Impact of Restatement Characteristics and Subsequent Earnings Management on Post-Sox Executive Turnover

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Executive Summary

Understanding whether the likelihood of management turnover related to financial restatements changes after SOX is especially important because restatements have become much more common, with over 10% of publicly traded companies announcing restatements in 2006 (Johnson 2008). By surveying post-SOX company restatements, this study focuses on restatement characteristics as well as related management behavior, and provides insights into their consequences. Our findings provide evidence that the likelihood of CEO or CFO turnover increases for companies with higher restatement severity. Specifically, restatement characteristics, including core-earnings and magnitude of amounts, significantly affect the likelihood of management turnover. Additionally, when restatements are prompted by companies, management turnover is associated with the magnitude of overstated amount on income and/or restatements affecting core earnings. In addition, after controlling for the restatement severity, our empirical results provide strong evidence that when post-SOX executives window-dress earnings to portray a more favorable earnings picture, they are more likely to be terminated following financial restatements.

1. Introduction

Although SOX initiated a series of regulations to improve corporate financial reporting quality, the consequences of the resultant regulatory changes have not yet been fully studied. More importantly, understanding whether the likelihood of management turnover changes after SOX is especially important because restatements have become much more common, with more than 10% of publicly traded companies announcing restatements in 2006 (Johnson 2008). Thus, we focus on surveying post-SOX company restatements and provide analyses regarding their consequences by investigating specific restatement characteristics and management behavior.

This study examines three important issues. First, prior literature on the likelihood of managerial turnover after restatements has been mixed (Beneish 1999; Jayaramnan et al. 2004; Arthaud-Day et al. 2006; Desai et al. 2006; Land 2006; Collins et al. 2009, Hennes et al. 2008; and Burks 2010), and there is no consistent evidence on the association between management turnover and financial restatements. A recent survey done by the Audit Analytics (2008) finds that companies that filed financial restatements during the years 2005 to 2007 were significantly more

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likely to be associated with C-level executive (i.e., CEO and CFO) departures.[1]

This raises the question of whether executive turnover following restatements may be more likely in the current regime than in prior periods due to new or more stringent penalties imposed on companies and executives. Additionally, are restatement characteristics really important when companies decide to fire executives? Second, prior studies use the prompter as a measure of restatement severity and find mixed results (Palmrose et al. 2004; Desai et al. 2006; Arthaud-Day et al. 2006). We question the appropriateness of using prompters as a measure of restatement severity by prior research. Third, Kim (2008) finds that the board of directors became less tolerant of underperformance after SOX. Richardson et al. (2006) and Richardson et al. (2003) also indicate that restating companies have been attempting to maintain a string of consecutive positive earnings growth and/or quarterly earnings surprises.

Thus, managers who face a high likelihood of termination have strong incentives to select income-increasing earnings management. Are these managers who select aggressive accounting practices to window-dress earnings more likely to be retained in their jobs?

Our results provide evidence that the likelihood of CEO or CFO turnover significantly increases for companies with higher restatement severity. Specifically, restatement characteristics including core-earnings accounts and magnitude of amounts significantly affect the likelihood of management turnover. When a restatement is prompted by the company, management turnover appears to be associated with the dollar amount of overstated income and/or whether the restatement affects core earnings. After controlling for the restatement severity, our empirical results provide evidence that when executives window-dress earnings to portray a more favorable earnings picture, they are more likely to be terminated following financial restatements.

Our findings contribute to the literature in several ways. First, this research examines management turnover within the context of restatement characteristics. We argue that prior research ignores the fact that restatements have different characteristics and may make various impacts on companies. Our hand-collected restatement characteristics including core-earnings, magnitude of amounts, scope of accounts affected and duration can provide a good opportunity to re-examine and extend prior mixed empirical findings.

After SOX, managers have strong incentives to window-dress earnings to avoid underperformance.

Second, prior research has shown inconsistent results on using the prompter[2] as a measure of restatement severity (Palmrose et al. 2004; Desai et al. 2006; Arthaud-Day et al. 2006). Our empirical results find that when restatements are prompted by companies, two restatement characteristics (core-earnings and amounts) are associated with the replacement of executives. The results imply that using the prompter as a measure of restatement severity by prior research may have oversimplified the issues.

Third, prior studies suggest that SOX is effective in mitigating earnings management behavior, and board members react more unfavorably to post-SOX earnings management behavior based on aggressive accounting because it is interpreted as a signal of non-compliance with SOX or poor quality of financial reporting. This study takes a step further and finds that company boards are more likely to terminate executives who, via restatements, adjust prior period earnings downward and in the meantime continue to massage current period earnings upward. Board members are becoming less tolerant

to executives who, following restatements, continue practicing aggressive accounting and/or window-dressing earnings.

Finally, our findings suggest that the power of tests on the consequences of restatements can be greatly enhanced by singling out *PostPost*[3] observations from the pooled Post-SOX samples. The examination of individual restatement characteristics and composite severity measures proves to be fruitful. Our focus on the investigation of income-decreasing restatements also helps provide powerful test results for the research issues.

The remainder of this paper is organized as follows. Section 2 discusses prior studies in restatements that are most relevant to our study and presents the hypotheses development. Section 3 describes the sample selection procedure and research design. Section 4 reports the empirical results together with their implications. The sensitivity analyses are presented in Section 5. Section 6 provides our concluding remarks.

2. Literature review and hypotheses development

By imposing more stringent civil and criminal penalties for issuing misstated financial statements,[4] SOX lifted the accountability of CEOs and CFOs to certify financial reports to the SEC (Section 302).[5] This raised the question of whether executive turnover around restatements may be more likely in the current regime than in the past. Given executives' primary responsibility for the financial reporting quality, we focus our research on the consequences faced by CEOs and CFOs in the post-SOX period. Prior studies have shown that turnover of corporate executives increases after restatements or other accounting problems (Jayaramnan et al. 2004; Arthaud-Day et al. 2006; Desai et al. 2006; Land 2006; Collins et al. 2009, Hennes et al. 2008; and Burks 2010). However, there is no systematic evidence on the association between management turnover and financial restatements.[6] One possible reason for mixed results may be due to the fact that prior studies ignore restatement characteristics and subsequent management behavior.

2.1 Restatement characteristics

In this study, we focus on whether restatement characteristics are associated with management turnover, because we argue that restatements have different characteristics and may cause various influences on companies. Hence, we conjecture that companies will consider different characteristics and impacts of restatements when they decide to discharge executives. In this study, we include four restatement characteristics:

1. whether or not the restatement involves core earnings,
2. the number of accounts affected,
3. the magnitude of amounts, and
4. the number of years restated.

These restatement characteristics have received some research attention. For example, prior studies (Palmrose et al. 2004; Palmrose and Scholz 2004; Romanus et al. 2008) suggest that investors regard restatements of core accounts as more serious. Palmrose et al. (2004) capture the pervasiveness of restatements (measured by the number of accounts affected) within the income statement.

Regarding restatement duration and restatement amounts, Srinivasan (2005) indicates that restatement duration measures the length of time the quality of accounting was compromised, whereas higher restatement magnitude indicates poorer prior representation of the true numbers. In addition, empirical evidence suggests that there were significant positive changes made to both internal and external monitoring mechanisms after the SOX (Krishnan 2005; Richardson 2005).

Therefore, we assume that the impact of SOX will affect the association between restatement characteristics and management turnover. For example, we expect a higher management turnover following restatements affecting core earnings after SOX because companies are now facing more stringent civil and criminal penalties for untruthful financial reporting under SOX. Thus, our hypothesis is stated as follows:

H_1: Restatement characteristics are associated with management turnover after SOX.

To extend our research issues, restatement prompters are used as an alternative proxy for restatement severity in this study. Prior researches use the prompter as a measure of restatement severity, but their results are mixed (Palmrose et al. 2004; Desai et al. 2006; Arthaud-Day et al. 2006). They predict that restatements prompted by external parties (SEC and auditors) are more severe and should thus increase the likelihood of CEO turnover, but they find no such evidence.

Compared with auditor- and SEC-prompted restatements, company-prompted restatements are more susceptible to SOX provisions regarding top management's misconducts and financial reporting responsibility (e.g. §304). This raises a question of whether executive turnover following a restatement prompted by the company is less likely as Palmrose et al. (2004) propose.[7]

Thus, we examine the relation between restatement characteristics and the probability of management turnover following a company-prompted restatement. The following hypothesis is developed:

H_{1a}: Restatement characteristics are associated with management turnover following a post-SOX company-prompted restatement.

2.2 Management behavior

Because a primary internal disciplinary mechanism in a company is the dismissal of management by the board (Menon and Williams 2008), poor performance of a company may trigger its board to replace the top managers. It is reported that some boards of directors became more intense in replacing managers after SOX (Kaplan and Minton 2006; Kim 2008).[8] Thus, after SOX, managers have strong incentives to window-dress earnings to avoid underperformance. Prior studies also find that some executives falsely restate their companies' earnings to make them appear profitable (Ettredge et al. 2010; Richardson et al. 2006; Richardson et al. 2003). If such executives keep portraying a favorable financial picture by window-dressing earnings, we question whether they are more likely to be terminated by the board. After controlling for the restatement severity, we investigate the association between the likelihood of management turnover and management behavior after SOX. Additionally, we focus on the restatement in the post-post group because market participants may consider such restatements a signal of non-compliance with SOX. Hence, this leads to our hypothesis 2:

H_2: In the *post-post* group,[9] earnings management following restatements is associated with subsequent executive turnover.

