THE EFFECT OF SARBANES-OXLEY ON EARNINGS MANAGEMENT BEHAVIOR

by

GEORGE WILSON

(Under the Direction of Benjamin Ayers)

ABSTRACT

This paper investigates the impact of Sarbanes-Oxley (SOX) on managers' earnings management choices (i.e., accrual management and real earnings management). Specifically, I investigate whether firms reduce their use of accrual management and increase their use of real earnings management post-SOX. SOX likely increases the cost of engaging in accrual management because of increased legal liability for executives, greater auditor independelce, and increased public awareness of aggressive accounting treatments. An increased cost of aacrual management is likely to lead managers to use other methodq to manage earnings (e.g., real earnings management through sales manipulation, reduction of discretionary expenditures, and overproduction). Consistent with this expectation, I find an increased association between certain types of real earnings management (overproduction and sales manipulation) and the propensity to beat the profit and earnings change benchmarks. Results also indicate that the associations between abnormal accruals and beating the profit and earnings change benchmarks dm *not* change post-SOX. Contrary to recent evidence suggesting a decline, on average, in accruals management post-Sox, these results suggest there was no significant decline in accruals management for firms with strong incentives to manage earnings (i.e., firms with earnings close to earnings benchmarks).

INDEX WORDS: Earnings Management, Real Earnings Management, Production Cost Management, Discretionary Expenses Management, Sarbanes-Oxley Act of 2001, Earnings Benchmarks

THE EFFECT OF SARBANES-OXLEY ON EARNINGS MANAGEMENT

BEHAVIOR

by

GEORGE WILSON

B.B.A., The University of Memphis, 2001

A Dissertation Submitted to the Graduate Faculty of The University of Georgia In Partial Fulfillment of the Requirements

for the Degree

DOCTOR OF PHILOSOPHY

ATHENS, GEORGIA

© 2006

George Wilson

All Rights Reserved

THE EFFECT OF SARBANES-OXLEY ON EARNINGS MANAGEMENT

BEHAVIOR

by

GEORGE WILSON

Major Professor: Benjamin Ayers

| Committee: | Scott Atkinson |
|------------|------------------|
| | Stephen Baginski |
| | Jennifer Gaver |

Electronic Version Approved:

Maureen Grasso Dean of the Graduate School The University of Georgia August 2006

ACKNOWLEDGEMENTS

I wish to express my appreciation for everyone who has helped me in pursuit of this degree. I must first thank my wife Heather for her tremendous support, encouragement, and understanding throughout my entire educational process. I must also thank my children, Sterling, Savannah, and Eli, as well as my brother and sister for their encouragement.

I also would like to thank all of the members of my dissertation committee, Ben Ayers, Jenny Gaver, Ken Gaver, Steve Baginski, and Scott Atkinson for their time spent in reviewing this work and offering comments to help improve the paper. Their input has been invaluable in helping to craft my understanding of earnings management and the research process. I wish to especially thank Ben Ayers for his long-suffering patience and keen insights. His guidance and example of professionalism will continue to benefit me throughout my career.

Finally, I would like to thank the entire faculty of the J.M. Tull School of Accounting. Each member of the faculty has taken time to assist me whenever I have asked or whenever they saw an opportunity to help. The lessons they have taught me go far beyond the classrooms.

TABLE OF CONTENTS

| Page |
|--|
| ACKNOWLEDGEMENTSvi |
| LIST OF TABLESix |
| CHAPTER |
| 1 INTRODUCTION1 |
| 1.1. Statement of Issues1 |
| 1.2. Summary of Research Methods and Results4 |
| 1.3. Contributions6 |
| 1.4. Organization of the Dissertation |
| 2 LITERATURE REVIEW8 |
| 2.1. Empirical Definitions of Earnings Management8 |
| 2.2. Incentives to Beat Earnings Benchmarks10 |
| 2.3. Earnings Management to Meet/Beat Earnings |
| Benchmarks13 |
| 2.4. The Effects of SOX on Earnings Management19 |
| 2.5. Contributions22 |
| 3 HYPOTHESES |
| 3.1. The Effect of Sarbanes-Oxley on Accrual |
| Management23 |
| 3.2. The Effect of Sarbanes-Oxley on Real |
| Management24 |

Page

| 4 | RESEARCH METHOD AND SAMPLE SELECTION |
|--------|---|
| | 4.1. Overview of Research Method25 |
| | 4.2. Cross-sectional Probit Model27 |
| | 4.3. Estimation Models and Expectations |
| | 4.4. Sample Selection |
| 5 | RESULTS |
| | 5.1. Univariate Results |
| | 5.2. Multivariate Results |
| | 5.3. The Use of Accrual Management Following |
| | Sarbanes-Oxley43 |
| | 5.4. The Use of Real Earnings Management Post-SOX45 |
| б | CONCLUSIONS |
| | 6.1. Summary |
| | 6.2. Limitations50 |
| | 6.3. Future Research |
| REFERE | NCES53 |

LIST OF TABLES

Page

| Table 1: | Industry Distributions57 |
|----------|---|
| Table 2: | Univariate Analysis60 |
| Table 3: | Comparison of Just Meet/Beat Firm-Years with |
| | Just Miss Firm-Years64 |
| Table 4: | Comparison of Real Earnings Management Levels |
| | Between Suspect Firms and Non-Suspect Firms67 |
| Table 5: | Time Trends in Accrual Management69 |

CHAPTER 1

INTRODUCTION

1.1.Statement of Issues

1.1.1. Earnings Management Background

It is well documented that managers have strong capital market incentives (Myers and Skinner 1999; Barth et al. 1999; Skinner and Sloan 2000) to manage reported earnings. The vast majority of prior earnings management literature has focused managers' use of accruals to manage earnings (see Healy and Wahlen, 1999; Dechow and Skinner, 2000; Beneish, 2001; Fields et al., 2001 for survey). However, managers also have the option to manage earnings through real earnings management (i.e., sales manipulation, reduction of discretionary expenditures, and overproduction). Roychowdhury (2005) provides evidence that suggests managers do in fact use real earnings management (hereafter REM) to beat earnings benchmarks. Specifically, Roychowdhury (2005) finds that firms who just meet/beat the profit and earnings change benchmarks exhibit higher levels of abnormal production costs and lower levels of discretionary expenses when compared to other firms across the distribution of earnings. Graham, Harvey, and Rajgopal (2005) survey 401

financial executives and find that executives prefer to use REM to manage earnings rather than accruals management. This evidence is puzzling because manipulating real activities to meet short-term earnings benchmarks represents a sacrifice of economic value to the extent that the manipulated activities deviate from long-term optimal actions. Consistent with this view, Gunny (2005) documents that engaging in REM negatively impacts operating performance in subsequent years. Unlike REM, accruals management has no implications for cash flows or longterm performance, and it reverses in subsequent periods. Therefore, accrual management appears to be a less costly form of earnings management when compared to REM.

1.1.2. Sarbanes-Oxley and Earnings Management

Although REM may be more costly than accruals management, several recent papers suggest that managers' preference for engaging in REM may be increasing in recent years. Ewert and Wangenhofer (2005) analytically demonstrate that tightening accounting standards increases the marginal benefit of REM. Similarly, Graham et al. (2005) suggest that recent accounting scandals and the passage of the Sarbanes-Oxley Act (SOX) may have altered managers' preference for using REM versus accruals management to ease stakeholder concerns. In support of this assertion, one interviewed executive reports a desire to "...go out of their way to assure stakeholders that there is no

accounting based earnings management in their books." In addition to avoiding the perception of being an "accounting manipulator," managers may avoid using aggressive accounting methods to limit their own legal liability since SOX imposes significant criminal and civil penalties on executives who knowingly file false financial reports. Furthermore, accruals management, unlike REM, is subject to auditor scrutiny. While auditors can disallow aggressive accounting methods, they do not have the ability to alter managers' operational choices. Thus, given that SOX increases the risk of engaging in accruals management, firms may choose to use other forms of earnings management that do not bear increased risk under SOX.

Recent evidence in Cohel, Dey, and Lys (2005) suggests that earnings management behavior changed following SOX passage. In particular, they create a composite measure of earnings management using abnormal accrual proxies utilized in prior research and other accounting ratios. Post-SOX, they find a sharp decline in their earnings management measure. Their evidence suggests that, on average, firms decreased earnings management post-SOX. Given firms' ability to use both accruals management and REM to manage earnings, a decline in earnings management post-SOX does not necessarily imply that all types of earnings management activity declined, nor does it imply a decrease in earnings management for firms with the strongest

incentives to manage earnings - e.g., those firms that absent earnings management would just-miss earnings benchmarks.¹ This study investigates whether managers' use of accrual manipulations and REM to beat earnings benchmarks changed in the wake of recent accounting scandals and the passage of SOX.

1.2.Summary of Research Methods and Results

1.2.1. Summary of Research Methods

To identify firms with stronger incentives to manage earnings, I focus on firms with earnings around the three common earnings benchmarks - profit, earnings change, and analysts' forecasted earnings. My sample includes firm-year observations for these just-miss and just-beat firms from 1987 to 2004. I divide the sample into pre-SOX (1987 - 2001) and post-SOX periods (2003-2004) and eliminate observations from 2002 since SOX was effective the third-quarter of 2002.²

To provide evidence on the change in earnings management following SOX, I estimate a probit regression that relates a firm's probability of beating an earnings benchmark with the firm's abnormal accruals, abnormal production costs, and abnormal discretionary expenses. I use the Jones (1991) model to estimate discretionary accruals and linear models presented

¹ Cohen et al. (2005) do not examine the time-series properties of their earnings management measure for just miss or just beat firms. ² The actual year deleted varies depending on each firm's month of fiscal year-end. For firms with fiscal years ending from January to June and October to December, I delete fiscal year 2002. For firms with fiscal years ending in July or August, I delete fiscal year 2003.

by Roychowdhury (2005) to estimate REM measures for production costs and discretionary expenses. I interact measures of abnormal accruals, abnormal production costs, and abnormal discretionary expenses with an indicator variable for post-SOX firm-years to measure the incremental effect of SOX on the use of accrual management and REM to `eat earnings benchmarks. If REM increases post-SOX, then I expect to find a positive and significant coefficient on the interactions of REM measures with the post-SOX indicator variable. Similarly, if accruals management declines post-SOX, I expect to find a significant negative coefficient on the interaction of abnormal accruals with the post-SOX indicator variable.

1.2.2. Summary of Results

Results indicate that the associations between abnormal accruals and beating the profit, earnings change, and analysts' forecast benchmarks *do not* change post-SOX. In contrast to Cohen et al. (2005), who conclude that earnings management, *on average*, declined post-SOX, this evidence suggests that SOX had no significant effect on the use of accrual management to beat earnings benchmarks. Regarding the use of REM to beat earnings benchmarks, results indicate an increased association between REM and the propensity to beat the profit and earnings change benchmarks. I find no change in the association between REM and the propensity to beat the analysts' forecast benchmark. In

sum, results indicate a relative shift to REM for benchmark beaters post-SOX, but that earnings management, on average, has not declined for firms with strong incentives to manage earnings.

