1$$

The above utility function indicates that institutional investors with a short-term investment horizon have limited incentive to get involved in corporate governance issues compared to institutional investors with a long-term horizon because they are always ready to dump their shares.

As institutional shareholding grows, selling shares becomes more expensive, because large block sales generally entail large discounts (Black and Coffee 1994; Rajgopal and Venkatachalam 1998). Hence, some institutions are becoming long-term investors, taking a more active role in corporate governance matters because their shares cannot be sold without adversely affecting the sale price.³³ Long-term-oriented institutional investors ameliorate agency problems by monitoring managerial decisions because only institutional shareholders with long-term focus have sufficient incentives to undertake monitoring activities on firms' long-term performance. Long-term-oriented institutional investors' utility function is:

$$U_{longinv} = w_2 P_2$$

According to the clientele hypothesis by Bushee (1998), institutional investors' preferences affect corporate managers' decisions. Short-term-focused institutions are impatient and this impatience is communicated to corporate managers through pressure on stock prices. One consequence is that managers are discouraged from engaging in

³³ Wahal (1996) shows that an active fund does not reduce its holding in poorly performing firms, while other individual investors do.

projects with long-term payoffs, and instead focus on projects with short-term payoffs. By comparison, managers monitored by long-term-oriented institutional investors are less likely to engage in myopic behavior.

2.3.5 Flexibility of Accounting Standards

Besides managers and institutional investors, accounting standards can have a substantial impact on managers' earnings management decisions. The major function of financial reports is to convey managers' private information on their firms' performance to other parties, primarily shareholders. In order to facilitate this function, standards have to permit managers to exercise judgment in financial reporting. Managers can then use their knowledge about the business and its opportunities to select reporting methods and estimates that match the firms' business economics, potentially increasing the value of accounting as a form of communication.

Yet, managers' use of judgment also creates opportunities for earnings management, in which managers choose reporting methods and estimates that do not adequately reflect their firms' underlying economics. Therefore, many practitioners as well as academic researchers believe that stringent accounting standards restrain corporate managers' earnings management behaviors because they leave less room for managers to use discretion in accounting choices. As a result, U.S. GAAP from the 1930s to the present has become much more details-oriented and stringent.

However, the recent wave of accounting failures has raised concerns about the rules-based accounting standards. Many industry professionals feel that the standards-setting process of the Financial Accounting Standards Board (FASB) has become overly reliant on rules. The effect of the decreased flexibility of accounting standards on earnings management behavior has been on debate. Proponents of principles-based standards argue a rules-based regime may well give a false sense of precision. While the rules may be precise with bright-line tests on the finest minutia of financial reporting, the financial reporting itself remains subject to manipulation either through pure accounting choices or real activities manipulation. Stringent guidance can reduce earnings management through manager's judgments on accounting conditions; it may increase earnings management through real activities manipulation. This conjecture is supported by several studies.

Nelson et al. (2002) survey 253 audit partners on their experience with 515 attempts at earnings management by their clients and find a positive association between the precision of accounting rules and the structuring of transactions by managers. The structuring of transactions allows managers to avoid infringement of specific provisions in the accounting standards, and ensures its acceptance by auditors. Dye (2002) provides support for Nelson et al. (2002) that stringent accounting standards will increase managers' ability to manipulate financial reporting outcomes opportunistically, and thus weaken the effectiveness of the rigid standard.

Another survey paper by Graham et al. (2005) supports the notion that managers will sacrifice real economic earnings in order to meet their reporting objectives. Under stringent accounting regulations, managers are overly concerned with accounting-based earnings management. That is, managers emphasize that firms now go out of their way to assure shareholders that there is no accounting-based earnings management in their books. Managers also express a corporate fear that even an appropriate accounting choice runs the risk of an overzealous regulator concluding ex post that accounting treatment is driven by an attempt to manage earnings (Graham et al. 2005).

An analytical paper by Demski (2004) sketches a model with substitution between accounting and real earnings management. He assumes that tighter standards reduce accounting earnings management, but increases real earnings management. Along a similar line, Ewert and Wagenhofer (2005) examine the substitution effect between accounting earnings management and real manipulation. Their model distinguishes between accounting and real earnings management and assume that a standard setter can only influence accounting earnings management by the tightness of standards. They predict that managers increase costly real earnings management because the higher earnings quality increases the marginal benefit of real earnings management.

The empirical evidence by Cohen et al. (2008) supports this conjecture. They document that the time period with more flexible accounting standards (i.e., pre-SOX period) was characterized by high accounting-based earnings management and low real activities manipulation. Following the passage of SOX (accounting standards becoming more

stringent), accounting-based earnings management decline significantly, while real earnings management increased significantly. Consistent with the results of other studies, this evidence suggests that firms switched to managing earnings using real methods, possibly because these techniques, while more costly, are likely to be harder to detect.

The evidence suggests that both rules-based and principles-based accounting standards have the strengths and weaknesses in terms of constraining earnings management. Hence, the agreement over the more effective accounting standards has not been reached. This inconclusive result may be due to the fact that all prior studies fail to consider other factors that may interact with accounting standards, such as institutional environments (e.g., short-term-focused versus long-term-oriented institutional investors). I expect that with short-term-focused institutional investors (i.e., no monitoring mechanism), managers are more likely to switch from accounting-based earnings management to real activities manipulation when accounting standards become tighter, whereas with long-term-oriented institutional investors (i.e., monitoring mechanisms exist), managers are less likely to switch from accounting-based earnings management to real activities manipulation.

2.4 Research Method

2.4.1 Why Use an Experimental Approach?

I use an experimental approach to examine the effects of accounting standards on managers' earnings management decisions for the following reasons. First, accounting standards are confounded in natural settings with other institutional factors such as legal systems. It makes the archival results hard to interpret. In contrast, an experiment is well suited to this task because a research setting that controls for other potentially influential variables can be constructed in a laboratory. .

In addition, an experimental method allows drawing causal inferences. An experimental method is a more effective way to test the causal relationship between the time horizon of institutional investors and earnings management than archival study. An archival study can only examine the association between institutional ownership and earnings management, but not the asserted causation.³⁴ Moreover, in the laboratory, real earnings management can be clearly defined and is manipulated as a sub-optimal decision. In contrast, the measures for real earnings manipulation are questionable in archival studies because it is infeasible to detect the sub-optimal decision given the fact that optimal decision is not observable in the real world setting.

³⁴ Even though a few studies indicate that institutional investors constrain real earnings manipulation, it is plausible that what is being examined is the differential attractiveness of long-term versus short-term investments for institutional investors relative to all other types of stockholders. That is, the long-term orientation of firms may attract long-term-oriented investors, while firms with short-term focus may attract short-term-focused investors.

2.4.2 Basic Setting

Following Ewert and Wagenhofer's (2005) proposition, stringent accounting standards imply a higher value relevance of β and γ . Accordingly, I set β and γ higher with stringent accounting standards than with flexible accounting standards. The increase in the value relevance increases the marginal benefit of real activities manipulation and, in turn, the manager engages in more real activities manipulation in equilibrium. In addition, I formalize stringent accounting standards by increasing the cost of accounting-based earnings management (a). In the extreme case, the disutility of engaging in accounting-based earnings management is equal to the disutility of real activities manipulation with flexible accounting standards. The disutility of accounting-based earnings management increases when accounting standards become tighter. Hence, I set a higher under stringent accounting standards condition.