3. Research design

We investigate financial accounting restatements announced between August 1, 2002 and December 31, 2005, using a probit model to examine our research issues. In this section, we first detail the data sources and sample selection used to generate the research sample. Second, we introduce the research models, followed by a discussion of the test and control variables.

Company boards are more likely to terminate executives who, via restatements, adjust prior period earnings downward and in the meantime continue to massage current period earnings upward.

3.1 Data and sample selection

To control for the homogeneity to comply with the SEC disclosure rules and avoid any exchange-market effect, we restrict our sample to companies listed on the NASDAQ and NYSE only.

Restatement announcements[10] and characteristics

We hand-collect data about the dates of initial restatement announcements and the characteristics of these restatements from the *Lexis-Nexis News Library*, covering all interim and annual restatements announced from August 1, 2002, through December 31, 2005.[11] Identifying exact announcement dates related to restatements is challenging. Thus, we only consider each company's first release of its restatement announcement in a given year. Similar to Palmrose et al. (2004) and Kinney et al. (2004), our search uses several key words for restatements, such as "restate," "restatement," "revise," "revision," "adjust," and "error." The event day is determined by the first restatement announcement date identified in the *Lexis-Nexis News Library*. We also search the EDGAR database to cross-check whether these event days are correct.[12] Finally, we add restating companies mentioned in other sources discussing restatements such as GAO's (2006) report, *SEC Filing Library*, *Accounting Today News, BNET Today News*, *CFO.com News and Compliance Week News.* All hand-collected data about the dates of initial restatement announcements and characteristics are available from public filings and databases.

Management turnover[13]

Following Desai et al. (2006), Collins et al. (2009) and Hennes et al. (2008), we identify the CEO and CFO of the restatement company by reading proxy statements (Form DEF-14A) as well as press releases. If the proxy statement is not available, then we search 10-Ks and 8-Ks.[14] To enhance the power of tests and improve the generality of results, we also hand-collect data about CEO and CFO turnover from the *Lexis-Nexis News Library, CFO.com News* and *WebCPA News.* We define management turnover as the turnover of a person or persons holding titles of Chairman, CEO, CFO, and/or President. A company is said to have turnover if an individual holding the title of Chairman, CEO, CFO, or President leaves the company within 24 months around the restatement announcement (from 6 months before to 18 months after).[15] In addition, if the company merges or is acquired within 24 months, and as long as the manager does not leave the company prior to the merger, we do not consider it as turnover.

Corporate governance

Information on board size, audit committee size, board independence and audit committee independence is also hand-collected from the appointing companies' proxy statements (Form DEF-14A). If the Form DEF-14A was not available, then we search 10-Ks. Form DEF-14A requires companies to state whether they have standing audit, compensation, or nominating board committees. If such committees exist, then companies must disclose their functions, responsibilities, and their members.

Others

Company-level accounting data are obtained from the Standard and Poor's *COMPUSTAT* Annual Industrial, Research, and Full Coverage files. The *Compustat* database includes not only data found in balance sheets, income statements, and statements of cash flow, but also industry classification, and audit opinions for U.S. companies. For most variables of interest in this study, they are available from the database.

3.2 Research models

3.2.1 H_1 Restatement characteristics

We investigate the reputational penalties to managers of companies for restatements announced in the post-SOX period. Prior literature on managerial turnover after restatements has been mixed in the post-SOX period (Collins et al. 2009; Hennes et al. 2008; Burks 2010). Thus, we re-examine the association between restatement and management turnover, controlling for other factors that are known to influence managerial turnover. More importantly, we include four restatement characteristics to investigate the consequences to managers for restating financial statements. The primary specification model is:[16]

$$\begin{aligned} TURNOVER_{i,t} = {} & \alpha_0 + \alpha_1 CORE_{i,t} + \alpha_2 AMOUNT_{i,t} + \alpha_3 ACCOUNTS_{i,t} + \alpha_4 RYEARS_{i,t} \\ & + \alpha_5 GC_{i,t} + \alpha_6 GROWTH_{i,t} + \alpha_7 ROA_{i,t} + \alpha_8 LNASSET_{i,t} + \alpha_9 BOARD_{i,t} \\ & + \alpha_{10} INDBOARD_{i,t} + \alpha_{11} [Fixed\ Effects] + \varepsilon_{i,t} \end{aligned} \quad (1-1)$$

We also use a composite index that combines four characteristics *(CORE, AMOUNT, ACCOUNTS, RYEARS*) of the restatement into a single comprehensive variable *(SEVERITY)* that captures the company's overall restatement severity.

$$\begin{aligned} TURNOVER_{i,t} = {} & \alpha_0 + \alpha_1 SEVERITY_{i,t} + \alpha_2 GC_{i,t} + \alpha_3 GROWTH_{i,t} + \alpha_4 ROA_{i,t} \\ & + \alpha_5 LNASSET_{i,t} + \alpha_6 BOARD_{i,t} + \alpha_7 INDBOARD_{i,t} \\ & + \alpha_8 [Fixed\ Effects] + \varepsilon_{i,t} \end{aligned} \quad (1-2)$$

where

TURNOVER = 1 if the CEO[17] leaves the company within 24 months[18] around the restatement announcement (from 6 months before[19] to 18 months after), and 0 otherwise;

CORE = 1 if a restatement involves revenue, cost of sales or on-going operating expenses, and 0 otherwise;

AMOUNT = The cumulative amount of net income overstatement scaled by total assets in the year prior to the restatement announcement;

ACCOUNTS = Number of account groups affected in a restatement. The seven account groups are revenue, cost of sales, operating expenses, one-time/special items, merger-related, non-operating expenses, and other items;

RYEARS = Sum of years restated, where a fiscal year = 1 and each additional quarter = 0.25;

SEVERITY = Combines four characteristics of restatements (CORE, AMOUNT, ACCOUNTS, RYEARS) into a single comprehensive variable;

GC = 1 if the company receives a going concern opinion at announcement year, and 0 otherwise;

GROWTH = One-year percentage change in sales reported at announcement year;

ROA = Net income divided by book value of total assets reported at announcement year;

LNASSET = Natural log of book value of total assets reported at announcement year;

BOARD = Number of directors on the board at announcement year;

INDBOARD = Number of independent directors[20] on the board divided by the total board size at announcement year;

Fixed Effects = Dummy variables controlling for fixed effects of industries and calendar years; ε= the residual term.

Following Desai et al. (2006) and Balsam and Miharjo (2007) we use the same process to select management turnover cases. Our classification of turnover is more conservative according to a number of criteria.[22] We estimate a probit regression model where the dependent variable, *TURNOVER,* equals one if the company experiences turnover in at least one of the top four positions (Chairman, CEO, CFO, or President) within 24 months around the restatement announcement.

3.2.2 H_{1a} Company-prompted restatement

In this section, to consider the effects of restatement prompter, we use equation (2) to examine the question whether executive turnover following restatements may be less likely when companies had high restatement severity but had prompted these restatements by themselves to reap the benefit. The primary specification model is;

$$\begin{aligned} TURNOVER_{i,t} = {} & \alpha_0 + \alpha_1 CORE_{i,t} + \alpha_2 CORE_{i,t} \times ATTCOMP_{i,t} + \alpha_3 AMOUNT_{i,t} \\ & + \alpha_4 AMOUNT_{i,t} \times ATTCOMP_{i,t} + \alpha_5 ACCOUNTS_{i,t} \\ & + \alpha_6 ACCOUNTS_{i,t} \times ATTCOMP_{i,t} + \alpha_7 RYEARS_{i,t} \\ & + \alpha_8 RYEARS_{i,t} \times ATTCOMP_{i,t} + \alpha_9 GC_{i,t} + \alpha_{10} GROWTH_{i,t} \\ & + \alpha_{11} ROA_{i,t} + \alpha_{12} LNASSET_{i,t} + \alpha_{13} BOARD_{i,t} + \alpha_{14} INDBOARD_{i,t} \\ & + \alpha_{15} [Fixed\ Effects] + \varepsilon_{i,t} \end{aligned} \qquad (2)$$

where *ATTCOMP* = 1 for companies having restatements prompted by themselves, and 0 otherwise.

This model allows us to determine the incremental relation[23] between restatement characteristics and executive turnover following a company-prompted *(ATTCOMP)* restatement (relative to a non company-prompted restatement), which, in turn, enables us to address one potential alternate explanation for our results — restatement characteristics could be associated with executive turnover, not just whether executives are terminated because of a company-prompted restatement. The coefficients associated with the main effects of each of the four restatement characteristics (α_1, α_3, α_5, α_7) measure the relation between restatement characteristics and executive turnover for non company-prompted restatements. However, we are mainly interested in the association between restatement characteristics and executive turnover for company-prompted restatements. Thus, we use the joint test to examine this issue.[24] By focusing on company-prompted restatements, we examine whether executive turnover increases when a restatement involves core earnings (α_1+ α_2), the overstated amount grows (α_3+ α_4), more account groups are affected (α_5+ α_6), and more quarters are restated (α_7+ α_8).

When executives window-dress earnings to portray a more favorable earnings picture, they are more likely to be terminated following financial restatements.