1.3. Contributions

This paper contributes to the earnings management literature in two ways. First, prior research suggests that managers use several earnings management methods to beat earnings benchmarks. This study demonstrates how regulatory intervention influences how firms' beat earnings benchmarks. In particular, results suggest that post-SOX the associations between abnormal production costs and beating earnings benchmarks increase relative to the association between abnormal accruals and beating earnings benchmarks. Second, SOX was designed to limit opportunistic behavior by managers. Since REM represents a sacrifice of future economic benefit to improve short-term financial reporting, investors have incentives to identify and limit managers' use of REM. To date, the effects of SOX on financial reporting decisions and managers' actions are still largely unknown. This paper suggests that SOX resulted in an increase of REM, arguably a more costly and less attractive method to beat benchmarks.

1.4. Organization of the Dissertation

The remainder of the paper is organized as follows: Section 2 reviews prior literature and Section 3 develops testable hypotheses. In Section 4, I describe the sample selection and research method. I present results in Section 5 and discuss conclusions and implications for future research in Section 6.

CHAPTER 2

LITERATURE REVIEW

In this chapter I review the extant accounting literature related to this study's predictions and empirical tests. I also discuss this study's contributions to the accounting literature. I begin this literature review in section 2.1 by reviewing studies that empirically define earnings management. In section 2.2 I discuss the various incentives that managers have to beat earnings benchmarks. In section 2.3 I review the streams of literature that provide evidence regarding earnings management to beat earnings benchmarks, both through the use of accrual management and real earnings management. I discuss related studies that investigate the effects of SOX on financial reporting in section 2.4. Finally, I discuss this study's contributions to the accounting literature in section 2.5.

2.1. Empirical Definitions of Earnings Management

The vast majority of prior earnings management research investigates earnings management from the perspective of accrual management. Likewise, several widely accepted definitions of earnings management tend to define earnings management in terms of accruals management. For instance, Schipper (1989) defines earnings management as:

... [A] purposeful intervention in the external financial reporting process, with the intent of obtaining some private gain (as opposed to, say, merely facilitating the neutral operation of the process.

Similarly, Healy and Whalen (1999) define earnings management as

follows:

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.

Both of these definitions refer to the financial reporting process as a context for earnings management. Accruals management is the type of earnings management that takes place inside the financial reporting process since Generally Accepted Accounting Principles (GAAP) are based on the accrual method of accounting.

REM does not fit precisely inside these widely cited definitions of earnings management since it is an intervention into the internal operational processes of the firm rather than the external financial reporting processes. However, REM does share an important characteristic used in each of the widely used definitions of earnings management. Namely, managers engage in REM with the intent to "obtain some private gain" and to "mislead some stakeholders about the underlying economic performance of the company". In summary, accruals management is

the use mf managerial discretion over accounting choices with the intent to influence reported accountine numbers; REM is the use of managerial discretion over operational choices with the intent to influence reported accounting numbers.

2.2. Incentives to Beat Earnings Benchmarks

2.2.1. Capital Market Incentives

A long line of literature exists that documents incentives for managers to meet or beat earnings benchmarks (i.e. the zero earnings, earnings change, and analysts' forecast benchmarks). One of the most documented incentives to meet or beat earnings benchmapks comes from the capital markets.

Several papers have examined capital market reactions around the earnings change benchmark. DeAngelo, DeAngelo, and Skinner (1996) investigate the capital market reaction to breaking a string of annual earnings increases. They find that firms who miss the earnings change benchmark after beating the benchmark in at least the nine previous years had on average a -14% return in the benchmark miss year. Barth, Elliott, and Finn (1999) find that firms with consecutive strings of annual earnings increases have higher price- earnings multiples than other firms. Similar to DeAngelo, DeAngelo, and Skinner (1996), they also find that there is a significant decline in the priceearnings multiple when the string of earnings increases is broken. Myers and Skinner (1999) use quarterly earnings data

and find similar results. These papers suggest that the capital markets reward firms who consistently beat the earnings change benchmark and punish firms when they break and string of consecutive earnings increases; thus giving managers an incentive to manage earnings to beat the earnings change benchmark.

Several papers have also investigated the capital market incentives for managers to beat the analysts' forecast benchmark. Skinner and Sloan (2001) examine the difference in the market responses to earnings surprises³ between growth stocks⁴ and value stocks. They find that the market response to positive earnings surprises is similar for both growth stocks and value stocks. However, they also find that the market reaction to negative earnings surprises is disproportionately larger for growth stocks. This evidence suggests that managers of growth stocks have strong incentives to meet/beat analysts' forecasts. Kasznik and McNichols (2002) find the capital markets reward firms that consistently beat analysts' forecasts. They show that firms who beat analysts' forecast benchmark in a given year have higher abnormal returns than those who miss the benchmark. Additionally, firms who have beat the analysts' forecast benchmark in the prior two years have higher abnormal

³ Skinner and Sloan define an earnings surprise as the difference between actual earnings and the consensus analysts' forecast.

⁴ Growth stocks are defined in terms of market-to-book ratio.

returns than those who have only beat the benchmark in the current year. Bartov, Givoly, and Hayn (2002) find similar results showing that firms who meet/beat the quarterly analysts' earnings forecast have higher price premiums than firms that miss this benchmark. Additionally, Mikhail, Walther, and Willis (2004) find that firms who miss the analysts' forecast benchmark have higher cost of equity capital than firms that meet/beat analysts' expectations. These studies suggest that managers have a strong incentive to beat the analysts' forecast benchmark and to continue to do so year after year.

Graham, Harvey, and Rajgopal (2005) survey 401 financial executives and ask about their perceptions on the importance of beating earnings benchmarks. They find that 65.2% of responding executives say that beating the profit benchmark is important; 73.5% say that beating the analysts' forecast benchmark is important, and 85.1% say that beating the earnings change benchmark is important. When asked why they believe beating earnings benchmarks is important, 86.3% responded that beating the earnings benchmarks builds credibility with the capital markets, and 82.2% responded that beating the earnings benchmarks helps maintain or increase stock prices. These survey results strongly reflect a belief by executives that beating earnings benchmarks is important to the capital markets.

2.2.2. CEO Compensation Incentives

Matsunaga and Park (2001) directly examine the effect of missing or meeting earnings benchmarks on CEO cash compensation. They find that meeting/beating the analysts' forecast benchmark and meeting/beating the earnings change benchmark has an effect on CEO compensation. Their results suggest that CEOs have an incentive to beat at least some earnings benchmarks in order to increase their own personal wealth.

2.3. Earnings Management to Meet/Beat Earnings Benchmarks

2.3.1 Distributional Studies

Hayn (1995) is the first paper to document discontinuities in the distributions around earnings benchmarks. She examines the annual earnings distributions around the profit benchmark and finds fewer than expected firm-years in the small loss category and greater than expected firm-years in the small profit category. Although her study does not specifically test for earnings management, she notes that this result is consistent with firms managing earnings to beat the profit benchmark.

Burgstahler and Dichev (1997) also use the distributional method to investigate discontinuities around the profit and earnings change benchmarks, but unlike Hayn (1995) they develop two theories to explain managers incentives to manage earning to meet/beat these two earnings benchmarks - transactional cost

theory and prospect theory. Burgstahler and Dichev, similar to Hayn (1995), find discontinuities around the profit and earnings change benchmarks. They conclude that 8%-12% of firms with small pre-managed earnings decreases manage earnings to beat the earnings change benchmark. They also conclude that 30%-44% of firms with small pre-managed losses manage earnings to beat the profit benchmark. Burgstahler and Eames (1999) extend Burgstahler and Dichev (1997) by documenting similar discontinuities around the analysts' forecast benchmark, consistent with firms managing earnings upwards to meet/beat this benchmark.

Degeorge, Patel, and Zeckhauser (1999) also examine earnings management to exceed earnings benchmarks. Similar to Burgstahler and Dichev (1997) and Burgstahler and Eames (1999), they find evidence that managers act opportunistically to exceed the profit, earnings change, and analysts' forecast benchmarks. They also evaluate the relative importance of each benchmark. Their results suggest that managers view the profit benchmark as the most important benchmark, followed by the earnings change benchmark and then the analysts' forecast benchmark. Brown and Caylor (2005) reevaluate the relative importance of these three earnings benchmarks and find that the importance of the

analysts' forecast benchmark becoming the most important benchmark for managers to beat.

2.3.2. Earnings Management in Specific Contexts

Although studies such as Burgstahler and Dichev (1997) and Degeorge et al. (1999) provide strong evidence for the existence and pervasiveness of earnings management, neither study examines how or why managers meet/beat the earnings benchmarks. То answer these questions, many studies examine earnings management to beat earnings benchmarks in specific contexts. Beaver, McNichols, and Nelson (2003) examine earnings management to meet/beat the profit benchmark in the property-casualty insurance industry. Specifically, they examine managers' use of claim loss reserves to manage earnings. The insurance industry provides a unique context to examine earnings management because managers must establish a claim loss reserve based on estimates of future claims. By underestimating (overestimating) the claim loss reserve, managers can increase (decrease) current net However, the accuracy of the claim loss reserve income. estimates can eventually be determined as actual claims occur. This allows researchers to compute the overestimation or underestimation of the initial claim loss reserve. Beaver et al. (2003) conclude that managers use the claim loss reserve in an opportunistic manner to meet/beat the profit benchmark.

Beatty, Ke, and Petroni (2002) examine earnings management in the banking industry. They compare the earnings change distributions of publicly owned banks to privately owned banks. They argue that publicly owned banks have greater incentives to manage earnings due to capital market pressures. Their results indicate that publicly held banks are more likely to just meet/beat the earnings change benchmark through the use of loan loss reserves and realized security gains and losses.

Phillips, Pincus, and Rego (2003) use deferred tax expense (DTE) to detect earnings management around the three earnings benchmarks. They argue that the tax code does not allow as much managerial discretion as GAAP; thus, managing earnings upwards creates a temporary book-tax difference. They find that DTE is incrementally useful in detecting earnings management around all three earnings benchmarks. Dhaliwal, Gleason, Mills (2004) also use a tax methodology to examine earnings management to meet/beat the analysts' forecast benchmark. Specifically, they investigate whether managers opportunistically use income tax expense to boost earnings in order to meet analysts' expectations. Their results indicate that managers reduce the estimates of their effective tax rates in the fourth quarter to avoid missing the analysts' forecast benchmark.

Several other studies also suggest that firms manage accruals upwards to meet/beat earnings benchmarks. Das and

Zhang (2003) investigate whether managers use their discretion over reported accounting numbers to round up earnings to meet/beat earnings benchmarks. They find that managers are more likely to manipulate earnings to round up earnings if managers expect that rounding up will meet/beat the profit, earnings change, or analysts' forecast benchmark. They present evidence that managers achieve this rounding up by manipulating accruals. Moehrle (2002) also finds evidence that firms manage accruals to meet/beat earnings benchmarks. He documents that managers reverse prior period restructuring charge accruals to meet/beat the profit or analysts' forecast benchmarks. He finds weaker evidence for the earnings change benchmark.