I assign parameters values as summarized in Table 2.1.³⁵ In addition, I set some restrictions to simplify the problem. First, managers can only choose one type of earnings management. This restriction helps better understand managers' earnings management choices in different conditions. Second, I restrict behavior such that managers engage in the optimal level of each type of earnings management because the managers would make the optimal decision in the light of the underlying utility function. Third, I examine the case in which the amount of earnings management is greater than zero because I assume that the manager's incentive is to inflate the reported earnings (d_A^*

³⁵ The detailed parameter selection process is presented in Appendix D. The qualitative relationship within the payoff tables remains the same for any specific value that fulfills the requirement.

> 0 ; $d_R^* > 0$; $d_A^* > 0$; $d_R^* > 0$). All conditions and corresponding equilibrium are summarized in Appendix B. The payoff tables for all conditions are presented in Appendix C.

Table 2.1: Summary of Notations and Parameter Values

α (magnitude of the adjustment for expected bias)	-1.16
s (relative weight on current period reported earnings)	3.12
p (relative weight on current period price)	3.12
c (real cost of real activities manipulation)	1
Flexible Accounting Standards	
β_1 (value relevance)	0.32
β_2 (value relevance)	0.11
γ_2 (value relevance)	0.21
a (cost of accounting-based earnings management)	1
Stringent Accounting Standards	
β_1 (value relevance)	0.64
β_2 (value relevance)	0.22
γ_2 (value relevance)	0.42
a (cost of accounting-based earnings management)	2

Based on payoff tables provided in Appendix C, the equilibrium exists for each condition with short-term-focused institutional investors. The short-term-focused institutional

investors always elect to sell his/her shares at the end of the first periods. So there is no need to collect data for conditions with short-term-focused institutional investors. However, no optimal equilibrium exists for managers under conditions with long-term-oriented institutional investors. Therefore, the method of experimental economics is employed to test managers' earnings management preference with long-term-oriented institutional investors under different conditions.

2.4.3 Experimental Predictions

I use the results for conditions with short-term-focused investors as a benchmark and compare them with the results from the experiment for conditions with long-term-oriented institutional investors. In conditions with short-term-focused institutional investors, long-term managers prefer accounting-based earnings management with flexible accounting standards, whereas short-term managers are indifferent to accounting-based earnings management and real activities manipulation. But according to other-regarding preferences theory, short-term managers will choose accounting-based earnings management because it is less detrimental to the investors and the managers are indifferent. When accounting standards become stringent, long-term managers prefer accounting-based earnings management, whereas short-term managers favor real activities manipulation. Overall, managers favor accounting-based earnings management except the case with short-term managers and stringent accounting standards. The results for conditions with short-term-focused institutional investors and the predictions for conditions with long-term-oriented institutional investors are presented in the following table.

Experimental Predictions:

Short-term-focused Institutional Investors	Long-term-oriented Institutional Investors
Result 1a: Managers are more likely to favor accounting-based earnings management with flexible accounting standards.	Hypothesis 1a: Managers are no more likely to favor accounting-based earnings management with flexible accounting standards.
Result 1b: Managers are more likely to favor real activities manipulation with stringent accounting standards.	Hypothesis 1b: Managers are no more likely to choose real activities manipulation with stringent accounting standards.
Result 1: Managers switch from accounting-based earnings management to real activities manipulation when accounting standards become more stringent in conditions with short-term-focused institutional investors.	
<i>Hypothesis 1 (effects of accounting standards): Managers are not likely to switch from accounting-based earnings management to real activities manipulation when accounting standards become more stringent in conditions with long-term-oriented institutional investors.</i>	

Short-term-focused Institutional Investors	Long-term-oriented Institutional Investors
Result 2a: Short-term managers are more likely to favor real activities manipulation than accounting-based earnings management.	Hypothesis 2a: Short-term managers are no more likely to favor real activities manipulation than accounting-based earnings management.
Result 2b: Long-term managers are more likely to favor accounting-based earnings management.	Hypothesis 2b: Long-term managers are no more likely to favor accounting-based earnings management.
Result 2: In conditions with short-term-focused institutional investors, short-term managers are more willing to engage in real activities manipulation than long-term managers.	
<i>Hypothesis 2 (effects of type of manager): In conditions with long-term-oriented institutional investors, short-term managers are less likely to favor real activities manipulation than long-term managers.</i>	

2.4.4 Experiment Overview

I use a one-shot, two-person experiment to test managers' earnings management choices when monitored by long-term-oriented institutional investors. I manipulate the tightness of accounting standards (flexible versus stringent) and type of manager (short-term versus long-term). There are four conditions in total. One half of the participants take the role of the manager and the other half that of the long-term oriented institutional investor. Participants are randomly assigned their roles, which they maintain for the whole session (i.e., for all four conditions).

It is a within-subjects design. Fifty-eight students participate in the experiment, resulting in 29 pairs. Each pair of participants individually chooses an action from a payoff table, which summarizes the effects of the flexibility of accounting standards and type of manager on managers' earnings management choices as well as institutional investors' monitoring activities. All participants are provided with the same set of payoff tables: one for each experimental condition.

The game is played simultaneously. Managers can choose one of three options in the first period: (1) no earnings management, (2) accounting-based earnings management, or (3) real activities manipulation. All long-term-oriented institutional investors have three options: (1) do not investigate, (2) investigate accounting-based earnings management, or (3) investigate real activities manipulation. Option 2 and 3 give long-term-oriented

institutional investors monitoring ability.³⁶ If investors choose to investigate accounting-based earnings management (real activities manipulation), accounting-based earnings management (real activities manipulation) cannot be taken. In other words, the monitoring activities of long-term-oriented institutional investors prevent such behavior from occurring.

The participants are recruited from a medium sized U.S. university. Participants are comprised mostly of undergraduates (91 percent), with an average age of 21 years. More than half of the participants (52 percent) are pursuing a program of study in business.

2.4.5 Procedures

All participants are in the same room. But the participants are physically separated (spread out) and no communication is permitted. Players do not know other players' roles. Envelopes containing instructions for the experiment are randomly distributed to the participants, and informed consents are obtained. The experimenter reads the instruction aloud. Participants then are required to complete a quiz to ensure the understanding of the experiment. The instruction is presented in Appendix E.

After completing the quiz, participants privately learn their roles and start making decisions. Participants are not given the phrases such as managers and investors in the experiment. Participants who act as managers and long-term-oriented investors only

³⁶ I do not impose costs on the monitoring activities because the costs of institutional monitoring activities will eventually pass to the company and other investors.

learn that they are players X and Y, respectively. The experiment is framed in abstract terms because a rich setting may introduce confounds.

All participants are provided with four payoff tables³⁷ (see Appendix C) corresponding to condition 5 to 8 in Appendix C (i.e., all conditions with long-term-oriented institutional investors). The payoff tables present both players' payoffs for each decision combination. In addition, I employ a Graeco-Latin square design to randomize the sequence of the payoff tables in order to control for order effects. The decisions are recorded on a decision sheet. A helper collects the decision sheets and takes them to a student assistant located in an office. The student assistant randomly matches player X and player Y, and then determines each participant's payoff and puts cash in envelopes which have participant numbers written on the outside. The helper returns to the room and distributes the envelopes.³⁸

While participants are waiting for the helper to return, a post-experiment questionnaire is administered. The questionnaire is used to collect demographics and other information that may provide insight into participants' decisions. The experimental sessions last approximately 30 minutes, for which participants earn an average of \$15.