3.2.3 H_2 Management behavior

Several studies find that poor financial performance often leads to CEO turnover (e.g., Weisbach 1988; Denis et al. 1997; Furtado and Rozeff 1987; Kaplan and Minton 2006; Kim 2008). When executives window-dress earnings and portray a more favorable earnings picture in the period a restatement is announced, the question is whether they are more likely to be retained in their jobs. Thus, we estimate equation (3-1) and (3-2) to investigate the association between management turnover and earnings management.

$$\begin{aligned} TURNOVER_{i,t} = {} & \alpha_0 + \alpha_1 PMDA_{i,t} + \alpha_2 PostPost_{i,t} + \alpha_3 PMDA_{i,t} \times PostPost_{i,t} + \alpha_4 CORE_{i,t} \\ & + \alpha_5 AMOUNT_{i,t} + \alpha_6 ACCOUNTS_{i,t} + \alpha_7 RYEARS_{i,t} + \alpha_8 GC_{i,t} \\ & + \alpha_9 GROWTH_{i,t} + \alpha_{10} ROA_{i,t} + \alpha_{11} LNASSET_{i,t} + \alpha_{12} BOARD_{i,t} \\ & + \alpha_{13} INDBOARD_{i,t} + \alpha_{14} [Fixed\ Effects] + \varepsilon_{i,t} \end{aligned} \quad (3-1)$$

Additionally, this study also follows Wang and Yu (2008) by partitioning the sample years into two distinct groups: restatements announced in the post-SOX period restating financial statements issued in the pre-SOX period (denoted by *PostPre*), and restatements announced in the post-SOX period restating financial statements issued in the post-SOX period (denoted by *PostPost*).

$$\begin{aligned} TURNOVER_{i,t} = {} & \alpha_0 + \alpha_1 PMDA_{i,t} + \alpha_2 PostPost_{i,t} + \alpha_3 PMDA_{i,t} \times PostPost_{i,t} \\ & + \alpha_4 SEVERITY_{i,t} + \alpha_5 GC_{i,t} + \alpha_6 GROWTH_{i,t} + \alpha_7 ROA_{i,t} \\ & + \alpha_8 LNASSET_{i,t} + \alpha_9 BOARD_{i,t} + \alpha_{10} INDBOARD_{i,t} \\ & + \alpha_{11} [Fixed\ Effects] + \varepsilon_{i,t} \end{aligned} \quad (3-2)$$

Our *PMDA* variable as a measure of earnings management is the performance-matched discretionary accrual (Kothari et al. 2005). The Kothari et al. (2005) performance-matched discretionary accrual is obtained by matching on the basis of two-digit SIC code, year and current ROA. The performance-matched discretionary accrual is defined as the accrual for company *i* in year *t* from the Jones-model discretionary accrual[25] in year *t* minus the matched company's Jones-model discretionary accrual in year *t*.

3.3 Variables of restatement characteristics

The first test variable is an indicator variable for core-earnings (denoted by *CORE*), which equals one if a restatement involves core earnings, and zero otherwise. According to Penman (2001), core earnings in an income statement include sales revenue, cost of sales, and on-going operating expenses. Prior studies indicate that core earnings are of particular importance to financial statement users (Palmrose et al., 2004; Palmrose and Scholz, 2004; Gleason et al., 2008; and Ettredge et al. 2010) because they consist of primary operating earnings generated by repetitive business. Market participants regard restatements of core earnings as more serious due to potential litigation, and therefore react negatively (Palmrose and Scholz 2004; Palmrose et al. 2004). In our models, we include *CORE* as a test variable and expect that executives are more likely to be terminated when the restatement involves core earnings.

Second, the magnitude of a restatement is positively associated with the probability of a lawsuit (Palmrose and Scholz 2004), and restatements of greater magnitudes are more of a concern to investors (Palmrose and Scholz 2004; Palmrose et al. 2004; Lev et al. 2008). Thus, we include a measure of the magnitude effect (*AMOUNT*) as a restatement characteristic. Following Palmrose et al. (2004), Srinivasan (2005), Lev et al. (2008), Collins et al. (2009) and Hennes et al. (2008), we compute *AMOUNT* as the restated income (loss) less originally reported income (loss), scaled by the book value of total assets at the year-end immediately preceding the restatement announcement. We also expect that executives are more likely to be terminated if restatements involve greater overstatement amounts.

Third, because a restatement may involve several accounts and cause more negative reactions (Palmrose et al. 2004), we measure the number of account groups affected (denoted by *ACCOUNTS*) to capture the pervasiveness of the restatement. In a word, *CORE* captures the overall impact of accounting numbers whereas the variable *ACCOUNTS* indicates whether market participants consider the detailed line items (within the income statement) involved in a restatement. We follow Palmrose et al. (2004) by focusing on seven account groups in the income statement (i.e., revenue, cost of sales, operating expenses, one-time/special items, merger-related, non-operating expenses, and other items) and expect *ACCOUNTS* (which range from one to seven) to be positively associated with executive turnover.

Fourth, like Palmrose et al. (2004) and Srinivasan (2005) we also include the number of years restated as one restatement characteristic. Duration of the misstatement (denoted by *RYEARS*) is measured by the number of years financial statements are restated in a single restatement (where a fiscal year = 1 and a quarter = 0.25). Therefore, *RYEARS* captures the "cumulative compromise" of financial reporting quality over a specific length of time. We also expect a positive association between this variable and the executive turnover.

... the CEO/CFO certification requirement in Section 302 of SOX has made managers more conservative.

Fifth, similar to DeFond et al. (2005), we develop a composite index that combines the aforementioned characteristics of the restatement (*CORE, AMOUNT, ACCOUNTS, RYEARS*) into a single comprehensive severity measurement (*SEVERITY*) to capture the company's overall restatement severity. We code company characteristics equal to 1 if a company's *AMOUNT, ACCOUNTS* or *RYEARS* is above the median of the samples, and 0 otherwise. Then, we construct our comprehensive restatement severity (*SEVERITY*) measure by summing the three dichotomous measures for each sample observation and the *CORE* variable. We also expect *SEVERITY* (ranging from zero to four) to be positively associated with executive turnover.

3.4 Control variables

Similar to previous studies (e.g., Dechow et al. 1996; Richardson et al. 2003; Desai et al. 2006), we control for company's size effect (denoted by *LNASSET*) because company size might capture company-specific risk (Fama and French 1992), and mitigate the problem of correlated omitted variables (Ahmed and Goodwin 2007). Additionally, Denis et al. (1997) and Desai et al. (2006) find that the incidence of top management turnover is negatively associated with company size. Prior studies have documented a negative relationship between financial performance and executive turnover (Hennes et al. 2008). Therefore, consistent with DeFond and Jiambalvo (1991), we consider two proxies for a company's financial condition: company's profitability (denoted by *ROA*) and sales growth rate (denoted by *GROWTH*).

We include the going concern opinion as an indicator variable (denoted by GC) following DeFond and Jiambalvo (1991), and expect *GC* to be positively related to management turnover (Lennox 2005). Corporate boards are responsible for monitoring managerial performance in general (Yermack 1996), but Dechow et al. (1996) find that outside independent directors are effective monitors of managerial actions. Accordingly, we follow Yermack (1996) and Weisbach (1988) to include two measures to proxy for a company's governance environment: board size (denoted by *BOARD*) and board independence (denoted by *INDBOARD*). Weisbach (1988) finds that boards dominated by outside directors are more likely to respond to poor performance by replacing the CEO. Thus, we expect *BOARD* and *INDBOARD* to be positively related to management turnover.

4. Empirical results

4.1 Sample selection

As reported in Table 1, Panel A, a number of companies are excluded from our sample for the following reasons. First, we exclude 12 companies lacking identifying information, such as perm number, cusip, gvkey, or cnum. Second, we cannot find 8-K, 10-K/A, 10-Q/A or restatement data for 183 companies. Third, the restatements of 554 companies do not decrease net income and are deleted. Fourth, 57 companies are merged or acquired within 24 months of the restatement. Fifth, 40 companies are excluded because of missing Compustat financial data. Our final sample is composed of 512 companies that overstated earnings and announced income-decreasing restatements in the post-SOX period.

Table 1
Sample selection for the sample of management turnover

Panel A: Number of observations lost due to data requirements	*n*[a]
Sample of 10-K or 10-Q restatements	1,358
Observations without perm number, cusip, gvkey, cnum, etc.	(12)
Observations with missing restatement data	(183)
Observations not income-decreasing restatements	(554)
Observations merged or acquired	(57)
Observations not on Compustat or with missing Compustat data	(40)
Final Sample	**512**

Panel B: Distributions of CEO turnover by industry						
Industry [b]	**Turnover**		**No Turnover**		**Total**	
	Obs.	%	Obs.	%	Obs.	%
Agriculture	0	0.00	1	0.28	1	0.20
Mining & construction	4	2.67	3	0.83	7	1.37
Food	3	2.00	2	0.55	5	0.98
Textiles & printing / publishing	5	3.33	10	2.76	15	2.93
Chemicals	0	0.00	4	1.10	4	0.78
Pharmaceuticals	7	4.67	11	3.04	18	3.52
Extractive	2	1.33	10	2.76	12	2.34
Durable manufacturers	24	16.00	55	15.19	79	15.43
Transportation	1	0.67	31	8.56	32	6.25
Utilities	3	2.00	15	4.14	18	3.52
Retail	38	25.33	71	19.61	109	21.29
Financial services	22	14.67	68	18.78	90	17.58
Services	16	10.67	41	11.33	57	11.13
Computers	25	16.67	40	11.05	65	12.70
Total	**150**	**100**	**362**	**100**	**512**	**100**

Table 1, Panel B, details the industry composition of restatement companies. The industry that is most heavily represented (21.29% of sample companies) is retailing. Restatements are also relatively common among companies involved in the financial services and durable goods manufacturers, with 17.58% and 15.43% of the sample, respectively, coming from these two industries. Panel B also shows that retailing, computers and durable goods manufacturing industries have the highest percentages of restatements in the CEO turnover subsample (25.33%, 16.67% and 16%, respectively). In addition, Panel C also shows that retailing, durable goods manufacturing, computers and services industries have the highest percentages of restatements in the CFO turnover subsample (22.29%, 22.29%, 14.01% and 14.01%, respectively). When CEO and CFO turnover are combined, Panel D shows that retailing, durable goods manufacturing, and computer industries have the highest percentages of restatements in the CEO or CFO turnover subsample (23.61%, 18.89%, and 14.59%, respectively).