2.3.3. Real Earnings Management

The vast majority of prior studies on earnings management focus on the opportunistic use of accruals. Of the relatively few studies investigating REM, most focus on managers' opportunistic use of R&D to meet certain reporting goals. For example, Baber et al. (1991) find that managers decrease R&D spending when they face the prospect of reporting a small loss or decreased earnings. Similarly, Bushee (1998) provides evidence that managers reduce R&D expenses to avoid an earnings decline. Dechow & Sloan (1991) investigate the link between CEO horizon and R&D spending. They find that CEOs spend less on R&D during their final years with the firm to improve short-term

performance. This evidence suggests that CEOs myopically managing earnings to maximize personal wealth. Bens et al. (2002) find that managers are willing to repurchase stock to avoid EPS dilution from stock option exercises, and that managers use reductions in R&D expenses, in part, to finance these repurchases.

While most of the prior literature on REM focuses on R&D expenses, a few papers provide evidence on other REM methods. Thomas and Zhang (2002) investigate the relation between inventory changes and the market inefficiency documented by Sloan (1996). Their results suggest that managers overproduce with the intention of lowering COGS and thus increasing earnings. Gunny (2005) investigates the subsequent performance of firms that engage in REM and finds these firms have lower return on assets and lower cash flows in future years. This evidence suggests that managers trade long-term performance for short-term gains.

Roychowhury (2005) documents that managers engage in REM to avoid reporting annual losses and annual earnings decreases. Specifically, he finds that firms suspected of engaging in REM to cross the profit and earnings change benchmarks exhibit abnormally high production costs, abnormally low discretionary expenses, and abnormally low cash flows from operations compared to other firms in the earnings distribution. This evidence is

consistent with managers overproducing, offering aggressive price discounts, and cutting discretionary expenses to beat the profit and earnings increase benchmarks.

2.4. The Effects of SOX on Earnings Management

Congress passed SOX in July 2002 in response to a litany of accounting scandals that had occurred over the previous year. While SOX specifically targets fraudulent financial reporting, it also likely impacts other aggressive accounting choices. SOX increases the cost of engaging in accruals management, and thus lowers the cost of REM relative to accruals management in three specific ways. First, SOX requires CEOs and CFOs to personally certify the correctness of their public financial statements, and SOX significantly increases the criminal and civil penalties for executives who knowingly file false statements. This increased legal risk may discourage managers from engaging in aggressive accruals management. Unlike accruals management, REM is unlikely to result in criminal or civil penalties because REM is an intervention into a firm's internal operational process rather than an intervention into a firm's external financial reporting process. Second, SOX seeks to increase monitoring by severely restricting the types of non-audit work that a firm's audit company may perform and requiring audit committees to approve other non-audit work. Additionally, financial

statements filed with the SEC must include a report of independent accountants verifying that there has been no impairment of auditor independence. This heightened focus on auditor independence is likely to lead to more auditor scrutiny of questionable accounting choices. Since auditors have the ability to limit managers' use of accruals management, increased auditor independence increases the risk that auditors will disallow accounting choices aimed at increasing earnings (i.e., accruals management). However, auditors have little or no authority to challenge managers' operational choices. Thus, the increased risk of auditors disallowing aggressive accounting treatments (i.e., accrual management techniques) may lead managers to increase REM.

Third, Graham et al. (2005) provide anecdotal evidence that managers engage in REM to avoid being viewed by shareholders as an accounting manipulator. The flurry of accounting scandals from late 2001 through 2002 along with the passage of SOX has lead to an increase in public awareness of aggressive accounting methods. This heightened shareholder scrutiny of accounting choices also increases the advantages of REM since operational choices are largely seen as separate from accounting choices.

Two recent studies provide evidence that suggests that earnings management may have decreased post-SOX. Cohen et al. (2005) use factor analysis to create an earnings management

measure based on three variations of the modified Jones model, the ratio of the absolute value of accruals to the absolute value of cash flows from operations, the ratio of the change in accounts receivables to change in sales, the ratio of change in inventory to the change in sales, and the frequency of special items reported for the period. They report an upward trend in their earnings management proxy in the pre-SOX period, followed by a significant decline post-SOX. They conclude that, on average, earnings management declined after SOX.

Lobo and Zhou (2005) investigate whether SOX affects conservatism in financial reporting. Specifically, they focus on whether firms exhibit more reporting conservatism in the initial year of required CEO/CFO certification of financial reports. Using the modified Jones model to estimate discretionary accruals for a broad cross-section of firms, they find that firms report lower discretionary accruals post-SOX. They also find that negative security returns are more quickly incorporated into financial statement net income than positive security returns in the post-SOX period. They interpret their results as providing preliminary evidence that managers are more conservative post-SOX.

2.5. Contributions

In general, the extant literature indicates that managers engage in REM to beat earnings targets even though future performance may suffer. In addition, Ewert and Wagenhofer (2005) show analytically that tighter accounting standards lead to an increase in REM due to an increase in the marginal benefits of engaging in earnings management. Schipper (2003) also suggests that tightening accounting standards will lead to a substitution effect between accrual manipulation and REM. This study investigates whether tightening accounting standards via SOX leads to an increase in REM and a decrease in accruals management. Relative to prior research investigating the use of REM to manage earnings and the change in earnings management post-SOX, this study makes two important innovations. First, prior studies suggest that, on average, earnings management declined post-SOX. I investigate how SOX affects the earnings management behavior of firms with strong incentives to manage earnings (i.e., firms with earnings located around the earnings benchmarks). Second, I test whether the preferences for accruals management and REM change post-SOX. This is particularly important since REM is likely a more costly form of earnings management in terms of future firm performance.

CHAPTER 3

HYPOTHESES

In this chapter I state my two testable hypotheses. Section 3.1 discusses the use of accrual management to beat earnings benchmarks following Sarbanes-Oxley. Section 3.2 discusses the use of REM to beat earnings benchmarks following Sarbanes-Oxley.

3.1. The Effect of Sarbanes-Oxley on Accrual Management

Prior literature finds that, on average, accruals management declines and accounting conservatism increases post-SOX (Cohen et al. 2005, Lobo and Zhou 2005). Given these findings and the increased cost of engaging in accrual management post-SOX (e.g., increased executive liability, increased monitoring, and increased investor awareness), I expect that accrual management for benchmark firms will decrease post-SOX. This leads to my first testable hypothesis:

Hypothesis 1: The use of accrual management to beat earnings benchmarks declines following SOX.

3.2. The Effect of Sarbanes-Oxley on Real Management

A decline in the use of accrual management does not necessarily imply that all types of earnings management will decline post-SOX. Roychowdhury (2005) and Gunny (2005) document that managers are willing to engage in REM prior to SOX. Given firms' willingness to engage in REM to beat earnings benchmarks, an increase in the cost of engaging in accrual management may simply result in a shift to REM. This forms my second hypothesis.

Hypothesis 2: The use of real earnings management to beat earnings benchmarks increases following SOX.

CHAPTER 4

RESEARCH METHOD AND SAMPLE SELECTION

In this chapter I describe the research method I employ to test my hypotheses and explain my sample selection process. In section 4.1, I provide a general overview of my research method and sample selection method. I explain the cross-sectional probit model that I use to test my hypotheses in section 4.2. In section 4.3, I review the various estimation models I use to estimate abnormal accruals, abnormal production costs, and abnormal discretionary expenses. I also develop expectations for results. Finally, I describe my sample selection method in section 4.4.

4.1. Overview of Research Method

To investigate the effect of SOX on earnings management behavior, I estimate abnormal accruals and REM proxies for a sample of firms from 1987 - 2004. I examine three types of REM - overproduction, sales manipulation, and discretionary expense manipulation investigated in prior literature (e.g., Roychowdhury 2005, Gunny 2005). Managers have the option of cutting discretionary expenses such as sales, general, and administrative expense (SG&A), research and development expenses (R&D), and advertising expense to manage earnings. Although

SG&A is not entirely discretionary, many discretionary items such as employee training expense, travel expenses, and certain types of maintenance are commonly included in SG&A. Cutting these discretionary expenses increases cash flows from operations (CFO) and operating income in the current period. In addition to reducing discretionary expenses, managers of manufacturing firms may choose to overproduce to manage earnings Increased production levels spread fixed costs across upward. more units, thus lowering cost of goods sold and increasing gross margin and net income. While reported net income increases in the current period because of overproduction, cash flows from operations decrease since the firm incurs increased production and holding costs for the additional units produced. This results in lower than normal cash flows from operations at a given level of sales and higher production costs relative to sales.

Managers may also seek to manage earnings by artificially boosting sales through aggressive price discounts. Aggressive price discounts (i.e., discounts more extensive than those offered in the normal course of business) accelerate sales into the current period and thus increase sales revenue and net income. Using this strategy, sales revenue per unit would be lower than normal, whereas production costs relative to sales would be higher than normal.

4.2. Cross-sectional Probit Model

I focus on firms with relatively stronger incentives to manage earnings by restricting my sample to firms with earnings around three common earnings benchmarks - profit, earnings change, and analysts' forecasted earnings. Specifically, to determine whether SOX has an effect on earning management choices, I use the following probit regression that relates a firm's probability of meeting/beating a given earnings benchmark with the firm's abnormal accruals, abnormal production costs, and abnormal discretionary expenses in the pre-SOX and post-SOX periods.

$$BM = a + b_1 AbAccr + b_2 Abprod + b_3 AbDisc + b_4 SOX + b_5 AbAccr * SOX + b_6 Abprod * SOX + b_7 AbDisc * SOX + b_8 CFO + b_9 NOA + E$$
(1)

where:

Profit Benchmark: BM equals one for firm-years with scaled earnings (NI_t / TA_{t-1}) greater than or equal to 0 but less than 0.01, and BM equals zero for firm-years with scaled earnings greater than or equal to -0.01 but less than 0 (Burgstahler and Dichev 1997; Phillips et al. 2003; Ayers et al. 2005).

Earnings Change Benchmark: BM equals one for firmyears with scaled earnings changes (NI_t - NI_{t-1} / TA_{t-1}) greater than or equal to 0 but less than 0.005, and BM equals zero for firm-years with scaled earnings changes greater than or equal to -0.005 but less than 0 (Burgstahler and Dichev 1997; Roychowdhury 2005).

Analysts' Forecast Benchmark: BM equals one for firmyears with (EPS - forecasted EPS) greater than or equal to 0 but less that 0.01, and BM equals zero for
firm-years with (EPS - forecasted EPS) greater than or equal to -0.01 but less than 0. Forecasted EPS is defined as the most recent analyst forecast prior to the announcement of annual earnings (Ayers et al. 2005).

AbAccr (abnormal accruals) is the difference between total accruals and estimated expected accruals using the Jones (1991) model (discussed below).

AbProd (abnormal production costs) is the difference between a firm's actual production costs (Costs of goods sold + Change in inventory) and estimated expected production costs (discussed below).

AbDisc (abnormal discretionary costs) is the difference between a firm's actual discretionary costs (SG&A + R&D + Advertising expenses) and estimated expected discretionary costs (discussed below).

SOX equals one for Post-Sox years (i.e., 2003-2004), and zero otherwise.

CFO is cash flow from operations (Compustat Data #308).