³⁷ All payoffs in the payoff tables are in points, not real monetary payoffs. But the monetary payoff is directly related the points listed in the payoff tables.

³⁸ In addition to experimental earnings, participants are paid a \$5 show-up fee.

2.5 Results

In order to better understand managers' earnings management choices, I first present results for long-term-oriented institutional investors' monitoring activities because the earnings management strategy adopted by managers is influenced by institutional monitoring activities. The results on managers' earnings management decisions are document in the next section.

2.5.1 Long-term-oriented Institutional Investors' Monitoring Activities

Panel A of Table 2.2 presents descriptive statistics of the frequency of each type of monitoring activity. Figure 2.1 presents the frequency of institutional investors' monitoring activities. The results suggest that long-term-oriented institutional investors are more likely to constrain real activities manipulation.³⁹ The only exception is in condition 6 (flexible accounting standards and long-term managers), in which case institutional investors are more likely to limit accounting-based earnings management.⁴⁰ The results arise because, in general, institutional investors are more likely to monitor real activities manipulation due to the detrimental effects of such activities. However, in condition 6, the detrimental effects of real activities manipulation are insignificant to institutional investors because the optimal level of real activities manipulation is low.

³⁹ In condition 5, 2 (7%) and 27 (93%) participants choose to investigate accounting-based earnings management and real activities manipulation, respectively. In condition 7, 3 (10%) and 25 (86%) participants choose to investigate accounting-based earnings management and real activities manipulation, respectively. In condition 8, 4 (14%) and 23 (79%) participants choose to investigate accounting-based earnings management and real activities manipulation, respectively.

⁴⁰ In condition 6, 20 (69%) and 7 (24%) participants choose to investigate accounting-based earnings management and real activities manipulation, respectively.

Although the marginal cost of real activities manipulation is constant across different conditions, the total effects of real activities manipulation are not detrimental in condition 6 because the optimal amount of real activities manipulation is extremely lower. The low optimal level of real activities manipulation are due to (1) real activities manipulation have a detrimental effect on long-term managers' payoffs, so managers themselves have less incentive to engage in real activities manipulation; (2) with flexible accounting standards, cost of engaging in accounting-based earnings management is cheaper. Hence, accounting-based earnings management is a preferable type of earnings management to managers. All in all, institutional investors have less incentive to constrain real activities manipulation if managers are unlikely to engage in real activities manipulation.

Table 2.2 Panel A: Empirical Frequency Table for Observed Behavior of Long-term-oriented Institutional Investors

Accounting Standards								
Flexible								
Short-term Manager (Condition 5)			Long-term Manager (Condition 6)			Flexible Accounting Standards – All Managers		
NO	IA	IR	NO	IA	IR	NO	IA	IR
0	2	27	2	20	7	2	22	34
(0%)	(7%)	(93%)	(7%)	(69%)	(24%)	(3%)	(38%)	(59%)
Stringent								
Short-term Manager (Condition 7)			Long-term Manager (Condition 8)			Stringent Accounting Standards – All Managers		
NO	IA	IR	NO	IA	IR	NO	IA	IR
1	3	25	2	4	23	3	7	48
(4%)	(10%)	(86%)	(7%)	(14%)	(79%)	(5%)	(12%)	(83%)
Short-term Managers – Both Accounting Standards			Long-term Managers – Both Accounting Standards			Total		
NO	IA	IR	NO	IA	IR	NO	IA	IR
1	5	52	4	24	30	5	29	82
(2%)	(9%)	(89%)	(7%)	(41%)	(52%)	(4%)	(25%)	(71%)

Panel B: Statistical Tests on the Difference between Investigating Accounting-based Earnings Management and Investigating Real Activities Manipulation

Effects of Accounting Standards on A and R		
Flexible vs. Stringent	Chi-Square	P-value (Two -tailed)
	10.141	0.001
Effects of Type of Manager on A and R		
Short vs. Long	Chi-Square	P-value (Two -tailed)
	18.283	0.000

Notes: NO: Do Not Investigation; IA: Investigate Accounting-based Earnings Management; IR: Investigate Real Activities Manipulation.

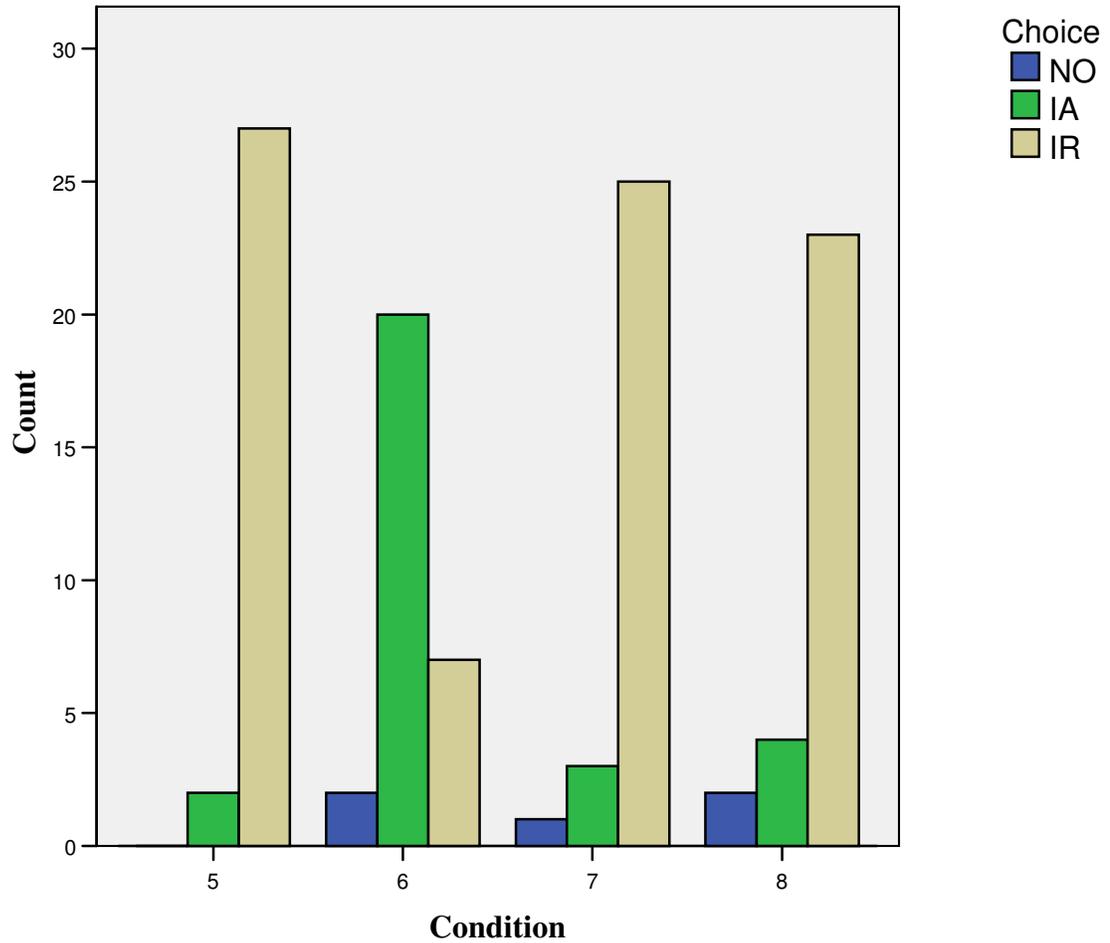


Figure 2.1 - Empirical Frequency Graph of Institutional Investors' Monitoring Activities for All Conditions with Long-term-oriented Institutional Investors