Panel C: Distributions of CFO turnover by industry						
Industry [b]	**Turnover**		**No Turnover**		**Total**	
	Obs.	%	Obs.	%	Obs.	%
Agriculture	0	0.00	1	0.28	1	0.20
Mining & construction	0	0.00	7	1.97	7	1.37
Food	1	0.64	4	1.13	5	0.98
Textiles & printing / publishing	4	2.55	11	3.10	15	2.93
Chemicals	0	0.00	4	1.13	4	0.78
Pharmaceuticals	4	2.55	14	3.94	18	3.52
Extractive	2	1.27	10	2.82	12	2.34
Durable manufacturers	35	22.29	44	12.39	79	15.43
Transportation	7	4.46	25	7.04	32	6.25
Utilities	7	4.46	11	3.10	18	3.52
Retail	35	22.29	74	20.85	109	21.29
Financial services	18	11.46	72	20.28	90	17.58
Services	22	14.01	35	9.86	57	11.13
Computers	22	14.01	43	12.11	65	12.70
Total	**157**	**100**	**355**	**100**	**512**	**100**

Panel D: Distributions of CEO or CFO turnover by industry						
Industry [b]	**Turnover**		**No Turnover**		**Total**	
	Obs.	%	Obs.	%	Obs.	%
Agriculture	0	0.00	1	0.36	1	0.20
Mining & construction	4	1.72	3	1.08	7	1.37
Food	3	1.29	2	0.72	5	0.98
Textiles & printing / publishing	6	2.58	9	3.23	15	2.93
Chemicals	0	0.00	4	1.43	4	0.78
Pharmaceuticals	9	3.86	9	3.23	18	3.52
Extractive	3	1.29	9	3.23	12	2.34
Durable manufacturers	44	18.89	35	12.54	79	15.43
Transportation	7	3.00	25	8.96	32	6.25
Utilities	8	3.43	10	3.58	18	3.52
Retail	55	23.61	54	19.35	109	21.29
Financial services	31	13.30	59	21.15	90	17.58
Services	29	12.45	28	10.04	57	11.13
Computers	34	14.59	31	11.11	65	12.70
Total	**233**	**100**	**279**	**100**	**512**	**100**

[a] Number of restatements identified in our searches. Summary statistics are provided only for observations with available data.

[b] Industry membership is determined by SIC code as follows: agriculture (0100-0999), mining and construction (1000-1999, excluding 1300-1399), food (2000-2111), textiles and printing/publishing (2200-2799), chemicals (2800-2824, 2840-2899), pharmaceuticals (2830-2836), extractive (1300-1399, 2900-2999), durable manufacturers (3000-3999, excluding 3570-3579 and 3670-3679), transportation (4000-4899), utilities (4900-4999), retail (5000-5999), financial services (6000-6999), services (7000-8999, excluding 7370-7379), and computers (3570-3579, 3670-3679, 7370-7379).

4.2 Descriptive statistics and univariate tests

Table 2 presents the descriptive statistics for all the variables used in our analyses, partitioned by two subsamples: CEO terminated following restatements (n = 150), and CEO not terminated following restatements (n = 362). As such, comparing two subsamples provides evidence as to whether restatement characteristics affect the probability of CEO turnover.

Table 2
Descriptive statistics of variables for the sample of CEO turnover

	Turnover Companies (N=150)			No Turnover Companies (N=362)			Differences [b]	
Variable [a]	Mean	Median	Std. Dev.	Mean	Median	Std. Dev.	Parametric *t* tests	Mann-Whitney *z* tests
CORE	0.780	1.000	0.416	0.670	1.000	0.470	2.590***	2.448***
AMOUNT	0.026	0.006	0.067	0.018	0.004	0.057	1.356	2.048**
ACCOUNTS	1.210	1.000	0.453	1.160	1.000	0.406	1.023	1.062
RYEARS	2.085	2.000	1.483	1.848	1.250	1.592	1.562	2.023**
SEVERITY	1.970	2.000	0.926	1.780	2.000	0.932	2.120**	1.906*
GC	0.450	0.000	0.499	0.460	0.000	0.499	-0.189	-0.189
GROWTH	0.082	0.062	0.268		0.075	0.506	-0.905	-1.464
ROA	-0.034	0.012	0.213	-0.006	0.016	0.141	-1.502	-0.609
LNASSET	6.912	7.133	2.287	6.922	6.601	2.176	-0.045	0.409
BOARD	8.790	9.000	3.203	8.660	8.000	2.738	0.486	0.373
INDBOARD	0.797	0.826	0.159	0.796	0.809	0.167	0.006	-0.028

[a] The definitions of the variables reported in this table are: TURNOVER = 1 if the CEO leaves the company within 24 months around the restatement announcement (from 6 months before to 18 months after), and 0 otherwise; CORE = 1 if a restatement involves revenue, cost of sales or on-going operating expenses, and 0 otherwise; AMOUNT = The cumulative amount of net income overstatement scaled by total assets in the year prior to the restatement announcement; ACCOUNTS = Number of account groups affected in a restatement. The seven account groups are revenue, cost of sales, operating expenses, one-time/special items, merger-related, non-operating expenses, and other items; RYEARS = Sum of years restated, where a fiscal year = 1 and each additional quarter = 0.25; SEVERITY = Combines four restatement characteristics (CORE, AMOUNT, ACCOUNTS, RYEARS) into a single comprehensive variable; GC = 1 if the company receives a going concern opinion at announcement year, and 0 otherwise; GROWTH = One-year percentage change in sales reported at announcement year; ROA = Net income divided by book value of total assets reported at announcement year; LNASSET = Natural log of book value of total assets reported at announcement year; BOARD = Number of directors on the board at announcement year; INDBOARD = Number of independent directors on the board divided by the total board size at announcement year.

[b] Asterisks *, **, *** indicate two-tailed significance at the 0.10, 0.05, and 0.01 levels, respectively.

The mean (median) of CORE reported in the CEO turnover subsample is significantly larger than those reported in the no CEO turnover subsample, at least at the 0.01 level for both tests. The medians of AMOUNT and RYEARS reported in the CEO turnover subsample are significantly larger than those reported in the no CEO turnover subsample at the 0.05 level. Univariate comparisons indicate that CEO turnover companies have larger overstatement value (AMOUNT), longer duration (RYEARS), and are more likely to affect core earnings accounts (CORE) than no CEO turnover companies. In addition, the mean (median) of SEVERITY reported in the CEO turnover subsample is also significantly larger than those reported in the no CEO turnover

subsample, at least at the 0.10 level for both tests. Overall, these findings suggest that the CEO turnover is more likely to be associated with higher restatement severity. When CEO and CFO turnover are combined, results are very similar to Table 2 (results are not tabled).

Table 3 reports the Pearson correlations for the test and control variables to be used in the probit models. As depicted in this Table, most explanatory variables are not significantly correlated with each other. Correlations between restatement characteristics and TURNOVER are in the predicted direction. Table 3 shows that TURNOVER is positively correlated with CORE (0.108), and SEVERITY (0.093), statistically significant at the 0.05 level, implying that the probability of CEO turnover is associated with higher restatement severity, and core earnings affected in a restatement. Also, TURNOVER is negatively correlated with ROA (-0.078) and statistically significant at the 0.10 level, suggesting that companies having better performance are associated with lower probability of CEO turnover.

Table 3
Pearson correlation coefficients for the sample of management turnover

Variable[a]	*CORE*	*AMOUNT*	*ACCOUNTS*	*RYEARS*	*SEVERITY*	*GC*	*GROWTH*	*ROA*	*LNASSET*	*BOARD*	*INDBOARD*
TURNOVER	0.108 (0.014)	0.064 (0.149)	0.047 (0.285)	0.069 (0.119)	0.093 (0.034)	-0.008 (0.850)	-0.040 (0.366)	-0.078 (0.078)	-0.002 (0.964)	0.021 (0.627)	-0.000 (0.995)
CORE		0.028 (0.534)	0.231 (0.000)	0.056 (0.206)	0.588 (0.000)	0.025 (0.577)	-0.030 (0.502)	-0.086 (0.052)	-0.132 (0.003)	-0.120 (0.006)	0.034 (0.442)
AMOUNT			0.062 (0.158)	-0.039 (0.375)	-0.138 (0.002)	-0.036 (0.420)	0.047 (0.286)	-0.139 (0.002)	-0.196 (0.000)	-0.108 (0.015)	0.109 (0.014)
ACCOUNTS				0.116 (0.009)	0.517 (0.000)	-0.007 (0.869)	-0.018 (0.690)	-0.045 (0.310)	-0.076 (0.084)	-0.108 (0.014)	0.081 (0.067)
RYEARS					0.410 (0.000)	0.035 (0.430)	0.007 (0.868)	0.155 (0.000)	0.047 (0.293)	-0.024 (0.583)	-0.040 (0.361)
SEVERITY						0.032 (0.470)	-0.013 (0.763)	0.079 (0.075)	0.099 (0.025)	-0.018 (0.680)	-0.002 (0.956)
GC							-0.098 (0.026)	-0.099 (0.026)	0.224 (0.000)	0.097 (0.028)	-0.006 (0.884)
GROWTH								0.019 (0.675)	-0.029 (0.514)	-0.047 (0.287)	-0.039 (0.374)
ROA									0.273 (0.000)	0.140 (0.002)	-0.051 (0.249)
LNASSET										0.532 (0.000)	-0.172 (0.000)
BOARD											-0.151 (0.001)