 Δ CFO is the change is cash flow from operations from year t-1 to year t. Δ CFO replaces CFO for analyses using the earnings change benchmark.

NOA is net operating assets defined as total shareholder's equity - cash and short-term investments + total debt.

4.3. Estimation Models and Expectations

I estimate a firm's expected level of accruals using the Jones (1991) model. 5

Accruals $_{t}/A_{t-1} = \alpha_{0} + \alpha_{1} * (1/A_{t-1}) + \beta_{1} * (\Delta S_{t}/A_{t-1}) + \beta_{2} * (PPE_{t}/A_{t-1}) + \varepsilon_{t}$ (2) where:

Accruals, is total accruals for year t, and \mathbf{A}_{t-1} is total assets at the end of period t-1, and

 $\Delta \mathbf{S}_{_{l}}$ is the change in sales from period t-1 to period t, and

PPE, is property, plant, and equipment at the end of period *t*.

I estimate equation (2) by industry and year and include an unscaled intercept, α_0 , to force the mean abnormal accruals for each industry-year to be zero. I use the parameter estimates from equation (2) to estimate the firm's expected accruals. I then estimate abnormal accruals as the difference between the firm's actual accruals and expected accruals as follows: $AbAccr_t = Accruals_t/A_{t-1} \cdot [\alpha_0 + \alpha_1^*(1/A_{t-1}) + \beta_1^*(\Delta S_t/A_{t-1}) + \beta_2^*(PPE_t/A_{t-1})]$ (3) To the extent that firms use discretionary accruals to beat earnings benchmarks, I expect to find a positive coefficient on AbAccr.

 $^{^{\}rm 5}$ Results using the modified Jones model (Dechow et al., 1995) are nearly identical to results when using the Jones model.

Following Dechow et al. (1998) and Roychowdhury (2005), I estimate the expected level of production costs using the following model:

 $PROD_{t}/A_{t-1} = \alpha_{0} + \alpha_{1} * (l/A_{t-1}) + \beta_{1} * (S_{t}/A_{t-1}) + \beta_{2} * (\Delta S_{t}/A_{t-1}) + \beta_{3} * (\Delta S_{t-1}/A_{t-1}) + \varepsilon_{t}$ (4) where:

 \mathbf{PROD}_t is total production costs for period t, and

 ${f s}_i$ is sales revenue for time period t (Compustat Data #12), and

 $\Delta \mathbf{S}_{t-1}$ is the change is sales revenue from period t-2 to period t-1.

I define all other terms the same as defined in equation 2.

I estimate equation (4) by industry and year and use the parameter estimates from equation (4) to determine the firm's expected production costs. I then calculate *AbProd* as the difference between the firm's actual production costs (i.e., the sum of Cost of goods sold and Change in inventory) and its expected production costs. *AbProd* represents a firm's abnormal production costs relative to other firms in the same industry. Concurrent literature (Roychowdhury 2005, Gunny 2005) suggests that managers engage in REM to beat earnings benchmarks. To the extent that managers are willing to engage in overproduction and sales manipulation to beat earnings benchmarks, I expect the coefficient on *AbProd* to be positive.

I estimate discretionary expenses using the following model by industry and year (Roychowdhury, 2005): $DISEXP_{t}/A_{t-1} = \alpha_{0} + \alpha_{1} * (l/A_{t-1}) + \beta_{1} * (S_{t-1}/A_{t-1}) + \varepsilon_{t}$ (5) where:

 \mathbf{DISEXP}_{t} is discretionary expenses for period t, and

 \mathbf{s}_{t-1} is sales revenue for time period t-1.

All other terms are as defined in equation 2.

Using lagged sales rather than current sales to estimate discretionary expenses mitigates one potentially complicating issue. If firms opt to manage earnings by increasing sales in a given year, then discretionary expenses would appear abnormally low even if they have not been managed. Using lagged sales alleviates this problem to the extent that firms are not located around an earnings benchmark in successive years. I expect to find a negative coefficient on *AbDisc*, since lowering expenses in the current period results in higher current period income.

SOX denotes whether a firm-year occurs before or after the passage of the Sarbanes-Oxley Act, and thus, represents the incremental propensity for a firm to beat a benchmark post-SOX. Cohen et al. (2005) document a sharp decline in earnings management, on average, post-SOX. Additionally, Lobo and Zhou (2005) find an increase in accounting conservatism post-SOX. To the extent that (1) Sox inhibited firms' abilities to beat

benchmarks using accrual management and (2) REM was not a viable method for a subset of firms to beat benchmarks, I anticipate a negative coefficient for *SOX*.

Hypothesis 1 predicts that post-SOX firms decreased their use of accruals management to meet/beat earnings benchmarks. Ιf firms decreased their use of accrual management to meet/beat earnings benchmarks post-SOX, the coefficient on AbAccr * SOX should be negative. Hypothesis 2 predicts that SOX caused firms to increase their use of REM to meet or beat earnings benchmarks. If firms engaged in more REM through increased use of overproduction and/or sales manipulations, then the coefficient on Abprod * SOX, should be positive. Likewise, if firms engage in more discretionary expenses manipulation following SOX, then the coefficient on AbDisc * SOX should be negative. I include either cash flows or change in cash flows in my model to control for the effect of a firm's cash flow on the firm's need to use accrual management or REM to meet or beat a benchmark (Phillips et al. 2003). I expect that the coefficient on CFO (ΔCFO) will be positive, since firms with higher cash flows should be more likely to beat benchmarks. Finally I include net operating assets (NOA) to control for a firm's level of accrual flexibility. The higher a firm's net operating assets, the lower their ability to manage accruals to

beat earnings benchmarks (Barton and Simko 2004). However, given a firm's ability to use REM to beat benchmarks and to walk-down analysts' forecasts, I make no prediction about the sign of NOA.

4.4. Sample Selection

I collect financial data from Compustat and analyst forecast data from I/B/E/S. I require that cash flows from operations are available from the Statement of Cash Flows, which restricts the sample to post-1986 firm-years. I also require sample firm-years to have sufficient data available to compute the necessary variables used for estimations of expected accruals, production costs, and discretionary expenses. Since SOX applies to domestically traded firms, I exclude foreign firms from the sample. I also exclude regulated industries (SIC codes 4400 through 4999) and banks and financial institutions (SIC codes 6000 through 6999). These firms operate in a different regulatory environment than other firms and likely have different earnings management incentives. Thus, I would expect SOX to affect regulated firms differently than other firms. Since I estimate expected accruals, production costs and discretionary expenses for each industry-year, I require at least 10 observations for each industry-year. I use two-digit SIC codes to assign each firm's industry. Panels A, B, and C of Table 1 list the number of firms in each two-digit SIC code for

my three samples. Panel A lists the SIC codes for firms in the profit benchmarks sample. Panel B lists the SIC codes for firms in the earnings change benchmark sample. Finally, Panel C lists the SIC codes for the firms in the analysts' forecast benchmark sample.

The modal industry represented in the profit benchmark sample is Electrical and Other Electrical Equipment (SIC code 36) with 379 firm-year observations. Measuring Instruments, Photo Goods, and Watches (SIC code 38) has the second highest number of observations with 322 firm-years. The twenty industries with the highest representation account for 83.3% of all observations in the profit benchmark sample.

The earnings change benchmark sample has a similar distribution to the profit benchmark sample. Like the profit benchmark sample, Electrical and Other Electrical Equipment (SIC code 36) is the modal industry with 473 firm-year observations. Industrial and Commercial Machinery and Computer Equipment (SIC code 35) is the second highest represented industry with 471 observations. The twenty industries with the highest representation account for 82.1% of all earnings benchmark sample observations.

Like the profit and earnings change samples, Electrical and Other Electrical Equipment (SIC code 36) is the modal industry for the analysts' forecast benchmark sample with 940 firm-year

observations. Measuring Instruments, Photo Goods, and Watches (SIC code 38) has the second highest number of observations with 794 firm-years. The twenty industries with the highest number of observations account for 87.1% of the entire analysts' forecast benchmark sample.

Insert Table 1 here

CHAPTER 5

RESULTS

In this chapter I present and interpret results for my two testable hypotheses. Each hypothesis is individually tested for the three earnings benchmarks. I also test hypotheses 2 for two types of REM (e.g., production costs management and discretionary costs management). In section 5.1, I present univariate results for the effects of abnormal accruals, abnormal production costs, abnormal discretionary expenses on beating the earnings benchmarks pre-SOX and post-SOX. In section 5.2, I present multivariate results and I also reconcile these results for my first hypothesis and I reconcile these results with prior literature. In section 5.4, I present results related to my second hypothesis.

5.1. Univariate Results

Table 2 presents descriptive statistics for each of the three benchmark samples. Imposing all of the data requirements results in a sample of 3,434 firm-years around the profit benchmark. 2,235 firm-years just meet/beat (i.e., $.00 \leq E_{ii} < .01$) the profit benchmark, and 1,199 firm-years just miss (i.e., $-.01 \leq E_{ii} < .00$) the benchmark. I further separate the sample

into Pre-SOX and Post-SOX periods to examine changes over time. Panel A indicates that there is no statistical difference in the means between the just miss abnormal production levels and the just beat abnormal production levels pre-SOX. However, there is a statistically significant difference in the mean abnormal production levels post-SOX (p = 0.0446). This is consistent with firms increasing their management of production costs to beat the profit benchmark post-SOX. There is no statistical difference in the pre-SOX or post-SOX means for abnormal accruals or abnormal discretionary expenses. However, univariate comparisons of just miss to just beat firms are a weaker test than multi-variate probit analyses since the univariate analyses do not control for cash flows or the effect of the various earnings management techniques on one another.

Insert Table 2 here

Panel B presents descriptive statistics for the 5,397 firmyears located around the earnings change benchmark. 3,208 firmyears just meet/ beat (i.e., $.00 \le \Delta E_u < .010$) the earnings change benchmark, and 2,189 firm-years just miss (i.e., $-.010 \le \Delta E_u < .00$) the benchmark. Again, I separate the sample in pre-SOX and post-SOX periods. The earnings change benchmark exhibits the same pattern for mean abnormal production levels as the profit benchmark. There is no statistical difference in the mean abnormal production levels pre-SOX (p = 0.3643), but there

is a statistically significant difference post-SOX (p = 0.0829). This is consistent with firms increasing their management of production costs to beat the earnings change benchmark post-SOX. Similar to the profit benchmark, there is no statistical difference in the pre-SOX or post-SOX means for abnormal accruals or abnormal discretionary expenses.

Panel C presents the descriptive statistics for the analysts' forecasted earnings benchmark. 3,751 firms just meet or beat (i.e., $.00 < EPS_{ii} < .01$) the benchmark, and 2,934 firms just miss (i.e., $-.01 < EPS_{ii} < .00$) the benchmark. Unlike the profit and earnings change benchmarks, mean abnormal production levels pre-SOX and post-SOX show a significant decline across the analysts' forecast benchmark. Thus, univariate analyses provide no evidence that firms engage in REM to beat the analysts' forecasted earnings benchmark. Again like the profit and earnings change benchmarks, there is no statistical difference in the pre-SOX or post-SOX means for abnormal accruals or in the pre-SOX means for abnormal discretionary expenses. However, there is a statistical difference (p = 0.0645) between the means in the post-SOX samples. This indicates that post-SOX, firms that just beat the analysts' forecast benchmark have higher discretionary expenses than firms that just miss the analysts' forecast benchmark. This result is

not consistent with firms opportunistically managing discretionary expenses.