Notes:

- Condition 5 Flexible Accounting Standards and Short-term Managers
- Condition 6 Flexible Accounting Standards and Long-term Managers
- Condition 7 Stringent Accounting Standards and Short-term Managers
- Condition 8 Stringent Accounting Standards and Long-term Managers

- NO Do Not Investigate
- IA Investigate Accounting-based Earnings Management
- IR Investigate Real Activities Manipulation

Next, I use multinomial logit regression to test the effects of flexibility of accounting standards (flexible versus stringent), type of manager (short-term versus long-term), and the interaction term on institutional investors' monitoring activities. The dependent variable is institutional investors' monitoring choice (i.e., do not investigate, investigate accounting-based earnings management, and investigate real activities manipulation). The results from the multinomial logit model are presented in Table 2.3. The results indicate that type of manager has a significant effect on institutional investors' choices of monitoring activities (Wald = 18.278; $p < 0.000$). In addition, I find a significant interaction between flexibility of accounting standards and type of manager (Wald = 7.709; $p = 0.003$). The significant interaction effect arises mainly due to condition 6, in which participants (acting as institutional investors) are more likely to investigate accounting-based earnings management. In all other conditions, participants are more likely to investigate real activities manipulation.

Table 2.3: Multinomial Logit Regression of Long-term-oriented Institutional Investors' Monitoring Activities

Dependent Variable = Institutional Investors' Monitoring Choice		β	Std. Error	Wald	P-value (One-tailed)	Exp(β)
	Intercept	-2.603	0.733	12.614	0.000	
Investigate	Accounting Standards	0.482	0.954	0.256	0.307	1.620
Accounting-based	Manager	3.653	0.854	18.278	0.000	38.571
Earnings Management	Accounting Standards by Manager	-3.281	1.182	7.709	0.003	0.038
	N			29		
	Log-likelihood			43.744		
	Pseudo R²			31.4%		

Note: The reference category is Real Activities Manipulation.

Further, I focus on examining two types of monitoring activities (i.e., investigate accounting-based earnings management and investigate real activities manipulation) rather than all three choices that are available to participants, which include no investigation and two types of monitoring activities, because the choice of two types of monitoring activities helps explain managers' earnings management choices (i.e., accounting-based earnings management versus real activities manipulation).

2.5.1.1 Effects of Accounting Standards

I examine the effects of flexibility of accounting standards on two types of monitoring activities (investigate accounting-based earnings management versus investigate real activities manipulation). The results reported in Panel A of Table 2.2 indicate that with flexible accounting standards, 34 (59%) participants acting as institutional investors constrain real activities manipulation. With stringent accounting standards, 48 (83%) participants constrain real activities manipulation. The results presented in Panel B of Table 2.2 suggest that long-term-oriented institutional investors are more likely to constrain real activities manipulation with stringent accounting standards than with flexible accounting standards ($\chi^2 = 10.141$; $p = 0.001$).

2.5.1.2 Effects of Type of Manager

I investigate the effects of type of manager on two types of monitoring activities (investigate accounting-based earnings management versus investigate real activities manipulation). As reported in Panel A of Table 2.2, the results suggest that with short-term managers, 52 (89%) participants acting as institutional investors constrain real

activities manipulation. With long-term managers, 30 (52%) participants constrain real activities manipulation. The results presented in Panel B of Table 2.2 suggest that long-term-oriented institutional investors are more likely to monitor real activities manipulation in conditions with short-term managers than in conditions with long-term managers ($\chi^2 = 18.283$; $p < 0.001$).

2.5.2 Managers' Earnings Management Choices

2.5.2.1 Effects of Flexibility of Accounting Standards and Type of Manager on Managers' Earnings Management Choices

Panel A of Table 2.4 presents descriptive statistics of the frequency of participants' earnings management choices. Figure 2.2 presents the frequency of managers' choices of earnings management. Multinomial logit regression is employed to test the effects of accounting standards (flexible versus stringent), type of manager (short-term versus long-term), and the interaction term on managers' earnings management choices. The results reported in Panel A of Table 2.5 indicate that the effect of flexibility of accounting standards on managers' earnings management choice is marginally significant (Wald = 2.219; $p = 0.068$) and type of manager is significant (Wald = 7.286; $p = 0.004$), but the interaction term is insignificant.

Table 2.4: Panel A: Empirical Frequency Table for Observed Behavior of Managers' Earnings Management Choices with Long-term-oriented Institutional Investors

Accounting Standards								
Flexible								
Short-term Manager (Condition 5)			Long-term Manager (Condition 6)			Flexible Accounting Standards – All Managers		
N	A	R	N	A	R	N	A	R
6	17	6	5	8	16	11	25	22
(21%)	(58%)	(21%)	(17%)	(28%)	(55%)	(19%)	(43%)	(38%)
Stringent								
Short-term Manager (Condition 7)			Long-term Manager (Condition 8)			Stringent Accounting Standards – All Managers		
N	A	R	N	A	R	N	A	R
6	21	2	3	18	8	9	39	10
(21%)	(72%)	(7%)	(11%)	(62%)	(27%)	(16%)	(67%)	(17%)
Short-term Managers – Both Accounting Standards			Long-term Managers – Both Accounting Standards			Total		
N	A	R	N	A	R	N	A	R
12	38	8	8	26	24	20	64	32
(20%)	(66%)	(14%)	(14%)	(45%)	(41%)	(17%)	(55%)	(28%)

Panel B: Statistical Tests on the Difference between Accounting-based Earnings Management and Real Activities Manipulation

Effects of Accounting Standards on A and R		
Flexible vs. Stringent	Chi-Square	P-value (Two -tailed)
	7.524	0.006
Effects of Type of Manager on A and R		
Short vs. Long	Chi-Square	P-value (Two -tailed)
	10.101	0.001

Note: N: No Earnings Management; A: Accounting-based Earnings Management; R: Real Activities Manipulation.