[a] The definitions of the variables reported in this table are: TURNOVER = 1 if the CEO leaves the company within 24 months around the restatement announcement (from 6 months before to 18 months after), and 0 otherwise; CORE = 1 if a restatement involves revenue, cost of sales or on-going operating expenses, and 0 otherwise; AMOUNT = The cumulative amount of net income overstatement scaled by total assets in the year prior to the restatement announcement; ACCOUNTS = Number of account groups affected in a restatement. The seven account groups are revenue, cost of sales, operating expenses, one-time/special items, merger-related, non-operating expenses, and other items; RYEARS = Sum of years restated, where a fiscal year = 1 and each additional quarter = 0.25; SEVERITY = Combines four restatement characteristics (CORE, AMOUNT, ACCOUNTS, RYEARS) into a single comprehensive variable; GC = 1 if the company receives a going concern opinion at announcement year, and 0 otherwise; GROWTH = One-year percentage change in sales reported at announcement year; ROA = Net income divided by book value of total assets reported at announcement year; LNASSET = Natural log of book value of total assets reported at announcement year; BOARD = Number of directors on the board at announcement year; INDBOARD = Number of independent directors on the board divided by the total board size at announcement year.

4.3 Multivariate analysis

4.3.1 Management turnover and restatement characteristics

To examine the association between the management turnover (CEO, CFO, and combined CEO/CFO turnover) and restatement characteristics, we estimate model (1) using four restatement characteristics (CORE, AMOUNT, ACCOUNTS, RYEARS) and model (2) using a composite index that combines four restatement characteristics into a single comprehensive variable (SEVERITY) that captures the company's overall restatement severity. We regress restatement severity variables and control variables on management turnover using a probit model with the standard errors corrected for heteroskedasticity (White 1980). Table 4 presents estimates from a probit regression of equation (1-1) and (1-2).

Table 4
Management turnover and restatement severity[a]

$$TURNOVER_{i,t} = \alpha_0 + \alpha_1 CORE_{i,t} + \alpha_2 AMOUNT_{i,t} + \alpha_3 ACCOUNTS_{i,t} + \alpha_4 RYEARS_{i,t} + \alpha_5 GC_{i,t} + \alpha_6 GROWTH_{i,t} + \alpha_7 ROA_{i,t} + \alpha_8 LNASSET_{i,t} + \alpha_9 BOARD_{i,t} + \alpha_{10} INDBOARD_{i,t} + \alpha_{11}[Fixed\ Effects] + \varepsilon_{i,t} \quad (1-1)$$

$$TURNOVER_{i,t} = \alpha_0 + \alpha_1 SEVERITY_{i,t} + \alpha_2 GC_{i,t} + \alpha_3 GROWTH_{i,t} + \alpha_4 ROA_{i,t} + \alpha_5 LNASSET_{i,t} + \alpha_6 BOARD_{i,t} + \alpha_7 INDBOARD_{i,t} + \alpha_8[Fixed\ Effects] + \varepsilon_{i,t} \quad (1-2)$$

Variable [b]	Pred. Sign	CEO Turnover		CEO Turnover		CEO or CFO Turnover	
		Individual [c]	Summary	Individual	Summary	Individual	Summary
Intercept		-1.76*** 3.48	-180.*** (3.65)	-1.47*** (2.80)	-1.48*** (2.94)	-1.00*** (2.12)	-1.02*** (2.94)
CORE	+	0.27* (1.81)		0.23 (1.54)		0.31** (2.30)	
AMOUNT	+	1.90* (1.92)		2.41*** (2.74)		2.46** (2.30)	
ACCOUNTS	+	0.02 (0.16)		-0.16 (1.07)		-0.08 (0.56)	
RYEARS	+	0.05 (1.31)		-0.00 (0.04)		0.02 (0.41)	
SEVERITY	+		0.21*** (3.34)		0.07 (1.23)		0.14** (2.41)
GC	+	0.12 (0.88)	0.09 (0.67)	.022 (1.56	0.19 (1.37)	.022 (1.56	0.10 (0.74)
GROWTH	-	-0.13 (0.78)	-0.12 (0.76)	-0.44* (1.92)	-0.38* (1.68)	-0.44* (1.92)	-0.38* (1.68)
ROA	-	-0.79** (1.99)	-0.79** (2.03)	0.37 (0.91)	0.26 (0.68)	0.37 (0.91)	-0.170 (1.27)
LNASSET	-	0.01 (0.35)	0.02 (0.48)	-0.04 (1.14)	-0.05 (1.33)	-0.04 (1.14)	-0.01 (0.32)
BOARD	+	0.03 (1.24)	0.04 (1.33)	0.01 (0.21)	0.01 (0.26)	0.01 (0.21)	0.04 (1.50)
INDBOARD	+	0.06 (0.16)	0.06 (0.14)	0.03 (0.07)	0.04 (0.11)	0.03 (0.07)	0.28 (0.77)
Fixed Effect		Included	Included	Included	Included	Included	Included
Pseudo-R^2 (%)		9.61	9.94	12.65	11.58	12.65	7.58
n		512	512	512	512	512	512

[a] Outlers are winsorized using the 1% and 99% percentiles.

[b] Please refer to Table 2 for variable definitions.

[c] Asterisks *, **, *** indicate two-tailed significance at the 0.10,0.05, and 0.01 levels respectively.

Table 4 reports results for our management turnover (CEO, CFO, and combined CEO/CFO turnover) regressions in the post-SOX period. Consistent with our prediction, in column (1), the coefficient on *CORE* is 0.27 (significant at $p < 0.10$), and *AMOUNT* is 1.90 (significant at $p < 0.10$). These results suggest that a CEO is more likely to be terminated if restatements involve core earnings accounts as well as larger overstatement values. In addition, we use a comprehensive variable of the restatement severity in column (2). The coefficient on *SEVERITY* is 0.21 (significant at $p < 0.01$). These results are consistent with the idea that the probability of CEO turnover significantly increases for companies with higher restatement severity. The coefficient on ROA is significant in expected direction ($p < 0.05$), suggesting that higher probability of CEO turnover is more likely for unprofitable companies.

Results for CFO turnover are very similar to our CEO turnover results. The coefficient on CORE is 0.23 (marginally significant at $p < 0.10$) and *AMOUNT* is 2.41 (significant at $p < 0.01$), suggesting that, a CFO is more likely to be terminated if restatements involve core earnings accounts as well as larger overstatement values. In column (4), the coefficient on *SEVERITY* is positive and insignificant. Overall, these results are consistent with the idea that the probability of CFO turnover significantly increases for companies with higher restatement severity. The coefficient on *GROWTH* is also significantly negative in the CFO regression ($p < 0.10$), suggesting that higher probability of CFO turnover is more likely for unprofitable companies.

When CEO turnover and CFO turnover are combined, results are very similar to respective CEO or CFO turnover results. Overall, these results suggest that in all of our models the likelihood of CEO or CFO turnover significantly increases for companies with higher restatement severity. To further explore the association between management turnover and restatement severity in different sample groups, we partition the sample into two distinct periods: restatements announced in the post-SOX period restating financial statements issued in the pre-SOX period (post-pre), and restatements announced in the post-SOX period restating financial statements issued in the post-SOX period (post-post). Untabulated results for different sample groups are very similar to Table 4, suggesting that the probability of management turnover significantly increases for companies with high restatement severity, no matter whether these restating financial statements are issued in the post-pre group or in the post-post group.

4.3.2 Management turnover and company-prompted restatement

Compared with auditor- and SEC-prompted restatements, company-prompted restatements are more susceptible to SOX provisions (e.g. §304) regarding top management's misconduct and financial reporting responsibility. This raises a question of whether executive turnover following a restatement prompted by the company is less likely, even if the company may actually suffer higher restatement severity. Table 5 displays the distribution of restating companies by the prompter and shows that the CEO and CFO have the highest percentages of retention turnover in the company-prompted subsample (37.11% and 35.55%, respectively). Although there is no requirement for companies to reveal this information, about 68.16 percent of our sample observations provide reasonably clear prompter data in their press releases or subsequent amended filings.

Table 5
Management turnover by prompter [a]

Prompter	CEO		CFO		CEO or CFO	
	Turnover	No Turnover	Turnover	No Turnover	Turnover	No Turnover
Company-Prompted						
Total	91	190	99	182	140	141
Percentage [b]	17.78	37.11	19.35	35.55	27.34	27.54
SEC-Prompted						
Total	13	26	8	31	16	23
Percentage	2.54	5.08	1.56	6.05	3.13	4.49
Auditor-Prompted						
Total	4	25	8	21	10	19
Percentage	0.78	4.88	1.56	4.10	1.95	3.71
Others						
Total	42	121	42	121	67	96
Percentage	8.20	23.63	8.20	23.63	13.09	18.75

[a] Following Palmrose et al. (2004), a restatement can be prompted by a company's disclosure of correcting previously issued financial statements, the SEC's request after reviewing the company's annual or quarterly filings, the auditor's advice due to material misstatements in the financial statements and others.