5.2. Multivariate Results

Table 3 presents the results for estimating equation (1) for firms that just meet or beat versus firms that just miss the three common earnings benchmarks. The coefficient on *AbAccr*, the measure of abnormal accruals pre-SOX, is positive and significant for all three earnings benchmarks. Phillips et al. (2003) find a similar association between measures of discretionary accruals (i.e., total accruals, modified Jones accruals, and forward-looking accruals) and the propensity to beat the three earnings benchmarks. The positive coefficient on *AbAccr* is consistent with firms managing accruals to cross the earnings benchmarks.

Insert Table 3 here

The coefficient on *Abprod*, the measure of abnormal production costs pre-SOX, is not significantly different than zero for any of the three benchmarks with (p = .7160) for the zero benchmark, (p = .1724) for the earnings change benchmark, and (p = .9076) for the analysts' forecast benchmark.⁶ The insignificant coefficients on *Abprod* suggest that abnormal production costs had no significant effect on the likelihood of beating the earnings benchmarks pre-SOX. These results are

⁶ All p-values are reported as one-tail values.

inconsistent with Roychowdhury (2005) who finds that firms who just meet or beat the profit benchmark⁷ exhibit higher levels of abnormal production costs compared to other firms across the earnings distribution.⁸ He concludes that firms who just meet or beat the profit benchmark manipulate their production operations to cross the benchmark threshold. Prior literature (Burgstahler and Dichev 1997, Burgstaher and Eames 1999, Phillips et al. 2003, Skinner and Sloan 2001, Kasznik and McNichols 2002) documents that firms around the earnings benchmarks have strong incentives to manage earnings to beat those benchmarks. It is unclear what incentives firms located further away from the benchmarks have to manage earnings (e.g., income smoothing; taking a big bath). Thus, it is difficult to draw conclusions regarding earnings management to beat earning benchmarks when comparing the abnormal production costs of firms that just-beat earnings benchmarks to all other firms. Comparing just-beat and just-miss firms focuses the analysis on firms with similar earning management incentives and earnings properties. Thus, my tests are less susceptible to alternative interpretations

To reconcile my results with Roychowdhury (2005) I partially replicate his analysis using my sample. I present my

⁷ Roychowdhury (2005) also finds weaker results suggesting firms use production cost manipulations to meet/beat the earnings change benchmark. However, his main results are for the profit benchmark.

⁸ Roychowdhury (2005) does not specifically compare just miss to just beat firms. Instead, he compared firms who just beat earnings benchmarks to firms in the 29 surrounding earnings bins.

results in Table 4. First in panel A, I replicate his results for the use of production cost management to beat the profit benchmark by using OLS regression on the following regression equation:

 $Abprod = a + b_1 Suspect + b_2 AbMTB + b_3 AbSize + b_4 AbNI + E$ (6)

where:

AbProd (abnormal production costs) is defined as the difference between a firm's actual production costs and expected production costs. Expected production costs are estimated using the industry-year regression: $\operatorname{Prod}_{t} = a_{0} + a_{1}*(1/A_{t-1}) + b_{1}*Sales_{t} + b_{2}*\Delta Sales_{t} + b_{3}*\Delta Sales_{t-1} + \varepsilon_{t}$. All terms are scaled by total assets at the end of year t-1.

Suspect is an indicator variable taking on the value of 1 if the firm-year observations has scaled earnings $(EBEI_{t} / TA_{t-1})$ greater than or equal to 0 but less than 0.01.

AbMTB (abnormal market-to-book) is the firm MTB subtracted from the industry mean MTB.

AbSize (abnormal size) is the logarithm of market value of equity subtracted from the industry mean logarithm of market value of equity.

AbNI (abnormal net income) is the scaled income before extraordinary items subtracted from the industry mean scaled income before extraordinary items.

The sample includes 18,546 observations with earnings before extraordinary items between -7.5% and 7.5% of beginning of the year total assets. Like Roychowdhury, I find that firms that just meet/beat the profit benchmark exhibit significantly higher abnormal production costs (t-stat = 2.53, p-value =

0.0115) compared to the much larger distribution of firms (i.e., not only the just-miss firms). Accordingly, the contrary conclusions in Roychowdhury (2005) appear to be attributable to the comparison of just-beat firms to a larger comparison group of firms rather than those firms that just-miss the earnings benchmark. I conclude that the differences in results are not due to unique characteristics of my sample.

Insert Table 4 here

I predict that the coefficient on AbDisc, the measure of abnormal discretionary expenses, will be negative to the extent that firms manage discretionary expenses opportunistically. The coefficient on AbDisc is not statistically significant for the profit (p= 0.7207), earnings change (p = .2027), or analysts' forecast (p = 0.7631) benchmarks.

This evidence is also inconsistent with Roychowdhury (2005) who concludes that firms manage discretionary expenses downward to meet/beat the profit benchmark. I again partially replicate Roychowdhury's analysis. In panel B of Table 4, I present results of an OLS regression on the following regression equation:

 $AbDisc = a + b_1 Suspect + b_2 AbMTB + b_3 AbSize + b_4 AbNI + E$ (7) where:

AbDisc (abnormal discretionary costs) is defined as the difference between a firm's actual discretionary

costs and expected discretionary costs. Expected discretionary costs are estimated using the industry-year regression: $\text{Disc}_t = a_0 + a_1 * (1/A_{t-1}) + b_1 * Sales_{t-1} + \varepsilon_t$.

All other terms are defined as described for equation (6).

I use the same 18,546 firm-year observation sample described above for equation (6). Similar to Roychowdhury, I find that firms who just meet/beat the profit benchmark exhibit lower levels of abnormal discretionary expenses. The coefficient on *Suspect* is negative and significant (t-stat = -3.69, p-value = 0.0002). I conclude that the differing results are attributable to differences in method and not a result of unique characteristics in my sample.

Returning to Table 3, the coefficient on SOX is negative for all three benchmarks, and is significant for the profit (p = .0118) and analysts' forecast benchmark (p = .0006). The coefficient for the earnings change benchmark (p = .1156) benchmark only approaches conventional significance levels. This evidence suggests that firms are less likely to beat the earnings benchmarks post-SOX. This is consistent with Lobo and Zhou (2005) who find that accounting conservatism has increased following SOX.

5.3. The Use of Accrual Management Following Sarbanes-Oxley

Hypothesis 1 predicts that firms decreased their use of accrual management to meet or beat earnings benchmarks following

SOX. Results do not support this hypothesis. The coefficient on AbAccr * SOX is insignificant for the profit benchmark (p = 0.9064), the earnings change benchmark (p = 0.8813), and the analysts' forecast benchmark (p = 0.8519). These results indicate that SOX had little effect on the use of accrual manipulations for these firms to meet or beat earnings benchmarks.

These results are inconsistent with evidence presented by Cohen, Dey, and Lys (2005), who find that the level of earnings management, including discretionary accruals, declines post-SOX. However, they focus on a broad cross-section of firms across the entire earnings distribution, while I focus on firms with strong incentives to manage earnings (i.e., firms around the earnings benchmarks). To reconcile my results with Cohen et al. (2005), I examine whether the time-series properties of my abnormal accrual measure is similar to the time-series properties of the earnings management metric used by Cohen et al. (2005).⁹ I tabulate my results in Table 5.

Despite the fact that I use annual data while they use quarterly data, I find a significantly positive time trend (tstat = 6.75, p-value = <.0001) indicating a rise in the use of accrual management from the beginning of my sample in 1987 until

⁹ Cohen et al. (2005) construct an earnings management measure based on several discretionary accruals models and financial ratios. Using quarterly data, they find a significant decline in earnings management post-SOX.

the passage of SOX. Post-SOX, I find, on average, a statistically significant decline in abnormal accruals (t-stat = -3.08, p-value = 0.0021). This evidence indicates that the use of discretionary accruals has declined overall post-SOX, but my other analysis indicates that accrual management has not declined for firms with strong incentives to manage earnings (i.e., firms close to the earnings benchmarks).

Insert Table 5 Here

5.4. The Use of Real Earnings Management Post-SOX

Hypothesis 2 predicts that firms increased their use of REM to meet or beat earnings benchmarks. Consistent with this hypothesis, the coefficient on *Abprod* **SOX* is positive and significant for the profit (p = .0321) and earnings change (p = .0477) benchmarks, indicating an increase in the use of overproduction and/or sales manipulations to beat these benchmarks following SOX. For the analysts' forecast benchmark, *Abprod* **SOX* is positive as predicted but not significant (p = .3136). It is not surprising that results for the analysts' forecast benchmark are weaker than the other benchmarks. Unlike accrual manipulations, production levels and sales cannot be easily or quickly adjusted at the end of the year to meet the analysts' earnings forecast. Instead, they must be adjusted during the year. Thus, analysts have the opportunity to adjust

their forecasts to incorporate changes in production levels and sales. The profit and earnings change benchmarks are static targets that do not change during the year. Therefore, managers should be better able to use REM to meet/beat these two benchmarks.¹⁰

Hypothesis 2 also predicts that firms will increase their use of discretionary expenses manipulation to meet or beat earnings benchmarks following SOX. My results do not support this hypothesis. For all three earnings benchmarks, the coefficient for *AbDisc*SOX* is insignificant. The coefficients on the profit, earnings change, and analysts' forecast benchmarks have p-values of 0.5544, 0.7928, and 0.9465 respectively. These results indicate that SOX has no significant effect on the use of discretionary expenses manipulation to meet/beat earnings benchmarks.

Consistent with prior literature, the coefficients on *CFO*, the control variables for firm cash flows, are positive and significant for the profit (p = <.0001) and analysts' forecast (p = <.0001) benchmarks. Likewise the coefficient on $\triangle CFO$ is positive and significant (p = <.0001) for the earnings change benchmark. Finally, the coefficients on *NOA*, the control variable for accrual flexibility, are positive for all three

¹⁰ Firms also have the option to walk down analysts' forecasts (Richardson et al. 2004), which is likely to be much less costly than engaging in REM.

benchmarks. However, they are only significant for the profit (p = .0010) and earnings change (p = .0009) benchmarks. This result seems to indicate that higher levels of net operating assets increase the probability of beating the profit and earnings change benchmarks. The NOA coefficient for the analysts' forecast benchmark is insignificant (p = .5963) indicating that the level of net operating assets has no significant effect on a firm's probability of beating the analysts' forecast benchmark.

CHAPTER 6

CONCLUSIONS

In this final chapter, I summarize the issues, contributions, methods, and results of this study. I also acknowledge the limitations of this study and offer some areas for future research. In section 6.1, I offer a summary of the study. Limitations are discussed in section 6.2. I conclude with ideas for future research in section 6.3.