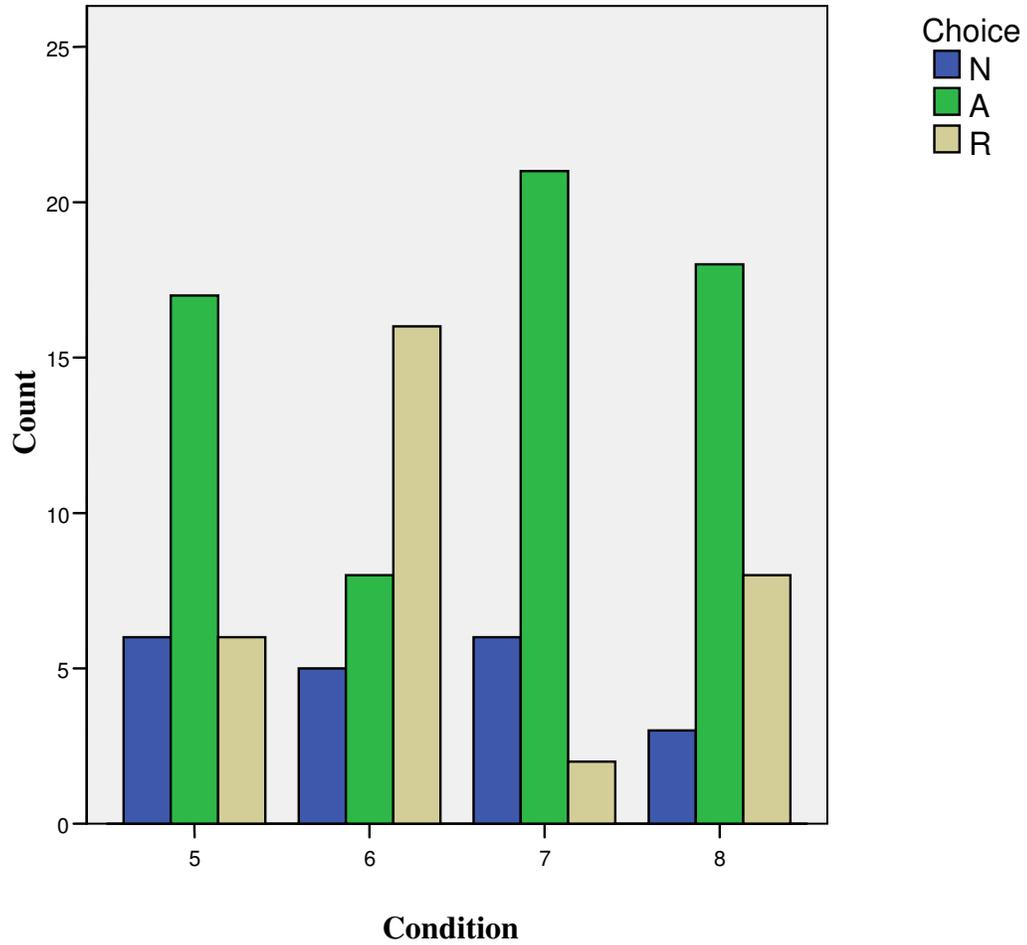


Figure 2.2 - Empirical Frequency Graph of Managers' Earnings Management Choices for All Conditions with Long-term-oriented Institutional Investors

Notes:

- Condition 5 Flexible Accounting Standards and Short-term Managers
- Condition 6 Flexible Accounting Standards and Long-term Managers
- Condition 7 Stringent Accounting Standards and Short-term Managers
- Condition 8 Stringent Accounting Standards and Long-term Managers

- N No Earnings Management
- A Accounting-based Earnings Management
- R Real Activities Manipulation

Table 2.5 Panel A: Multinomial Logit Regression of Managers' Earnings Management Choices

Dependent Variable = Managers' Earnings Management Choice		β	Std. Error	Wald	P-value (One-tailed)	Exp(β)
	Intercept	0.811	0.425	3.642	0.028	
Accounting-based Earnings Management	Accounting Standards	-1.310	0.879	2.219	0.068	0.270
	Manager	1.735	0.643	7.286	0.004	5.667
	Accounting Standards by Manager	-0.194	1.068	0.033	0.428	0.101
	N			29		
	Log-likelihood			26.021		
	Pseudo R²			16.7%		

Panel B: Multinomial Logit Regression of Managers' Earnings Management Choices – Short-term Managers

Choice	β	Std. Error	Wald	P-value (One-tailed)	Exp(β)
Accounting-based Earnings Management	Intercept	2.351	0.740	10.096	0.001
	Accounting Standards	-1.310	0.879	2.219	0.068

Panel C: Multinomial Logit Regression of Managers' Earnings Management Choices – Long-term Managers

Choice	β	Std. Error	Wald	P-value (One-tailed)	Exp(β)
Accounting-based Earnings Management	Intercept	0.811	0.425	3.642	0.028
	Accounting Standards	-1.504	0.607	6.146	0.007

Note: The reference category is Real Activities Manipulation.

I further examine the effects of accounting standards on managers' earnings management choice under conditions with different types of managers. As presented in Panel B of Table 2.5, the results indicate that the effects of flexibility of accounting standards on managers' earnings management choice are marginally significant under conditions with *short-term managers* (Wald = 2.219; $p = 0.068$). Results reported in Panel C of Table 2.5 suggest that the effect of type of manager on managers' earnings management choice is significant under conditions with *long-term managers* (Wald = 6.146; $p = 0.007$). The findings indicate that the marginal significant main effect of flexibility of accounting standards is driven by the results from the conditions with short-term managers.

2.5.2.1.1 Effects of Accounting Standards

Hypothesis 1 predicts that managers are not likely to switch from accounting-based earnings management to real activities manipulation when accounting standards become more stringent in conditions with long-term-oriented institutional investors. Hence, I compare the choices of accounting-based earnings management and real activities manipulation with different accounting standards. In support of Hypothesis 1, as Panel B of Table 2.4 indicates, more managers choose real activities manipulation with flexible accounting standards than with stringent accounting standards ($\chi^2 = 7.524$, $p = 0.006$).

The descriptive statistics presented in Panel A of Table 2.4 show that with flexible accounting standards, 25 (43%) and 22 (38%) participants choose accounting-based earnings management and real activities manipulation, respectively. Compared to the corresponding conditions with short-term-focused institutional investors, managers with

flexible accounting standards are less likely to choose accounting-based earnings management. However, accounting-based earnings management is still the most likely earnings management method. Hence, Hypothesis 1a is partially supported. With stringent accounting standards, 39 (67%) and 10 (17%) participants choose accounting-based earnings management and real activities manipulation, respectively. The result is consistent with Hypothesis 1b that managers do not favor real activities manipulation.

2.5.2.1.2 Effects of Type of Manager

Hypothesis 2 predicts that in conditions with long-term-oriented institutional investors, short-term managers are less likely to choose real activities manipulation than long-term managers. Hence, I compare the choices of accounting-based earnings management and real activities manipulation for different types of managers. In support of Hypothesis 2, the results presented in Panel B of Table 2.4 indicate that short-term managers are less likely to choose real activities manipulation than long-term managers ($\chi^2 = 10.101$; $p = 0.001$).

The results reported in Panel A of Table 2.4 show that short-term managers are more likely to choose accounting-based earnings management than real activities manipulation (A = 66%, R = 14%), which is consistent with Hypothesis 2a. Although accounting-based earnings management is the most likely earnings management choice (A = 45%, R = 41%), long-term managers are less likely to choose accounting-based earnings management compared to the corresponding benchmark conditions. Therefore, Hypothesis 2b is partially supported.

2.5.2.2 Further Analysis - Results for Each Condition

I further examine the results in each condition with long-term-oriented institutional investors, and then compare the results with those in the benchmark conditions. Figure 2.1 presents the frequency of managers' choice on each type of earnings management from conditions with long-term-oriented institutional investors. The figure indicates that managers are more likely to choose accounting-based earnings management than real activities manipulation in all conditions except for condition 6 (flexible accounting standards and long-term managers). These findings arise because institutional investors generally are more likely to constrain real activities manipulation except for condition 6, in which institutional investors are more likely to monitor accounting-based earnings management.⁴¹ As a result, managers are less likely to choose accounting-based earnings management in this condition. Managers' most likely earnings management choice for each condition is reported in Table 2.6 (in comparison to the corresponding benchmark result).

⁴¹ Institutional investors anticipate that, with flexible accounting standards and long-term managers, the most likely earning management method is accounting-based earnings management.