[b] The percentage computes for the subsample are scaled by final samples.

Thus, in this section, we examine the relation between restatement characteristics and the probability of management turnover for company-prompted restatements. The coefficients associated with the main effects of each of the four restatement characteristics ($\alpha 1$, $\alpha 3$, $\alpha 5$, $\alpha 7$) measure the relation between the characteristics and the probability of management turnover for non company-prompted restatements. Since we are primarily interested in the relation between restatement characteristics and the probability of management turnover for company-prompted restatements, for each restatement characteristic, as suggested by Carcello and Neal (2003), we sum the coefficient on the main effect of that characteristic plus the coefficient on the term that interacts the characteristic with the ATTCOMP indicator variable.[27] Table 6 reports the results.

By focusing on company-prompted restatements, the likelihood that the company terminated its management (CEO, CFO, and CEO or CFO) increases if core earnings accounts are affected in a restatement ($\alpha 1 + \alpha 2 > 0$), and when the amount of net income overstatement grows ($\alpha 3 + \alpha 4 > 0$; except the CEO turnover subsample). However, we find no significant relation between the likelihood of CEO turnover and the number of account groups and quarters restated ($\alpha 5 + \alpha 6$ and $\alpha 7 + \alpha 8$ are not significantly different from 0). Results for CFO turnover and CEO or CFO turnover are very similar to our CEO turnover results. The results show when restatements are prompted by companies, management turnover appears to be more associated with dollar amounts of the overstated income and/or restatements affecting core earnings.

In addition, we use a comprehensive variable of the restatement severity to rerun Table 6 (results are not tabled). The result reports that there is a significant positive relation between restatements severity and management turnover (CEO, CFO, and CEO or CFO) for company-prompted restatements.

Table 6
Management turnover analysis: Company-prompted restatement [a]

$$TURNOVER_{i,t} = \alpha_0 + \alpha_1 CORE_{i,t} + \alpha_2 CORE_{i,t} \times ATTCOMP_{i,t} + \alpha_3 AMOUNT_{i,t} + \alpha_4 AMOUNT_{i,t} \times ATTCOMP_{i,t} + \alpha_5 ACCOUNTS_{i,t} + \alpha_6 ACCOUNTS_{i,t} \times ATTCOMP_{i,t} + \alpha_7 RYEARS_{i,t} + \alpha_8 RYEARS_{i,t} \times ATTCOMP_{i,t} + \alpha_9 GC_{i,t} + \alpha_{10} GROWTH_{i,t} + \alpha_{11} ROA_{i,t} + \alpha_{12} LNASSET_{i,t} + \alpha_{13} BOARD_{i,t} + \alpha_{14} INDBOARD_{i,t} + \alpha_{15} [Fixed\ Effects] + \varepsilon_{i,t} \quad (2)$$

Variable [b]	Pred. Sign	CEO Turnover [c]	CEO Turnover	CEO or CFO Turnover
Intercept		-1.55*** (2.88)	-1.42*** (2.66)	-1.41*** (2.93)
CORE	+	0.02 (0.07)	0.05 (0.21)	0.08 (0.42)
CORE X ATTCOMP	+	0.46 (1.64)	0.28 (0.99)	0.39 (1.49)
Joint Test ($\alpha_1 + \alpha_2$) [d]	+	0.48** (5.71)	0.33* (3.02)	0.47*** (7.06)
AMOUNT	+	3.74** (2.04)	1.22 (0.65)	2.04 (1.11)
AMOUNT X ATTCOMP	*	-2.57 (1.21)	1.76 (0.84)	0.69 (0.30)
Joint Test ($\alpha_3 + \alpha_4$)	+	1.17 (1.05)	2.98*** (9.40)	2.73* (3.61)
ACCOUNTS	+	0.16 (0.80)	0.17 (0.79)	0.01 (0.07)
ACCOUNTS X ATTCOMP	+	-0.17 (0.81)	-0.01 (0.05)	-0.15 (0.75)
Joint Test ($\alpha_5 + \alpha_6$)	+	-0.01 (0.00)	-0.18 (1.12)	-0.14 (0.73)
RYEARS	+	0.03 (0.47)	0.16 (0.27)	0.00 (0.05)
RYEARSX ATTCOMP	*	0.04 (0.55)	-0.03 (0.34)	0.02 (0.32)
Joint Test ($\alpha_7 + \alpha_8$)	+	0.07 (1.77)	-0.01 (0.04)	0.03 (0.27)
GC	+	0.14 (0.96)	0.22 (1.59)	0.12 (0.94)
GROWTH	-	-0.14 (1.11)	-0.43* (0.84)	-0.20 (1.34)
ROA	-	-0.78* (1.82)	-0.04 (1.10)	0.39 (095)
LNASSET	-	0.02 (0.60)	0.01 (0.19)	-0.01 (0.16)
BOARD	+	0.03 (1.23)	0.01 (0.02)	0.03 (1.43)
INBOARD	*	0.05 (0.13)	0.01 (0.102)	0.26 (0.71)
Fixed Effect		Included	Included	Included
Pseudo-R^2 (%)		10.51	13.18	9.09
n		512	512	512

[a] Outliers are winsorized using the 1% and 99% percentiles.

[b] The definitions of the variables reported in this table are: TURNOVER = 1 if the CEO leaves the company within 24 months around the restatement announcement (from 6 months before to 18 months after), and 0 otherwise; CORE = 1 if a restatement involves revenue, cost of sales or on-going operating expenses, and 0 otherwise; AMOUNT = The cumulative amount of net income overstatement scaled by total assets in the year prior to the restatement announcement; ACCOUNTS = Number of account groups affected in a restatement. The seven account groups are revenue, cost of sales, operating expenses, one-time/special items, merger-related, non-operating expenses, and other items; RYEARS = Sum of years restated, where a fiscal year = 1 and each additional quarter = 0.25; ATTCOMP = 1 for companies having restatements prompted by themselves, and 0 otherwise; GC = 1 if the company receives a going concern opinion at announcement year, and 0 otherwise; GROWTH = One-year percentage change in sales reported at announcement year; ROA = Net income divided by book value of total assets reported at announcement year; LNASSET = Natural log of book value of total assets reported at announcement year; BOARD = Number of directors on the board at announcement year; INDBOARD = Number of independent directors on the board divided by the total board size at announcement year.

[c] Asterisks *, **, *** indicate two-tailed significance at the 0.10, 0.05, and 0.01 levels, respectively.

[d] For all joint tests in this table, the numerals in parentheses represent respective χ^2 values.

4.3.3 Management turnover and management behavior [28]

Table 7 documents the results of management turnover regressed on earnings management. Then we further explore the association between management turnover and earnings management in different sample periods. As discussed above, the sample is partitioned into two distinct periods: restatements announced in the post-SOX period restating financial statements issued in the pre-SOX period (*post-pre*), and restatements announced in the post-SOX period restating financial statements issued in the post-SOX period (*post-post*).[29]

Table 7
Management turnover analysis: Earnings management [a]

$$TURNOVER_{i,t} = \alpha_0 + \alpha_1 PMDA_{i,t} + \alpha_2 PostPost_{i,t} + \alpha_3 PMDA_{i,t} \times PostPost_{i,t} + \alpha_4 CORE_{i,t} + \alpha_5 AMOUNT_{i,t} + \alpha_6 ACCOUNTS_{i,t} + \alpha_7 RYEARS_{i,t} + \alpha_8 GC_{i,t} + \alpha_9 GROWTH_{i,t} + \alpha_{10} ROA_{i,t} + \alpha_{11} LNASSET_{i,t} + \alpha_{12} BOARD_{i,t} + \alpha_{13} INDBOARD_{i,t} + \alpha_{14} [Fixed\ Effects] + \varepsilon_{i,t} \quad (3-1)$$

$$TURNOVER_{i,t} = \alpha_0 + \alpha_1 PMDA_{i,t} + \alpha_2 PostPost_{i,t} + \alpha_3 PMDA_{i,t} \times PostPost_{i,t} + \alpha_4 SEVERITY_{i,t} + \alpha_5 GC_{i,t} + \alpha_6 GROWTH_{i,t} + \alpha_7 ROA_{i,t} + \alpha_8 LNASSET_{i,t} + \alpha_9 BOARD_{i,t} + \alpha_{10} INDBOARD_{i,t} + \alpha_{11} [Fixed\ Effects] + \varepsilon_{i,t} \quad (3-2)$$