6.1. Summary

This study investigates whether managers alter their earnings management behavior following SOX. Specifically, I test whether REM (overproduction, sales manipulation, and discretionary expenses manipulation) increased and whether accrual manipulation decreased post-SOX. I focus on firms with high incentives to manage earnings by limiting my sample to firms located around three common earnings benchmarks - profit, earnings change, and analysts' forecasted earnings. Focusing on these firms allows for a powerful test of earnings management behavior, since firms around the earnings benchmarks have clear incentives to manage earnings to meet/beat those earnings benchmarks.

I use a probit regression that relates a firm's probability of meeting/beating an earnings benchmark with the firm's abnormal accruals, abnormal production costs, and abnormal discretionary expenses in the pre-SOX and post-SOX periods. Results indicate that managers increase their use of production cost manipulation to meet/beat the profit and earnings change benchmarks post-SOX. However, results also indicate that SOX has no significant effect on the use of accrual manipulations or discretionary expense manipulations to meet/beat earnings benchmarks.

This paper contributes to the earnings management literature in two ways. First, this study documents how new accounting regulation influences how firms' beat earnings benchmarks. In particular, results suggest that post-SOX the associations between abnormal production costs and beating earnings benchmarks increase while the association between abnormal accruals and beating earnings benchmarks remain unchanged. Second, SOX was intended to limit opportunistic behavior by managers. Since REM represents a sacrifice of future economic benefit to improve short-term financial reporting, investors have incentive to identify and limit managers' use of REM. Additionally, these results should be of interest of regulators who have an obligation to understand the consequences, both intended and unintended, of new accounting

regulations. To date, the effects of SOX on financial reporting decisions and managers' actions are still largely unknown. This paper suggests that SOX resulted in an increase of REM, arguably a more costly/less attractive method to beat benchmarks.

6.2. Limitations

This study should be interpreted in light of the following limitations. First, it is difficult to discern whether managers have altered their use of REM due to SOX or due to increased investor awareness of accounting choices resulting from the rash of accounting scandals that preceded SOX. I acknowledge that it is difficult to disentangle the effect of the accounting scandals that preceded SOX from the effects of SOX itself. Second, prior studies have documented that discretionary accruals models, such as the Jones model and modified Jones model, do a relatively poor job of detecting earnings management (Dechow et al. 1995, Thomas and Zhang 1999, McNichols 2000). To the extent that the inherent noise in abnormal accrual measures does not change cross-temporally, this study's analyses may be less susceptible to the concerns associated with these measures.

6.3. Future Research

This study is part of an emerging stream of research investigating the use of real earnings management. Since this line of research is still largely in its infancy, there are many

fertile areas for continuing research. This paper tests only a few of the numerous types of real earnings techniques available to managers. Future research may extend the list of real earnings techniques beyond those currently being reviewed in the accounting literature.

Future researchers may also choose to investigate the impact of real earnings management on a firm's cost of capital. Managers often engage in real earnings management for the shortterm benefits associated with beating benchmarks. However, concurrent literature documents that there are long-term performance penalties for engaging in real earnings management. This dichotomy of short-term gains versus long-term penalties creates a natural question in regard to how supplies of equity capital and debt capital will react to real earnings management.

Lastly, I document an increase in certain types of real earnings management following the implementation of Sarbanes-Oxley. However, it is unclear whether this increase is permanent or temporary in nature. If the increase in real earnings management is in response to Sarbanes-Oxley, then I would expect the increase to be permanent. On the other hand, if the increase is in response to the rash of accounting scandals that gave rise to Sarbanes-Oxley, then I would expect the increase to last only as long as investors remain focused on accountine-based manipulations. Given more time to accumulate

data, future research should be able to answer whether this is a permanent consequence of Sarbanes-Oxley or just a temporary reaction to the rash of accounting scandals prior to Sarbanes-Oxley.

REFERENCES

Ayers, B., J. Jiang, E. Yeung, 2005, Discretionary accruals and earnings management: An analysis of pseudo earnings targets. *The Accounting Review* forthcoming

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

Barth, M., J. Elliot, M. Finn, 1999, Market rewards associated with patterns of increasing earnings. *Journal of Accounting Research* 32, 387-314

Bartov, E., D. Givoly, and C. Hayn, 2002, The rewards to meeting-or-beating earnings expectations. *Journal of Accounting and Economics* 33 (2), 173-204

Beatty, A., B. Ke, and K. Petroni, 2002. Earnings management to avoid earnings declines and losses across publicly and privately held banks. *The Accounting Review*, 77, 547-570

Beaver, W., M. McNichols, and K. Nelson, 2003. Management of the loss reserve accrual and the distribution of earnings in the property-casualty insurance industry. *Journal of Accounting and Economics*, 35, 347-376

Beneish, M.D., 2001, Earnings management: A perspective. Managerial Finance 27, 3-17

Bens, D., V. Nagar, and M. Wong, 2002, Real investment implications of employee stock option exercises. *Journal of Accounting Research* 40, 359-393

Brown, L. and M. Caylor, 2005, A temporal analysis of quarterly earnings thresholds: Propensities and valuation consequences. *The Accounting Review* 80 (2), 423-440

Burgstahler, D. and I. Dichev, 1997, Earnings management to avoid earnings decreases and losses. *Journal of Accounting and Economics* 24, 99-126 Burgstahler, D., and M. Eames, 1999, Management of earnings and management forecasts. Working Paper, University of Washington

Bushee, B., 1998, The influence of institutional investors on myopic R&D investment behavior. *The Accounting Review* 73, 305-333

Cohen, D., A. Dey, and T. Lys, 2005, Trends in earnings management and informativeness of earnings announcements in the pre- and post-Sarbanes-Oxley periods, Working Paper, University of Southern California

Das, S., and H. Zhang, 2003, Rounding-up in reported EPS, behavioral thresholds, and earnings management. *Journal of Accounting and Economics* 35, 31-50

DeAngelo, H., L. DeAngelo, and D. Skinner, 1996, Reversal of fortune: Dividend policy and the disappearance of sustained earnings growth. *Journal of Financial Economics*, 40, 341-371

Dechow, P., and R. Sloan, 1991, Executive incentives and the horizon problem: An empirical investigation. *Journal of Accounting and Economics* 14, 51-89

Dechow, P., R. Sloan, and A. Sweeney, 1995, Detecting earnings management. *The Accounting Review* 70, 193-225

Dechow, P., S. Kothari, and R. Watts, 1998, The relation between earnings and cash flows. *Journal of Accounting and Economics* 25, 133-168

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

Dechow, P., S. Richardson, A. Tuna, 2003, Why are earnings kinky? An examination of the earnings management explanation. *Review of Accounting Studies* 8, 355-384

Degeorge, F., J. Patel, and R. Zeckhauser, 1991, Earnings management to exceed thresholds. *Journal of Business* 72, 1-33

Ewert, R. and A. Wangenhofer, 2005, Economic effects of tightening accounting standards to restrict earnings management. *The Accounting Review* 80, 1101-1124

Fields, T., T. Lys, and L. Vincent, 2001, Empirical research on accounting choice. *Journal of Accounting and Economics* 31, 255-307

Graham, J., C. Harvey, and S. Rajgopal, 2005, The economic implications of corporate financial reporting. Working Paper, Duke University

Gunny, K., 2005, What are the consequences of real earnings management. Working Paper, University of California - Berkeley

Hayn, C., 1995, The information content of losses. Journal of Accounting and Economics, 20, 125-153

Healy, P. and J. Wahlen, 1999, A review of the earnings management literature and its implications for standard setting. *Accounting Horizons* 43, 365-383

Jones, J., 1991, Earnings management during import relief investigations. *Journal of Accounting Research* 29, 193-228

Kasznik, R., 1999, On the association between voluntary disclosure and earnings management. *Journal of Accounting Research* 37, 57-81

Kasznik, R. and M. McNichols, 2002, Does meeting earnings expectations matter: Evidence from analyst forecast revisions and share prices. *Journal of Accounting Research* 40 (3), 727-759

Lobo, G. and J. Zhou, 2005, Did conservatism in financial reporting increase after the Sarbanes-Oxley Act? Early evidence. Working Paper, University of Houston

Lopez, T., and L. Rees, 2002, The effect of beating and missing analysts' forecasts on the information content of unexpected earnings. *Journal of Accounting, Auditing, and Finance* 17 (2), 155-184

Matsunaga, S., and C. Park, 2001, The effect of missing a quarterly earnings benchmark on the CEO's annual bonus. The Accounting Review, 76, 313-332

McNichols, M., 2000, Research design issues in earnings management studies. *Journal of Accounting and Public Policy* 19, 313-345 Mikhail, M., B. Walther, and R. Willis, 2004, Earnings surprises and the cost of equity capital. Working Paper, Duke University

Moehrle, S., 2002, Do firms use restructuring charge reversals to meet earnings targets?. *The Accounting Review* 77 (2), 397-413

Myers, L. and D. Skinner, 1999, Earnings momentum and earnings management. Working Paper, University of Michigan

Phillips, J., M. Pincus, and S. Rego, 2003, Earnings management: New evidence based on deferred tax expense. *The Accounting Review* 78 (2), 491-521

Richardson, S., S. Teoh, and P. Wysocki, 2004, The walkdown to beatable analyst forecasts: The roles of equity issuance and insider trading incentives. *Contemporary Accounting Research* 21, 885-924

Roychowdhury, S., 2005, Earnings management through real activities manipulation. Working Paper, Massachusetts Institute of Technology

Schipper, K., 2003, Principles-based accounting standards. Accounting Horizons (March), 61-72

Skinner, D. and R. Sloan, 2002, Earnings surprises, growth expectations, and stock returns or Don't let and earnings torpedo sink your portfolio. *Review of Accounting Studies* 7, 289-312

Thomas, J. and H. Zhang, 2002, Inventory changes and future returns. *Review of Accounting Studies* 7, 163-187

Table 1: Industry Distributions

Industry distributions based on 2-Digit SIC codes for all three samples (profit, earnings change, and analysts' forecast) for years 1987 - 2004.