Table 2.6: Managers' Favorable Earnings Management Choices

	Short-term-focused Institutional Investors		Long-term-oriented Institutional Investors	
	Benchmark Condition	Favorable Earnings Management Choice	Condition	Favorable Earnings Management Choice
Flexible Accounting Standards / Short-term Manager	1	Accounting-based Earnings Management	5	Accounting-based Earnings Management
Flexible Accounting Standards / Long-term Manager	2	Accounting-based Earnings Management	6	Real Activities Manipulation
Stringent Accounting Standards / Short-term Manager	3	Real Activities Manipulation	7	Accounting-based Earnings Management
Stringent Accounting Standards / Long-term Manager	4	Accounting-based Earnings Management	8	Accounting-based Earnings Management

As reported in Panel A of Table 2.4, managers in condition 5 (flexible accounting standards, short-term managers, and long-term-oriented institutional investors) prefer accounting-based earnings management to real activities manipulation (A = 58%; R = 21%). In condition 6 (flexible accounting standards, long-term managers, and long-term-oriented institutional investors), managers are more likely to choose real activities manipulation than accounting-based earnings management (A = 28%; R = 55%). Managers in condition 7 (stringent accounting standards, short-term managers, and long-term-oriented institutional investors) prefer accounting-based earnings management to

real activities manipulation (A = 72%; R = 7%). In condition 8 (stringent accounting standards, long-term managers, and long-term-oriented institutional investors), managers are more willing to choose accounting-based earnings management than real activities manipulation (A = 62%; R = 27%).

The findings from condition 5 and 8 are consistent with those from the corresponding benchmark condition 1 (flexible accounting standards, short-term managers, and long-term-oriented institutional investors) and condition 4 (stringent accounting standards, long-term managers, and short-term-focused institutional investors), respectively. In these conditions, managers are more likely to choose accounting-based earnings management than real activities manipulation. The results arise because long-term-oriented institutional investors are more likely to constrain real activities manipulation.

However, the results from condition 6 are different than those from condition 2 (flexible accounting standards, long-term managers, and short-term-focused institutional investors). Managers in condition 6 (condition 2) are more likely to choose real activities manipulation (accounting-based earnings management) than accounting-based earnings management (real activities manipulation). The inconsistent results are driven by the difference of institutional investors' investment horizon. Long-term-oriented institutional investors are more likely to constrain accounting-based earnings management because the most likely earning management method is accounting-based earnings management with flexible accounting standards and long-term managers. More importantly, the detrimental effects of real activities manipulation are insignificant to institutional

investors because the optimal level of real activities manipulation is low.⁴² Consequently, institutional investors have more incentive to constrain accounting-based earnings management rather than real activities manipulation.

The findings from condition 7 are different than those from baseline condition 3 (stringent accounting standards, short-term managers, and short-term-focused institutional investors). With long-term-oriented institutional investors, short-term managers are more likely to choose accounting-based earnings management than real activities manipulation because long-term-oriented institutional investors are more likely to constrain real activities manipulation in this condition.⁴³

⁴² Although the marginal cost of real activities manipulation is constant across different conditions, the total effects of real activities manipulation are not detrimental in condition 6 because the optimal amount of real activities manipulation is extremely lower. The low optimal level of real activities manipulation are due to (1) the detrimental effects of real activities manipulation have impact on long-term managers' payoffs, so managers themselves have less incentive to engage in real activities manipulation; (2) with flexible accounting standards, cost of engaging in accounting-based earnings management is cheaper.

⁴³ Institutional investors are more likely to constrain real activities manipulation because (1) real activities manipulation has the detrimental effect on the long-term-oriented investors' payoff; (2) real activities manipulation is the most likely earnings management method without the presence of the institutional monitoring.

2.6 Summary and conclusion

A body of prior literature (e.g., Dechow and Skinner 2000; Nelson et al. 2002) is devoted to documenting accounting-based earnings management. However, the recent survey conducted by Graham et al. (2005) shows that many managers use real activities manipulation rather than accounting-based earnings management to window dress the financial statements. The unwillingness of managers to use accounting-based earnings management in recent years is partly attributed to the Sarbanes-Oxley Act (SOX), which imposes tightening accounting regulations and rules on firms. The core concern in this paper is that the legislative and regulatory response treats the symptoms (means) rather than the disease (motivation) because the constraints on accounting-based earnings management may cause managers to switch to real activities manipulation.

The prior studies (e.g., Demski 2004; Ewert and Wagenhofer 2005; Graham et al. 2005; Cohen et al. 2008) provide evidence that managers switch from accounting-based earnings management to real activities manipulation with tightening accounting standards. The paper extends this line of literature and examines the effects of flexibility of accounting standards on managers' earnings management behavior across different institutional environments and with different managers' compensation schemes. The findings suggest that with short-term-focused institutional investors, managers are more likely to switch from accounting-based earnings management to real activities manipulation when accounting standards become tighter. The results are consistent with the prior evidence.

However, in presence of a long-term-oriented institutional monitoring mechanism, managers are no more likely to switch from accounting-based earnings management to real activities manipulation with tightening accounting standards. The results suggest that managers engage in more real activities manipulation in response to tightening accounting standards only when institutional investors have a short investment horizon.

In addition, the findings suggest that with short-term-focused institutional investors, managers are more likely to engage in real activities manipulation when their payoffs are only tied to current-period earnings (short-term managers) than when their payoffs are related to both current-period earnings as well as long-term performance of the firm (long-term managers). However, with long-term-oriented institutional investors, short-term managers are less likely to choose real activities manipulation than long-term managers because a long-term-oriented institutional monitoring mechanism deters short-term managers from choosing real activities manipulation.

Furthermore, long-term-oriented institutional investors take a more active role to constrain earnings management than short-term-focused institutional investors. Specifically, long-term-oriented institutional investors generally are more likely to constrain real activities manipulation because of the detrimental effect of real activities manipulation.

This dissertation contributes to understanding the implications of flexibility of accounting standards on the level of accounting-based earnings management and real activities

manipulation. A conclusion on which accounting standard (rules-based or principles-based accounting standard) is more effective cannot be reached without considering other factors such as managers' compensation schemes and institutional investors' monitoring activities. These results have implications for regulators, practitioners, and academics. In order to effectively constrain earnings management, besides changing the flexibility of accounting standards, constructing a long-term-oriented institutional environment is required. Additionally, this dissertation sheds lights on the effects of managers' compensation schemes on earnings management behavior. When managers' payoffs are related to long-term performance of the firm, they are more likely to self-constrain real activities manipulation.

One limitation of this study is that only single motivation for earnings management, which is a compensation contract. In reality, many other factors could drive earnings management such as avoiding violations of debt covenants and smoothing earnings. The second limitation is that my experiment does not permit the prices to be endogenously determined by the market. Future research can enrich this experiment by incorporating a more dynamic market setting. That is, let the experimental market determine the prices.