Variable [b]	Pred. Sign	CEO Turnover		CEO Turnover		CEO Turnover	
		Individual c	Summary	Individual c	Summary	Individual c	Summary
Intercept		-1.67** (2.39)	-1.48** (2.29)	-1.99** (2.87)	-1.97** (2.92)	-0.69 (1.15)	-1.07* (1.93)
PMDA	?	-1.53** (2.50)	-1.34** (2.14)	0.51 (0.91)	0.77 (1.10)	-1.26*** (3.09)	-1.07*** (2.72)
PostPost	?	-0.25 (0.78)	-0.25 (0.78)	0.73 (1.52)	0.82 (1.63)	-0.09 (0.32)	-0.05 (0.20)
PMDA X PostPost	?	1.64*** (2.61)	1.49** (2.33)	-0.55 (0.96)	-0.77 (1.09)	1.26*** (2.99)	1.11*** (2.73)
CORE	+	0.38** (2.06)		0.33 (1.82)		0.37** (2.22)	
AMOUNT	+	1.79 (1.37)		2.80*** (2.98)		3.24 (2.16)	
ACCOUNTS	+	0.04 (0.23)		0.05 (0.31)		0.00 (0.02)	
RYEARS	+	0.05 (1.11)		0.01 (0.25)		-0.01 (0.14)	
SEVERITY	+		0.24*** (3.21)		0.13* (1.73)		0.15** (2.22)
GC	+	0.07 (0.46)	0.02 (0.14)	0.22 (1.37)	0.16 (0.97)	0.17 (1.10)	0.12 (0.79)
GROWTH	-	-0.11 (0.89)	-0.12 (0.93)	-0.63** (2.12)	-0.55* (1.82)	-0.19 (1.10)	-0.18 (1.22)
ROA	-	-0.60 (1.29)	-0.65 (1.41)	0.80* (1.67)	0.58 (1.33)	0.03 (0.07)	-0.17 (.40)
BOARD		0.03 (0.60)	0.04 (0.77)	-0.04 (0.91)	-0.04 (0.94)	0.00 (0.02)	0.02 (0.58)
INBOARD		0.04 (1.10)	0.04 (1.22)	0.01 (0.41)	0.01 (0.35)	0.01 (0.41)	0.01 (0.35)
LNASSET	-	0.23 (0.51)	0.23 (0.53)	-0.05 (0.11)	-0.01 (0.02)	0.08 (0.19)	0.12 (0.29)
Fixed Effect		Included	Included	Included	Included	Included	Included
Pseudo-R2 (%)		13.55	13.67	14.54	13.24	10.38	9.13
n		391	391	391	391	391	391

[a] Outliers are winsorized using the 1% and 99% percentiles.

[b] The definitions of the variables reported in this table are: *TURNOVER* = 1 if the CEO leaves the company within 24 months around the restatement announcement (from 6 months before to 18 months after), and 0 otherwise; *CORE* = 1 if a restatement involves revenue, cost of sales or on-going operating expenses, and 0 otherwise; *AMOUNT* = The cumulative amount of net income overstatement scaled by total assets in the year prior to the restatement announcement; *ACCOUNTS* = Number of account groups affected in a restatement. The seven account groups are revenue, cost of sales, operating expenses, one-time/special items, merger-related, non-operating expenses, and other items; *RYEARS* = Sum of years restated, where a fiscal year = 1 and each additional quarter = 0.25; *SEVERITY* = Combines four restatement characteristics (*CORE, AMOUNT, ACCOUNTS, RYEARS*) into a single comprehensive variable; PMDA = The performance matched discretionary accrual; PostPost = Restatements announced in the post-SOX period restating financial statements issued in the post-SOX period; GC = 1 if the company receives a going concern opinion at announcement year, and 0 otherwise; GROWTH = One-year percentage change in sales reported at announcement year; ROA = Net income divided by book value of total assets reported at announcement year; LNASSET = Natural log of book value of total assets reported at announcement year; BOARD = Number of directors on the board at announcement year; INDBOARD = Number of independent directors on the board divided by the total board size at announcement year.

[c] Asterisks *, **, *** indicate two-tailed significance at the 0.10, 0.05, and 0.01 levels, respectively.

The CEO turnover column of Table 7 indicates that the coefficient of *PMDA*[30] is significantly negative ($p < 0.05$), whereas the coefficient of *PMDA x PostPost* is significantly positive ($p < 0.01$). These findings suggest that when executives window-dress earnings to portray a more favorable earnings picture in the post-post group, they are more likely to be terminated following financial restatements. In the past, a negative association between corporate performance and CEO turnover was found (e.g., Weisbach 1988; Denis et al. 1997; Furtado and Rozeff 1987; Kaplan and Minton 2006; Kim 2008). For the same reason, in income-decreasing restatements, our empirical results indicate that in the post-pre group, if companies have more income-increasing accounting accruals, CEOs are less likely to be fired for income-decreasing restatements.[31]

In addition, the reversal from negative CEO turnover in the *PostPre* period to positive CEO turnover in the post-post group implies that companies indeed take into consideration the years being restated in reacting to CEOs' earnings management behavior after SOX. Lobo and Zhou (2006) also document that the CEO/CFO certification requirement in Section 302 of SOX has made managers more conservative. These empirical results imply that SOX is effective in mitigating CEOs' earnings management behavior. Board actions react more unfavorably to earnings management behavior in the post-post group because aggressive accounting is interpreted as signals of non-compliance with SOX or poor quality of financial reporting. When CEO and CFO turnover are combined, as reported in column (5) and (6), results are very similar. Finally, our results concerning the relations among (1) CEO turnover, (2) earnings management and (3) the years being restated, are unique to the income-decreasing restatement context and do not generalize to the more common situation.

5. Sensitivity analyses

This section examines the sensitivity of the reported empirical results by exploring whether the evidence persists for a series of variables, sample re-specifications and alternate estimation techniques. [32]

5.1 Alternative definitions of turnover window

In our primary analysis, we use a 24 month turnover window around the restatement announcement (from 6 months before to 18 months after). However, prior studies lack consensus on the appropriate measurement window for management turnover around restatements. Following Desai et al. (2006), Arthaud-Day et al. (2006), and Collins et al. (2009), we also consider a company experiencing management turnover if the top manager leaves the company within 24 months after the restatement announcement. The empirical results are similar to those reported in previous sections.

5.2 Alternative definitions of earnings management

Cohen et al. (2008) and Roychowdhury (2006) use real activity measures[33] to investigate companies' earnings management behavior before and after SOX and find that, while managers tend to use traditional accruals to manage earnings before SOX, they switch to the real activities earnings management after SOX. To ensure that our results are not sensitive to the measure of earnings management, we replicate the previous tests using Roychowdhury's (2006) definition of abnormal production costs. In general, the empirical results are similar to those reported in previous sections.

5.3 Alternative definitions of the post-SOX period

In our primary tests, we define the post-SOX period as announced restatements after

August 1, 2002. To ensure that our results are not sensitive to the definitions of the post-SOX period, we re-define the post-SOX period using January 1, 2003 as the cutoff point. Our empirical results are unaffected by this alternative definition.

5.4 Exclude Arthur Andersen clients and restatements announced in 2002

We exclude Arthur Andersen's clients who made restatements in 2002 to eliminate any potential "Andersen effect" that may bias our empirical analyses. Since SOX was signed into law on July 30, 2002, we also exclude restatements announced from August 1 to December 31 in 2002 to eliminate any "Act effect." The empirical results are similar to those reported in previous sections.

5.5 Exclude financial services industry

We exclude companies in the financial services industry because their financial ratios differ from other companies, and their corporate governance is subject to different regulatory oversight. The empirical results are similar to those reported in previous sections.

5.6 Alternative measure of test variable CORE

Following Hribar and Jenkins (2004), we also re-define CORE as equal to one if the restatement is categorized as affecting revenue recognition, cost of sales, operating expenses, or loan-loss provisions, and zero otherwise. The results and conclusions remain unchanged.

5.7 Include control variables

Corporate boards are responsible for monitoring managerial performance in general, and in particular financial reporting, a task that is delegated to the audit committees. Beasley and Salterio (2001) and Klein (2002a) shows that audit committee independence is positively associated with board size and board independence. Klein (2002b) further indicates that audit committee independence is negatively associated with the level of earnings management. Thus, we also consider two additional control variables: audit committee size and audit committee independence. The results and conclusions remain unchanged.

5.8 Exclude technical restatement

Following Palmrose and Scholz (2004), Agrawal and Chadha (2005), and Hennes et al. (2008), we exclude the companies with technical restatements because no financial reporting failures are involved (e.g., restatements for mergers, discontinued operations, accounting rule changes, changes in accounting method). The empirical results are similar to those reported in previous sections.

6. Conclusions:

Aiming to make widespread governance and financial reporting improvements, a major emphasis of SOX is to enhance the role of the CEOs and CFOs in corporate financial reporting. Thus, the increased criminal and civil sanctions codified by SOX suggest that more severe penalties will be imposed on CEOs and CFOs in the post-SOX environment. However, professional institutions and the press have reported a dramatic increase in restatements in the post-SOX period (e.g., Baldwin and Yoo 2005; GAO 2006; Grothe et al. 2006; Audit Analytics 2007; PCAOB 2007; Scholz 2008). This raises the concern of whether executives should be responsible for restatements. Hence, we investigate the restatement content and management behavior to determine the consequences of restating financial statements for executives.

This study provides evidence that the likelihood of CEO/CFO turnover increases for companies with higher restatement severity. Specifically, restatement characteristics, including core-earnings and magnitude of amounts, significantly affect the likelihood of management turnover. The results also

indicate that for restatements prompted by companies, management turnover is associated with the magnitude of income overstatement and restatements affecting core earnings. After controlling for restatement severity, our empirical findings provide evidence that when CEOs who face a high likelihood of termination pressure have incentives to select income-increasing accounting accruals to portray a more favorable earnings picture in the post-Sox period, they are more likely to be terminated following financial restatements.

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Endnotes

[1] The SEC does require companies to disclose the departure of CEO/CFO, but reasons are provided only if disagreements or litigation claims exist.

[2] Usually, a restatement can be prompted by (or attributed to) a company's voluntary disclosure of correcting previously issued financial statements, the SEC's requests after reviewing companies' annual or quarterly filings, and the auditors' advice due to material misstatements in the financial statements. In some cases, however, the restatements may not be attributed to any party. See Palmrose et al. (2004) for detailed discussions about the promotion of restatements.