Panel A

Industry distribution of firms that just miss or just meet/beat the profit benchmark. The sample is limited to firms with reported earnings before extraordinary items between -1.0% and 1.0% of total assets. The full sample is 3,434 firms.

| SIC | Industry Description | Number of |
|--------|---|------------|
| Code | | Firm-Years |
| 36 | Electrical and Other Electrical Equip | 379 |
| 38 | Measuring Instr., Photo Gds, Watches | 322 |
| 35 | Ind and Comm Machinery, Computer Equip | 318 |
| 73 | Business Services | 223 |
| 28 | Chemicals and Allied Products | 203 |
| 50 | Durable Goods - Wholesale | 189 |
| 20 | Food and Kindred Products | 142 |
| 59 | Miscellaneous Retail | 119 |
| 58 | Eating & Drinking Places | 111 |
| 33 | Primary Metal Industries | 99 |
| 34 | Fabr Metal, Ex Machinery, Trans Equip | 94 |
| 37 | Transportation Equipment | 93 |
| 30 | Rubber & Misc Plastic Products | 86 |
| 39 | Miscellaneous Manufacturing | 85 |
| 51 | Nondurable Goods - Wholesale | 79 |
| 13 | Oil and Gas Extraction | 79 |
| 23 | Apparel & Similar Products - Fabrics | 68 |
| 26 | Paper and Allied Products | 66 |
| 27 | Printing, Publishing, and Allied | 56 |
| 87 | Engineering, Acct, Research, Mgmt & Rel | 51 |
| 54 | Food Stores | 50 |
| 22 | Textile Mill Products | 50 |
| 80 | Health Services | 45 |
| 56 | Apparel and Accessory Stores | 44 |
| 99 | Nonclassifiable Establishments | 43 |
| 53 | General Merchandise Stores | 35 |
| 32 | Stone, Clay, Glass, and Concrete Products | 32 |
| 79 | Amusement & Recreation Services | 30 |
| 25 | Furniture and Fixtures | 27 |
| 78 | Motion Pictures | 26 |
| 29 | Petroleum Refining and Related | 24 |
| All | | 166 |
| Others | | |
| TOTAL | | 3434 |

Panel B

Industry distribution of firms that just miss or just meet/beat the earnings change benchmark. The sample is limited to firms with reported earnings before extraordinary items between -1.0% and 1.0% of total assets. The full sample is 5,397 firms.

| SIC | Industry Description | Number of |
|--------|---|------------|
| Code | | Firm-Years |
| 36 | Electrical and Other Electrical Equip | 473 |
| 35 | Ind and Comm Machinery, Computer Equip | 471 |
| 28 | Chemicals and Allied Products | 418 |
| 38 | Measuring Instr, Photo Goods, Watches | 376 |
| 50 | Durable Goods - Wholesale | 290 |
| 20 | Food and Kindred Products | 281 |
| 73 | Business Services | 213 |
| 59 | Miscellaneous Retail | 195 |
| 37 | Transportation Equipment | 189 |
| 34 | Fabr Metal, Ex Machinery, Trans Equip | 175 |
| 51 | Nondurable Goods - Wholesale | 161 |
| 54 | Food Stores | 159 |
| 30 | Rubber and Misc Plastic Products | 155 |
| 27 | Printing, Publishing, and Allied | 153 |
| 58 | Eating and Drinking Places | 150 |
| 33 | Primary Metal Industries | 143 |
| 26 | Paper and Allied Products | 117 |
| 56 | Apparel and Accessory Stores | 107 |
| 23 | Apparel & Similar Products - Fabric | 105 |
| 22 | Textile Mill Products | 98 |
| 32 | Stone, Clay, Glass, and Concrete Products | 95 |
| 39 | Miscellaneous Manufacturing | 92 |
| 53 | General Merchandise Stores | 91 |
| 13 | Oil and Gas Extraction | 91 |
| 25 | Furniture and Fixtures | 71 |
| 87 | Engring, Acct, Rsrch, Mgmt & Related | 58 |
| 57 | Home Furniture, Furninshings, & Equip | 58 |
| 24 | Lumber and Wood Products | 57 |
| 79 | Amusement and Recreation Services | 56 |
| 80 | Health Services | 54 |
| 55 | Auto Dealers and Gas Service Stations | 52 |
| All | | 193 |
| Others | | |
| TOTAL | | 5397 |

Panel C

Industry distribution of firms that just miss or just meet/beat the analysts' forecast benchmark. The sample is limited to firms with actual earnings between -0.01 and 0.01 of the most recent analyst forecast of annual EPS. The full sample is 6,685 firms.

| SIC | Industry Description | Number of |
|--------|---|------------|
| Code | | Firm-Years |
| 36 | Electrical and Other Electrical Equip | 940 |
| 38 | Measuring Inst, Photo Gds, Watches | 794 |
| 35 | Ind and Comm Machinery, Computer Equip | 722 |
| 28 | Chemicals and Allied Products | 600 |
| 73 | Business Services | 416 |
| 20 | Food and Kindred Products | 282 |
| 59 | Miscellaneous Retail | 246 |
| 50 | Durable Goods - Wholesale | 224 |
| 56 | Apparel and Accessory Stores | 216 |
| 58 | Eating and Drinking Places | 174 |
| 37 | Transportation Equipment | 172 |
| 23 | Apparel and Similar Products - Fabric | 130 |
| 27 | Printing, Publishing, and Allied | 125 |
| 34 | Fabr Metal, Ex Machinery, Trans Equip | 122 |
| 51 | Nondurable Goods - Wholesale | 118 |
| 33 | Primary Metal Industries | 105 |
| 80 | Health Services | 103 |
| 30 | Rubber and Misc Plastic Products | 100 |
| 57 | Home Furniture, Furnishing, and Equip | 98 |
| 39 | Miscellaneous Manufacturing | 93 |
| 26 | Paper and Allied Products | 91 |
| 53 | General Merchandise Stores | 83 |
| 13 | Oil and Gas Extraction | 81 |
| 25 | Furniture and Fixtures | 79 |
| 54 | Food Stores | 67 |
| 22 | Textile Mill Products | 62 |
| 55 | Auto Dealers and Gas Service Stations | 59 |
| 32 | Stone, Clay, Glass, and Concrete Products | 55 |
| 87 | Engnr, Acct, Rsrch, Mgmt and Related Svcs | 47 |
| 24 | Lumber and Wood Products | 43 |
| 31 | Leather and Leather Products | 42 |
| All | | 196 |
| Others | | |
| TOTAL | | 6685 |

Table 2 Univariate Analysis

Sample firm years are drawn from 1987 through 2004. Three separate samples are drawn for each of the three earnings benchmarks (profit, zero change, and analysts' forecasted earnings). Means, medians, and t-statistics from t-tests for the difference in means are reported.

Panel A

Firms that just miss or just meet/beat the profit benchmark. The sample is limited to firms with reported earnings `efore extraordilary items between - 1.0% and 1.0% of total assets. The full sample is 3,434 firms.

| | Pre-SOX | | | Post-SOX | | |
|--------------------|---------------------|---------------------|------------------------|----------------|----------------|------------------------|
| | Just Miss | Just Beat | Difference in Means | Just Miss | Just Beat | Difference in Means |
| | Mean Median | Mean Median | t-stat (p-value) | Mean Median | Mean Median | t-stat (p-value) |
| CFO | 2.77 1.08 | 3.48 2.46 | 2.47 (0.0135) | 4.76 4.87 | 4.71 5.02 | -0.05 (0.9597) |
| Abnormal Accruals | 1.58 1.33 | 1.82 1.50 | 0.76 (0.4469) | 0.89 0.48 | 2.02 1.28 | 1.22 (0.2227) |
| Abnormal Prod Cost | 6.26 <i>4.35</i> | 4.18 <i>4.90</i> | -1.27 (0.2027) | -2.36 -1.16 | 3.02 2.49 | 2.02 (0.0446) |
| Abnormal Disc Exp | -5.12 -4.76 | -4.50 -5.01 | 0.81 (0.4156) | -0.65 -1.69 | -3.68 -4.39 | -1.00 (0.3194) |
| N | 1,084 | 2,056 | | 115 | 179 | |

* Significant at the 0.10 level (two-tail) **Significant at the 0.05 level (two-tail)

Panel B

Firms that just miss or just meet/beat the earnings change benchmark. The sample is limited to firms with earnings changes between -1.0% and 1.0% of total assets. The full sample is 5,397 firms.

| | Pre-SOX | | | Post-SOX | | |
|--------------------|-----------|------------------|-------------------|-----------|-----------|------------|
| | | | Difference | | | Difference |
| | Just Miss | <u>Just Beat</u> | in Means | Just Miss | Just Beat | in Means |
| | Mean | Mean | t-stat | Mean | Mean | t-stat |
| | Median | Median | (p-value) | Median | Median | (p-value) |
| CFO | 7.44 | 8.93 | 5.52 | 7.91 | 9.41 | 2.35 |
| | 7.92 | 9.30 | (<0.0001) | 7.87 | 9.17 | (0.0188) |
| | | | | | | |
| Abnormal Accruals | 0.95 | 1.01 | 0.32 | 0.27 | 0.67 | 1.04 |
| | 0.64 | 0.76 | (0.7503) | 0.37 | 0.71 | (0.2991) |
| | | | | | | |
| Abnormal Prod Cost | 1.02 | 0.46 | -0.91 | 0.45 | 1.91 | 1.74 |
| | 2.08 | 1.06 | (0.3643) | 0.44 | 3.10 | (0.0829) |
| | | | | | | |
| Abnormal Disc Exp | -1.37 | -1.48 | -0.18 | -1.83 | -0.83 | 0.68 |
| - | -2.95 | -2.34 | (0.8561) | -3.46 | -2.82 | (0.4983) |
| Ν | 1,897 | 2,819 | | 292 | 389 | |

* Significant at the 0.10 level (two-tail) **Significant at the 0.05 level (two-tail)

Panel C

Firms that just miss or just meet/beat the analysts' forecasted earnings benchmark. The sample is limited to firms with actual earnings between -0.01 and 0.01 of the most recent analyst forecast of annual EPS. The full sample is 6,685 firms.

| | Pre-SOX | | | | Post-SOX | | |
|--------------------|------------|-----------|-----------------|---|------------|-----------|-----------------|
| | Inat Miss | Just Doot | Difference | | Inst Miss | Just Deat | Difference |
| | JUST WIISS | Just Deat | <u>in Means</u> | | JUST WIISS | Just Deat | <u>m wreans</u> |
| | Mean | Mean | t-stat | | Mean | Mean | t-stat |
| | Median | Median | (p-value) | | Median | Median | (p-value) |
| CFO | 10.32 | 12.81 | 4.45 | | 9.29 | 9.91 | 0.64 |
| | 10.26 | 11.54 | (<0.0001) | | 10.92 | 10.46 | (0.5223) |
| | | | | | | | |
| Abnormal Accruals | 0.95 | 0.98 | 0.15 | | -0.14 | 0.40 | 1.22 |
| | 0.79 | 0.72 | (0.8841) | | -0.09 | -0.14 | (0.2228) |
| | | | | | | | |
| Abnormal Prod Cost | -4.31 | -8.59 | -1.87 | | -2.52 | -4.95 | -1.76 |
| | -2.76 | -4.32 | (0.0612) | | -1.57 | -2.84 | (0.0794) |
| | | | | | | | |
| Abnormal Disc Exp | 3.51 | 4.66 | 1.25 | _ | 1.91 | 4.91 | 1.85 |
| | 0.07 | 0.62 | (0.2095) | | -0.37 | 0.72 | (0.0645) |
| Ν | 2,449 | 3,246 | | | 485 | 505 | |

* Significant at the 0.10 level (two-tail) **Significant at the 0.05 level (two-tail)

Variable Definitions

CFO is cash flow from operations.

AbAccr (abnormal accruals) is defined as the difference between total accruals and expected accruals. Expected accruals are calculated using the Jones model (Jones 1991). The Jones model estimates expected accruals as: $Accruals_{t}/A_{t-1} = \alpha_{0} + \alpha_{1} * (l/A_{t-1}) + \beta_{1} * (\Delta S_{t}/A_{t-1}) + \beta_{2} * (PPE_{t}/A_{t-1}) + \varepsilon_{t}$. All terms are scaled by total assets at the end of year t-1.