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APPENDIX A: Variables required for my analysis and corresponding COMPUSTAT data items

ASSETS	Total assets = data6
SALES	Net sales = data12
IBEI	Earnings before extra-ordinary items = data18
COGS	Cost of goods sold = data41
PPE	Plant, Property and Equipment = data107
CFO	Cash flow from operations = data308
ACCR	Total accruals = Earnings - Cash flow from operations = data18 – data308
EXP	Discretionary expenses = R&D + Advertising + SG&A = data46 + data45 + data189
RD	R&D expenses = data46
SG&A	Selling, General and Administrative expenses, excluding R&D = data189 – data46
Funds	Internal funds = IBEI + R&D + Depreciation = data18 + data46 + data14
TobinsQ	(MV + Book value of preferred stock + Long-term debt + Short-term debt) / Total assets = (data199*data25 + data130 + data9 + data34) / data6
CapitalExp	Capital expenditure = data128
DS	Dummy variable; 1 if income decreasing, 0 otherwise
PROD	COGS + Δ Inventory = data41 + Δ data3
SIZE	Logarithm of total assets = log (data6)
MTB	Logarithm of Market-to-book ratio = log (MV/BV) = log (data199*data25/data216)
NI	Net income = data172/data25*data199
ABDAC	$ACCR_t / A_{t-1} = \alpha * (1 / A_{t-1}) + \beta_1 * (\Delta S_t / A_{t-1}) + \beta_2 * (PPE_t / A_{t-1}) + \varepsilon_t$ <p>where, A = Total assets; ΔS = Change in sales over last period's sales; PPE = Property, plant and equipment; ACCR = Total accruals.</p> <p>This equation is estimated for every industry and year with at least 15 observations. The error term in the model represents the unexplained or discretionary component of accruals. ABDAC is the absolute value of the error term.</p>
ABCFO	$CFO_t / A_{t-1} = \alpha_0 + \alpha_1 * (1 / A_{t-1}) + \beta_1 (S_t / A_{t-1}) + \beta_2 (\Delta S_t / A_{t-1}) + \varepsilon_t$ <p>where, CFO= Cash flow from operations; S = Net sales; A= Total assets.</p> <p>This equation is estimated for every industry and year with at least 15 observations. The error term in the model represents abnormal cash flow from operations (ABCFO).</p>
ABEXP	$EXP_t / A_{t-1} = \alpha_0 + \alpha_1 * (1 / A_{t-1}) + \beta (S_{t-1} / A_{t-1}) + \varepsilon_t$ <p>where, EXP = Discretionary expenses = R&D + Advertising + Selling, General and Administrative expenses; S = Net sales; A= Total assets.</p> <p>This equation is estimated for every industry and year with at least 15</p>

	<p>observations. The error term in the model represents abnormal discretionary expenses (ABCFO).</p>
ABPROD	$PROD_t / A_{t-1} = \alpha_0 + \alpha_1 * (1 / A_{t-1}) + \beta_1 (S_t / A_{t-1}) + \beta_2 (\Delta S_t / A_{t-1}) + \beta_3 (\Delta S_{t-1} / A_{t-1}) + \varepsilon_t$ <p>where, Prod = Production costs = COGS + ΔInventory; S = Net sales; ΔS_t = Change in sales over last period's sales.</p> <p>This equation is estimated for every industry and year with at least 15 observations. The error term in the model represents abnormal production costs (ABPROD).</p>
ABRD	$RD_t / A_{t-1} = \alpha_0 + \beta_1 (RD_{t-1} / A_{t-1}) + \beta_2 (Funds / A_{t-1}) + \beta_3 * TobinsQ_t + \beta_4 * CapitalExp_t / A_{t-1} + \varepsilon_t$ <p>where, RD = R&D expense; A = Total assets; Funds = Internal funds = IBEI + R&D + Depreciation; TobinsQ = the sum of market value of equity, book value of preferred stock, long-term debt, and short-term debt, scaled by total assets; CapitalExp = Capital expenditure.</p> <p>This equation is estimated for every industry and year with at least 15 observations. The error term in the model represents abnormal R&D expenses (ABRD).</p>
ABSGA	$\log \frac{SG\&A_t}{SG\&A_{t-1}} = \alpha_1 + \alpha_2 \log \left[\frac{S_t}{S_{t-1}} \right] + \alpha_3 \log \left[\frac{S_t}{S_{t-1}} \right] \times DS_t + \alpha_4 \log \left[\frac{S_{t-1}}{S_{t-2}} \right] + \alpha_5 \log \left[\frac{S_{t-1}}{S_{t-2}} \right] \times DS_{t-1} + \varepsilon_t$ <p>where, SG&A = SG&A expenses – R&D expenses; S = Net Sales; DS = Dummy for decreasing sales that equals 1 if sales are decreasing, 0 otherwise.</p> <p>This equation is estimated for every industry and year with at least 15 observations. The error term in the model represents abnormal SG&A (ABSGA).</p>
PDAC	The predicted value of ABDAC from the first stage regression
Mktshare	Auditors' market shares = Total assets of all clients in a certain industry audited by a particular auditor / Total assets of all clients in that industry
SPEL	Industry specialist auditors = Auditors with a market share in excess of (1 firm/N firms * 1.20)%
Auditor Code	Data149
First Sample	Sample that includes firms that just meet analysts' forecasts Forecast Error = Forecasts earnings – Actual earnings = 0 where, Forecast earnings = Median of the most recent forecast earnings
Second Sample	Sample that includes firm-years before issuance of new equities If data108 > 0 in year t+1

APPENDIX B: All Conditions and Corresponding Equilibrium

Condition	Optimal Equilibrium
1 Flexible Accounting Standards, Short-term Managers, and Short-term-focused Institutional Investors	X chooses accounting-based earnings management Y chooses to exit the market at the end of the first period
2 Flexible Accounting Standards, Long-term Managers, and Short-term-focused Institutional Investors	X chooses accounting-based earnings management Y chooses to exit the market at the end of the first period
3 Stringent Accounting Standards, Short-term Managers, and Short-term-focused Institutional Investors	X chooses real activities manipulation Y chooses to exit the market at the end of the first period
4 Stringent Accounting Standards, Long-term Managers, and Short-term-focused Institutional Investors	X chooses accounting-based earnings management Y chooses to exit the market at the end of the first period
5 Flexible Accounting Standards, Short-term Managers, and Long-term-oriented Institutional Investors	Mixed Strategy
6 Flexible Accounting Standards, Long-term Managers, and Long-term-oriented Institutional Investors	Mixed Strategy
7 Stringent Accounting Standards, Short-term Managers, and Long-term-oriented Institutional Investors	Mixed Strategy
8 Stringent Accounting Standards, Long-term Managers, and Long-term-oriented Institutional Investors	Mixed Strategy

APPENDIX C: Payoff Tables (Short-term-focused institutional investors have all four options. Long-term-oriented institutional investors do not have 'Exit' option)

Flexible Accounting Standards - Short-term managers

Player Y's Options \ Player X's Options		Player X's Options		
		Action N	Action A	Action R
Player Y's Options	Exit	X = 79 Y = 131	X = 87 Y = 164	X = 87 Y = 164
	Accept All Actions	X = 79 Y = 131	X = 87 Y = 121	X = 87 Y = 99
	Investigate Action A	X = 79 Y = 131	X = 70 Y = 131	X = 87 Y = 99
	Investigate Action R	X = 79 Y = 131	X = 87 Y = 121	X = 70 Y = 131

Flexible Accounting Standards - Long-term managers

Player Y's Options \ Player X's Options		Player X's Options		
		Action N	Action A	Action R
Player Y's Options	Exit	X = 104 Y = 131	X = 109 Y = 155	X = 105 Y = 136
	Accept All Actions	X = 104 Y = 131	X = 109 Y = 123	X = 105 Y = 126
	Investigate Action A	X = 104 Y = 131	X = 99 Y = 131	X = 105 Y = 126
	Investigate Action R	X = 104 Y = 131	X = 109 Y = 123	X = 104 Y = 131