[3] Recently, Wang and Yu (2008) base their argument on a game perspective and posit that, if SOX is effective, companies will be less willing to restate financial statements issued *after* SOX because market participants may consider such restatements signals of non-compliance with SOX. In contrast, companies may be more willing to restate financial statements issued *before* SOX because market participants may regard such restatements as signals of enhanced internal controls and improved corporate governance. Thus, this study follows Wang and Yu (2008) to partition the post-SOX sample into two distinct groups: restatements announced in the post-SOX period restating financial statements issued in the pre-SOX period (denoted by *PostPre*), and restatements announced in the post-SOX period restating financial statements issued in the post-SOX period (denoted by *PostPost*).

[4] For example, Section 304 requires management to return bonuses or profits from stock sales received within 12 months of a restatement resulting from material non-compliance with financial reporting requirements as a result of misconduct. Section 305 also sets standards for imposing officer and director bars and penalties. In addition, Section 804 increases the statute of limitations for private securities fraud lawsuits. The limitations period for proceedings

commenced on or after the date of enactment is the earlier of two years after the discovery of the facts constituting the violation or five years after such violation. Section 805 also contains several emergency directives to the United States Sentencing Commission generally pertaining to fraud and obstruction of justice offenses.

[5] Section 302 requires the CEOs and CFOs to certify that quarterly and annual financial reports fairly present the company's financial condition and operating performance.

[6] For example, Beneish (1999) finds no significantly higher management turnover following violations of generally accepted accounting procedures or revelations of corporate frauds. Similarly, Land (2006) argues that not all restatement companies experience higher likelihood of CEO turnover. However, recent work shows more significant associations between financial reporting failure and management turnover. For instance, Desai et al. (2006), Collins et al. (2009), Hennes et al. (2008), and Burks (2010) find that top management turnover is higher for companies that restate earnings.

[7] For example, Palmrose et al. (2004) predict positive effects of company-prompted restatements on stock returns. Contrary to their prediction, however, they find that company-prompted restatements give rise to the second largest negative stock returns (-13 percent). Desai et al. (2006) also use the prompter to proxy for restatement severity but choose a different partition. They argue that company-prompted and auditor-prompted restatements are likely to be more severe than SEC-initiated restatements and find evidence that company- and auditor-prompted restatements are associated with higher levels of management turnover. In sum, in the management turnover context, results using the restatement prompter to gauge the severity of restatements are mixed.

[8] Prior research on management turnover can be broadly divided into three categories: (1) factors contributing to turnover, (2) immediate market reactions to the management turnover event, and (3) evaluation of subsequent company performance. See Furtado and Karen (1990) for a detailed discussion of the literature concerning CEO turnover.

[9] The *post-post* group includes restatements made in the post-SOX period for post-SOX misstatements.

[10] Identifying exact announcement dates related to restatements is challenging. Similar to Palmrose et al. (2004) and Kinney et al. (2004), our restatement announcement date is determined by the first restatement announcement date identified in the *Lexis-Nexis News Library*.

[11] Following Srinivasan (2005) and Hennes et al. (2008), we also narrow our investigation to companies' income-decreasing restatements for three reasons. First, income-decreasing restatements suggest that the company has followed aggressive accounting practices in the past (Ettredge et al. 2010). Consequently, we expect our final sample to provide a more powerful test of the hypotheses. Second, prior research finds that the relationship for an income-increasing sample is unclear (Srinivasan 2005). Finally, income-decreasing restatements have received more adverse consequences than income-increasing restatements by market participants (Srinivasan 2005).

[12] SEC rules adopted in August 2004 require companies to file a Form 8-K within four days of discovering a misstatement in previously issued financial statements. These rules also greatly expand the scope of information required to be disclosed about the restatement.

[13] Following Furtado and Rozeff (1987), Beneish (1999), Jayaraman et al. (2004), Arthaud-Day et al. (2006), Desai et al. (2006), Land (2006), Hennes et al. (2008), and Burks (2010), we also don't classify the management turnover event as voluntary or forced in this study. We don't intend to distinguish between forced turnover and voluntary turnover because it's very difficult to judge by their appearance of news or press releases.

[14] On November 7, 2006, the SEC released final rules to the Form 8-K regarding the disclosure of the departure of any named executive officer, as well as the principal executive officer, president, principal financial officer, principal operating officer and principal accounting officer.

[15] Thus, if a person occupies the position of Chairman and CEO prior to the restatement but following the restatement retains the title of only Chairman, this is not considered turnover.

[16] See section 3.3 and 3.4 for detailed discussions about the variables in equations (1-1) and (1-2).

[17] In contrast to the growing amount of researches on CEO and restatements, prior research on CFO has been fairly limited in this area (Aier et al. 2005). In addition, the CFO is the officer with primary responsibility for the financial reporting process. Thus, in our analysis, we include analyses of the post-SOX CFO turnover as part of our tests.

[18] In our primary analysis, we use a 24 months turnover window (6 months before and 18 months after) around the restatement announcement. In addition, we also use an alternative definition of turnover window – that the management leaves the company within 24 months after the restatement announcement – as part of our sensitivity tests.

[19] For example, AIG released its restatement announcement first in May 2005, but its CEO stepped down in March 2005 (WSJ.com).

[20] An independent director is a director who does not have employment, family, or other significant economic or personal connections to the corporation other than serving as a director (SEC 2002).

[21] In this study, we include industry and year dummy variables to control for industry and time fixed effects. Eleven dummy variables are employed for fourteen industries identified in Table 1, because agriculture, food and chemicals are grouped into one industry due to their limited observations. The three year dummy variables control for any time-specific effects during years 2002 to 2005. Similar treatments may be found in Barth et al. (2008) and Fan and Wong (2005).

[22] For instance, if the company merges with or is acquired by another company within 24 months after the restatement announcement and as long as the manager does not leave the company prior to the merger, we do not consider it as a turnover, even though prior research suggests that an acquisition significantly increases the likelihood of managerial turnover (Agrawal and Walkling 1994). In addition, if a person occupies the position of Chairman and CEO prior to the restatement but following the restatement retains the title of only Chairman, this is not considered a turnover.

[23] In this study, we include four incremental variables that interact the restatement characteristics *(CORE, AMOUNT, ACCOUNTS, RYEARS)* with company-prompted restatements *(ATTCOMP)* in equation (2).

[24] Because we are interested in company-prompted restatements, we don't focus on the incremental effect (interaction effects). Instead, we sum the coefficient on the main effect of that characteristic plus the coefficient on the term that interacts the characteristic with the *ATTCOMP* indicator variable. Our joint test method is similar to Carcello and Neal (2003).

[25] First, the Jones model discretionary accrual is estimated cross-sectionally each year using all firm-year observations in the same two-digit SIC code.

$$TA_{i,t} = \beta_1(1/ASSETS_{i,t-1}) + \beta_2 SALES_{i,t} + \beta_3 PPE_{i,t} + \varepsilon_{i,t}$$

where $TA_{i,t}$, total accruals at year t for company i, is the change in non-cash current assets minus the change in current liabilities excluding the current portion of long-term debt, minus depreciation and amortization, scaled by lagged total assets. $SALES_{i,t}$ is change in sales scaled by lagged total assets, $ASSETS_{i,t-1}$, and $PPE_{i,t}$ is net property, plant and equipment scaled by $ASSETS_{i,t-1}$.

Second, using coefficients b_1 to b_3 estimated from the OLS regression by industry and year, we estimate discretionary accruals (DA) for each sample firm as:

$$DA_{i,t} = TA_{i,t}\{b1(1/ASSETS_{i,t-1}) + b_2 SALES_{i,t} + b_3 PPE_{i,t}\}$$

Third, the Kothari et al. (2005) performance-matched discretionary accrual (PMDA) is obtained by matching non-restating companies (denoted by j) on the industry, year and current ROA.

$$PMDA_{i,t} = DA_{i,t} DA_{j,t}$$

[26] Palmrose et al. (2004) also found 68% in their restatement sample.

[27] If we include the base level of ATTCOMP as a main effect in the model, it provides no incremental explanatory power (the company-prompted rate is about 54% of the final sample). Therefore, ATTCOMP is deleted in our final regression (Carcello and Neal 2003).

[28] In Cohen et al.'s (2008) term, the traditional discretionary (abnormal) accruals are called artificial earnings management activities in capturing managers' earnings management. However, in many cases, managers may have employed real activities to manipulate earnings numbers as well. Thus, we also use the abnormal production costs proxy developed by Roychowdhury (2006) to measure real earnings management as part of our sensitivity tests. The empirical results remain the same.

[29] In this section, we eliminate 121 firms with insufficient data to compute the performance matched discretionary accrual.

[30] We also carry out performance matching based on two-digit SIC code, year, and lagged ROA. Similar results are obtained.

[31] DeAngelo (1988) suggests that managers window-dress earnings to portray a favorable earnings picture during the campaign and thereby increases the managers' chances of retaining their jobs.

[32] Because of the similarity of the sensitivity results to the results already reported in the paper, and for the sake of parsimony, we do not tabulate the sensitivity analyses.

[33] Roychowdhury (2006) identifies three major real manipulation activities that are relatively free of the effects of pure accrual manipulations: (1) accelerate the timing of sales and/or generate additional unsustainable sales through increased price discounts or more lenient credit terms, (2) reduce discretionary expenditures to report higher margins, and (3) overproduce or increase production to report lower cost of goods sold.