AbProd (abnormal production costs) is defined as the difference between a firm's actual production costs and expected production costs. Expected production costs are estimated using the industry-year regression: $\operatorname{Prod}_{t} = a_{0} + a_{1}*(1/A_{t-1}) + b_{1}*Sales_{t} + b_{2}*\Delta Sales_{t} + b_{3}*\Delta Sales_{t-1} + \varepsilon_{t}$. All terms are scaled by total assets at the end of year t-1.

AbDisc (abnormal discretionary costs) is defined as the difference between a firm's actual discretionary costs and expected discretionary costs. Expected discretionary costs are estimated using the industry-year regression: $\text{Disc}_{t} = a_{0} + a_{1} * (1/A_{t-1}) + b_{1} * Sales_{t-1} + \varepsilon_{t}$. All terms are scaled by total assets at the end of year t-1.
Table 3

Comparison of Just Meet/Beat Firm-Years With Just Miss Firm Years

This table reports the results of probit analysis for firm-years located just to the right and left of the profit, earnings change, and analyst forecast benchmarks for years 1987 - 2004. $BM = a + b_1 \ AbAccr + b_2 \ Abprod + b_3 \ AbDisc + b_4 \ SOX + b_$

 b_5 AbAccr x SOX + b_6 Abprod x SOX + b_7 AbDisc x SOX + b_8 CFO + b_9 NOA + E

| | | Profit | Earnings Change | Analyst Forecast |
|------------|-----------|-----------------------|-----------------------|-----------------------|
| | Predicted | Estimate | Estimate | Estimate |
| | Sign | $(\Pr > \chi^2)$ | $(\Pr > \chi^2)$ | $(\Pr > \chi^2)$ |
| Intercept | ? | 0.2964 (<0.0001)** | 0.2097 (<0.0001)** | 0.1004 (<0.0001)** |
| AbAccr | + | 1.6090 (<0.0001)** | 0.7542 (0.0104)** | 0.4755 (0.0112)** |
| AbProd | + | -0.0313 (0.7160) | 0.1248 (0.1724) | -0.0385 (0.9076) |
| AbDisc | - | 0.0703 (0.7207) | -0.1060 (0.2027) | 0.0448 (0.7631) |
| SOX | - | -0.1819 (0.0118)** | -0.0629 (0.1156) | -0.1432 (0.0006)** |
| AbAccr*SOX | - | 1.3764 (0.9064) | 1.2096 (0.8813) | 0.6412 (0.8519) |
| AbProd*SOX | + | 0.8396 (0.0321)** | 0.7965 (0.0477)** | 0.1346 (0.3136) |
| AbDisc*SOX | - | 0.0542 (0.5544) | -0.3558 (0.7928) | 0.3868 (0.9465) |
| CFO | + | 2.1111 (<0.0001)** | | |
| ΔCFO | + | | 1.0510 (<0.0001)** | 0.5415 (<0.0001)** |
| NOA | ? | 0.2058 (0.0010)** | 0.1425 (0.0009)** | 0.0163 (0.5963) |
| Ν | | 3,434 | 5,397 | 6,685 |

* Significant at the 0.10 level (one-tail) **Significant at the 0.05 level (one-tail)

Variable Definitions

Profit Benchmark: BM = 1 where firm-years have scaled earnings (NI_t / TA_{t-1}) greater than or equal to 0 but less than 0.01, and BM = 0 where firm-years have scaled earnings greater than or equal to -0.01 but less than 0.

Earnings Change Benchmark: BM = 1 where firm-years have scaled earnings changes (NI_t - NI_{t-1} / TA_{t-1}) greater than or equal to 0 but less than 0.01, and BM = 0 where firm-years have scaled earnings changes greater than or equal to -0.01 but less than 0.

Analysts' Forecast Benchmark: BM = 1 where firm-years have (EPS - forecasted EPS) greater than or equal to 0 but less that 0.01, and BM = 0 where firm-years have (EPS - forecasted EPS) greater than or equal to -0.01 but less than 0. Forecasted EPS is defined as the most recent analyst forecast prior to the announcement of annual earnings.

Prod (production costs) is defined as Costs of goods sold + Change in inventory.

Disc (discretionary expenses) is defined as Selling, General, and Administrative expenses + R&D + Advertising expenses.

AbAccr (abnormal accruals) is defined as the difference between total accruals and expected accruals. Expected accruals are calculated using the Jones model (Jones 1991). The Jones model estimates expected accruals as: $Accruals_{t}/A_{t-1} = \alpha_0 + \alpha_1 * (l/A_{t-1}) + \beta_1 * (\Delta S_t/A_{t-1}) + \beta_2 * (PPE_t/A_{t-1}) + \varepsilon_t$. All terms are scaled by total assets at the end of year t-1.

AbProd (abnormal production costs) is defined as the difference between a firm's actual production costs and expected production costs. Expected production costs are estimated using the industry-year regression: $\operatorname{Prod}_{t} = a_0 + a_1 * (1/A_{t-1}) + b_1 * Sales_t + b_2 * \Delta Sales_t + b_3 * \Delta Sales_{t-1} + \varepsilon_t$. All terms are scaled by total assets at the end of year t-1.

AbDisc (abnormal discretionary costs) is defined as the difference between a firm's actual discretionary costs and expected discretionary costs. Expected discretionary costs are estimated using the industry-year regression: $\text{Disc}_t = a_0 + a_1 * (1/A_{t-1}) + b_1 * Sales_{t-1} + \varepsilon_t$. All terms are scaled by total assets at the end of year t-1.

SOX is an indicator variable taking on the value of 1 if the firm year is 2003 or 2004 (years following the adoption of Sarbanes - Oxley). SOX = 0 for years prior to 2002.

CFO is cash flow from operations.

 ΔCFO is the change is cash flow from operations from year t-1 to year t.

NOA is net operating assets defines as total shareholder's equity - cash and short term investments + total debt.

Table 4

Comparison of Real Earnings Management Levels Between Suspect Firms and Non-Suspect Firms

Panel A

Comparison of abnormal production cost levels between suspect firms and non-suspect firms. Suspect firms are defined as firms with reported earnings before extraordinary items between -1.0% and 1.0% of total assets. The sample is limited to firms with reporting earnings before extraordinary items between -7.5% and 7.5% of total assets. OLS regression is used for the following equation:

 $Abprod = a + b_1 Suspect + b_2 AbMTB + b_3 AbSize + b_4 AbNI + E$

| N = 18,546 | Coefficient | t-Stat | p-value |
|------------|-------------|--------|----------|
| Intercept | 0.0245 | 10.27 | <.0001** |
| Suspect | 0.0213 | 2.53 | 0.0115** |
| AbMTB | -0.0002 | -2.82 | 0.0018** |
| AbSize | 0.0068 | 5.81 | <.0001** |
| AbNI | -0.0029 | -5.19 | <.0001** |

* Significant at the 0.10 level **Significant at the 0.05 level (two-tail)

Panel B

Comparison of abnormal discretionary expense levels between suspect firms and non-suspect firms. Suspect firms are defined as firms with reported earnings before extraordinary items between -1.0% and 1.0% of total assets. The sample is limited to firms with reporting earnings before extraordinary items between -7.5% and 7.5% of total assets. OLS regression is used for the following equation:

 $AbDisc = a + b_1 Suspect + b_2 AbMTB + b_3 AbSize + b_4 AbNI + E$

| N = 18,546 | Coefficient | t-Stat | p-value | |
|------------|-------------|--------|----------|--|
| Intercept | -0.0597 | -33.19 | <.0001** | |
| Suspect | -0.2557 | -3.69 | 0.0002** | |
| AbMTB | -0.0001 | -0.21 | 0.8319 | |
| AbSize | 0.0066 | 6.87 | <.0001** | |
| AbNI | -0.0006 | 6.26 | <.0001** | |
| | | | | |

* Significant at the 0.10 level **Significant at the 0.05 level (two-tail)

Variable Definitions

AbProd (abnormal production costs) is defined as the difference between a firm's actual production costs and expected production costs. Expected production costs are estimated using the industry-year regression: $\operatorname{Prod}_{t} = a_{0} + a_{1}*(1/A_{t-1}) + b_{1}*Sales_{t} + b_{2}*\Delta Sales_{t} + b_{3}*\Delta Sales_{t-1} + \varepsilon_{t}$. All terms are scaled by total assets at the end of year t-1.

AbDisc (abnormal discretionary costs) is defined as the difference between a firm's actual discretionary costs and expected discretionary costs. Expected discretionary costs are estimated using the industry-year regression: $\text{Disc}_{t} = a_{0} + a_{1} * (1/A_{t-1}) + b_{1} * Sales_{t-1} + \varepsilon_{t}$. All terms are scaled by total assets at the end of year t-1.

Suspect is an indicator variable taking on the value of 1 if the firm-year observations has scaled earnings (*EBEI*_{*i*} / *TA*_{*i*-1}) greater than or equal to 0 but less than 0.01.

AbMTB (abnormal market-to-book) is the firm MTB subtracted from the industry mean MTB. All terms are scaled by total assets at the end of year t-1.

AbSize (abnormal size) is the logarithm of market value of equity subtracted from the industry mean logarithm of market value of equity. All terms are scaled by total assets at the end of year t-1.

AbNI (abnormal net income) is the scaled income before extraordinary items subtracted from the industry mean scaled income before extraordinary items. All terms are scaled by total assets at the end of year t-1.

Table 5 Time Trends in Accrual Management

This table reports results of a time-trend analysis of accrual management from 1987 through 2004. Results show an increase in accrual management from 1987 until the passage of Sarbanes-Oxley, and a sharp decline in accrual management in the years following Sarbanes-Oxley. The sample is 43,786 firm years drawn from the entire distribution of earnings. OLS regression is used on the following model:

 $AbAccr = a + b_1 TIME + b_2 SOX + E$

| N = 43,786 | Coefficient | t-stat | p-value |
|------------|-------------------|--------|-------------|
| Intercept | -0.0163 | -5.42 | <.0001** |
| TIME | 0.0022 | 6.75 | <.0001** |
| SOX | -0.0139 | -3.08 | 0.0021** |
| | 0 1 0 1 1 1 1 0 1 | | 7 7 4 1 7 1 |

* Significant at the 0.10 level **Significant at the 0.05 level (two-tail)

Variable Definitions

AbAccr (abnormal accruals) is defined as the difference between total accruals and expected accruals. Expected accruals are calculated using the Jones model (Jones 1991). The Jones model estimates expected accruals as: $Accruals_t/A_{t-1} = \alpha_0 + \alpha_1 * (l/A_{t-1}) + \beta_1 * (\Delta S_t/A_{t-1}) + \beta_2 * (PPE_t/A_{t-1}) + \varepsilon_t$.

TIME is a time trend variable measured as the years away from 1987. For instance, for year 1989 TIME would equal 2 (1989 - 1987).

SOX is an indicator variable taking on the value of 1 if the firm year is 2003 or 2004 (years following the adoption of Sarbanes - Oxley). SOX = 0 for years prior to 2002.