Stringent Accounting Standards - Short-term managers

Player Y's Options \ Player X's Options		Player X's Options		
		Action N	Action A	Action R
Player Y's Options	Exit	X = 99 Y = 291	X = 105 Y = 332	X = 112 Y = 373
	Accept All Actions	X = 99 Y = 291	X = 105 Y = 278	X = 112 Y = 212
	Investigate Action A	X = 99 Y = 291	X = 92 Y = 291	X = 112 Y = 212
	Investigate Action R	X = 99 Y = 291	X = 105 Y = 278	X = 86 Y = 291

Stringent Accounting Standards - Long-term managers

Player Y's Options \ Player X's Options		Player X's Options		
		Action N	Action A	Action R
Player Y's Options	Exit	X = 130 Y = 291	X = 134 Y = 322	X = 132 Y = 308
	Accept All Actions	X = 130 Y = 291	X = 134 Y = 281	X = 132 Y = 274
	Investigate Action A	X = 130 Y = 291	X = 127 Y = 291	X = 132 Y = 274
	Investigate Action R	X = 130 Y = 291	X = 134 Y = 281	X = 130 Y = 291

Note: The bolded choices in the above tables are the equilibrium in the conditions with short-term-focused institutional investors.

APPENDIX D: Parameter Selections

I randomly generate parameter s but it has to fulfill the following criteria: $s - 1 > 0$;

The discount rate can be randomly selected because all results are qualitatively similar as long as the manager's and the market's discount rates are identical (Sunkar and Subramanyam 2001). I set $p = s$ because both are essentially discount rates.

α is a random variable generated between $-(d_A^* + d_R^*)$ and 0. I set the market's beliefs of earnings management are smaller than the actual earnings management because prior literature documents that market typically cannot fully anticipate and adjust the reporting bias.

β_2 and γ_2 with flexible accounting standards are randomly selected. Then, I set $\beta_1 = \beta_2 + \gamma_2$, implying that reported earnings in the two periods are equally informative with respect to the liquidating dividend. With stringent accounting standards, all value relevance parameters (β_2, β_2 and γ_2) are assumed doubled.

c is randomly selected, but it has to be large enough to show the detrimental effect of real activities manipulation. That is, with stringent accounting standards, long-term managers are expected to take less real activities manipulation than accounting-based earnings management (i.e., $d_A^* > d_R^*$).

All randomly selected parameters have to meet the following requirements: $d_A^* > 0$; $d_R^* > 0$; $U_{shortmgr} > 0$; $U_{longmgr} > 0$; $U_{shortinv} > 0$; $U_{longinv} > 0$

$$\alpha = -1.16; s = p = 3.12;$$

Flexible Accounting Standards

$$\beta_1 = 0.32; \beta_2 = 0.11; \gamma_2 = 0.21; a = 1$$

Stringent Accounting Standards

$$\beta_1 = 0.64; \beta_2 = 0.22; \gamma_2 = 0.42; a = 2$$

The optimal level of each of earnings management is presented below:

	Flexible Accounting Standards	Stringent Accounting Standards
Short-term Managers	$d_A^* = 4.12$ $d_R^* = 4.12$	$d_A^* = 2.56$ $d_R^* = 5.12$
Long-term Managers	$d_A^* = 3.02$ $d_R^* = 0.60$	$d_A^* = 1.96$ $d_R^* = 1.08$

APPENDIX E: Instructions

Thank you for participating in this experiment. After the experiment begins, please do not communicate with other participants. If you have a question, please raise your hand and I will answer your question individually.

Roles

In this experiment you will perform a simple decision task that involves two people -- call them players X and Y. All participants in this experiment are allocated to one of two groups: the group of players X and the group of players Y. Your role will be announced after instructions are finished. Your role will remain unchanged throughout the experiment.

Overview

Players X and players Y make decisions simultaneously based on the payoff tables (provided later). Each player makes a series of decisions. At the end of the experiment, each player X is randomly paired with a player Y. One of the decisions is randomly selected and used to determine each player's payoff in the pair.

Anonymity and Privacy

In the experiment, no player will know the identity of the player with whom s/he is paired. All your decisions are completely anonymous. No one, including the experimenter, will be able to link your decisions to your name. At the end of the experiment, your monetary payoff will be given to you in a sealed envelope, with only your participant number printed on the envelope.

Procedures

Player X has the following three options: **(1) Action N, (2) Action A, and (3) Action R.** Player X can only choose *one* of the three options. Player Y has three options: **(1) Accept any actions chosen by player X, (2) Reject Action A, and (3) Reject Action R.** Player Y can only choose *one* of the three options.

The payoffs of players X and Y are jointly determined by both players' decisions. The payoff tables are provided later. The numbers in the payoff tables are in points. The points are converted to the monetary payoff using the following formula:

$$\frac{\text{The actual points you get in each table} - \text{Minimum points you can get in each table}}{\text{Maximum points you can get in each table} - \text{Minimum points you can get in each table}} \times \$15$$

In addition to the earnings converted from your points, you will also receive a participation fee of \$5.

Quiz

Please complete this quiz to make sure you have a complete and accurate understanding of instructions as well as the payoff tables. After you have completed the quiz, the experimenter will check your answers and discuss with you any questions that have been answered incorrectly.

Payoff Table for Both Players (Note: This table is solely for practice purposes and is different from the actual table you will be using in the experimental task.)⁴⁴

		Player X's Options		
		Action N	Action A	Action R
Player Y's Options	Accept All Actions	X = 12 Y = 150	X = 116 Y = 200	X = 130 Y = 500
	Reject Action A	X = 113 Y = 250	X = 12 Y = 120	X = 220 Y = 200
	Reject Action R	X = 212 Y = 200	X = 313 Y = 200	X = 65 Y = 300

Assume Player X chooses Action R and Player Y chooses Reject Action R, what is the payoff for each player (Please fill in the blanks):

Player X's payoff (in points): _____
 Player Y's payoff (in points): _____

Assume Player X chooses Action A and Player Y chooses Reject Action R, what is the payoff for each player (Please fill in the blanks):

Player X's payoff (in points): _____
 Player Y's payoff (in points): _____

Assume Player X chooses Action A and Player Y chooses Reject Action A, what is the payoff for each player (Please fill in the blanks):

Player X's payoff (in points): _____
 Player Y's payoff (in points): _____

⁴⁴ The example on how to calculate the monetary payoff is shown below. The monetary payoff for Player X is calculated as:

$$\frac{X - 12}{313 - 12} \times \$15$$

The monetary payoff for Player Y is calculated as:

$$\frac{Y - 120}{500 - 120} \times \$15$$

Participants are informed of their roles (either Player X or Player Y).
You belong to the group of players X (or Y)!

Participants get the payoff tables.
Payoff tables are shown in Appendix B.

Participants are asked to make a decision for each payoff table.

For Player X:

Please choose one and only one of the following options (place an “x” in the blank next to your choice)

Options

1 Action N _____

2 Action A _____

3 Action R _____

For Player Y:

Please choose one and only one of the following options (place an “x” in the blank next to your choice)

Options

1 Accept All Actions _____

2 Reject Action A _____

3 Reject Action R _____