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Restatement Severity, Credit Risk, and Internal Control

Ya-Fang Wang
Department of Accounting, Providence University, Taiwan (R.O.C.)
E-mail: yfwang2@pu.edu.tw
Tel: 886-4-2632-8001 ext. 13216

Abstract

Understanding internal controls in restatement studies is especially important, because quality financial statements depend on the soundness of the internal controls. Therefore, ineffective *internal control*s may contribute to restatement severity and credit risk. This study first examines the association between restatement severity and internal controls by examining whether the level *of internal control* quality affects core account restatements. My findings provide evidence that the probability of core account restatements increases in degree of internal control deficiency under among three definitions of internal control quality. Second, this study examines whether internal control quality of restating companies matters for credit risk. Empirical results show that credit rating agencies consider restating companies with material internal weaknesses as higher-risk clients, and thus assign a more unfavorable rating. This result seems to be consistent with rating agencies argue that after SOX they regard internal controls over financial reporting as an important factor in the rating process.

Keywords: Internal Control, Restatement, Core Account, Credit Rating
JEL Classification Codes: M41; G32, G24; K20

1. Introduction

The Sarbanes-Oxley Act (hereafter called the SOX) of 2002 requires management and independent auditors to comply with Section 404 in assessing the effectiveness of company internal controls and to report their findings to investors. However, Section 404 does not require companies to maintain adequate internal control quality. Section 404 only requires management and auditors to test internal controls to see whether they are effective, and subsequently to inform investors of their effectiveness. Thus, regulators and the public have devoted considerable attention to whether internal controls are sufficient to ensure the accuracy of company financial statements, particularly following the sharp increase in the number of restatements following SOX (Baldwin and Yoo 2005; GAO 2006; Grothe et al. 2006; Grothe et al. 2007a; Grothe et al. 2007b; Audit Analytics 2007; PCAOB 2007). Understanding internal controls in restatement studies is especially important, because quality financial statements depend on the soundness of the internal controls.

This study examines two important issues. First, the requirements of Section 404 focus on improving the internal controls over financial reporting and in turn the reliability of financial statements. Therefore, the increase in number of post-SOX restatements may indicate that Section 404 is in fact working, because effective internal controls are more likely to detect errors in financial reports and prompt an increase in the number of restatements. Thus, I first focus on whether and how

internal control quality is associated with restatement severity, because internal controls have different quality levels and may cause various influences on restatements. 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. Hence, quality internal controls are less likely to involve core account restatements. Second, restatements may cause investors to reevaluate their risk/uncertainty when a company lacks proper internal controls. Credit ratings are important assessments of company credit worthiness in financing markets, and Boot et al. (2006) argued that credit ratings provide an "economically meaningful role" by facilitating equilibrium in bond investment. However, in recent years, credit rating agencies have been sternly criticized due to various high-profile corporate scandals. Although rating agencies argue that they now regard internal controls over financial reporting as an important factor in the rating process (Moody's Investor Service 2004; Moody's Investor Service 2006; Fitch Ratings 2005), the public still questions the reliability of these ratings. This raises the question of whether credit rating agencies interrogate internal controls of restating companies before assigning credit ratings.

Empirical results of this study provide evidence consistent with the conjecture that the probability of core account restatements significantly increases for companies with material internal weaknesses. Specifically, internal controls have different quality levels and may cause various influences on restatements. This study thus uses three measurement methods to proxy for quality levels of internal controls: (1) occurrence of internal control weakness; (2) type of internal control problem; and (3) number of internal control weaknesses. Further, empirical results show that credit ratings react more unfavorably to restating companies with internal control weaknesses. This result seems to be consistent with rating agencies argue that they now regard internal controls over financial reporting as an important factor in the rating process. The findings contribute to the existing literature in two ways. First, this study is one of few studies which document that level *of internal control* quality affects restatement severity. I hand-collect restatements and use different internal control quality proxies (including occurrence of internal control problem, type of weaknesses and number of weaknesses) can provide a good opportunity to extend prior empirical findings on the association between restatements and internal controls. Second, this study contributes to the literature on the association between credit risk and internal controls *by* analyzing *the association between credit ratings and* different *quality of internal controls.*

The remainder of this study is organized as follows. Section 2 discusses the previous literature most relevant to this study, and also conducts hypotheses development. Section 3 then describes the sample selection procedure and research design. Section 4 reports the empirical results and their implications. Conclusions are finally drawn in Section 5, along with recommendations for future research.

2. Literature Review and Hypotheses Development

Understanding the information content of internal controls in restatement studies is especially important, because quality financial statements depend on the soundness of the internal controls. Therefore, ineffective *internal control*s may contribute to the severity of restatement and credit risk. This study re-examines and extends prior research into the relationship among restatements, internal controls and credit ratings.

2.1. Core Account Restatement and Internal Control Quality

Section 404 claims that effective internal controls assure investors that materially misstated financial statements are unlikely. Simply put, if internal control systems are effective, the likelihood of intentional or unintentional errors being committed should be significantly reduced (DeFond and Jiambalvo 1991). Therefore, internal control systems that companies establish over financial reporting should be designed to prevent or detect financial reporting misstatements (PCAOB 2004). Thus,

company internal control systems are important in error prevention and detection. Given poor internal control quality, subsequent restatements are highly likely. Some studies have demonstrated a link between internal control quality and the likelihood of subsequent financial restatements (Hammersley et al. 2008; Li and Wang 2006; Nagarajan and Carey 2008; Plumlee and Yohn 2009). Ashbaugh-Skaife et al. (2007), Grothe et al. (2007a) and Grothe et al. (2007b) also indicate that companies with material weaknesses frequently find it necessary to restate earnings, and material weakness is often disclosed following restatement. This raises the question of whether and how weakness in material internal control affects company restatement severity. Further, Prior researches (Palmrose et al. 2004; Palmrose and Scholz 2004; Romanus et al. 2008) use core account restatements as a measure of restatement severity, because core earnings restatements are associated with more negative financial statement implications and market reactions than noncore earnings restatements. Following prior studies (Palmrose et al. 2004; Palmrose and Scholz 2004; Romanus et al. 2008), this study uses core account restatements to proxy for restatement severity.

This study focuses solely on restating companies as research samples to build on the earlier empirical findings, because restatements are of significant concern to investors, managers, regulators, issuers, auditors, boards of directors and academics, and their information content has not been fully explored. This study differs from previous studies, I attempt to examine the association between restatements and internal controls by examining whether and how internal control quality affects degree of restatement severity, because restatement severity matters to the market, and assessments of internal control quality can potentially provide useful and timely information to investors. For example, Li et al. (2006) indicates that investment reaction to restatements differs according to knowledge of company internal control quality. Following Ge and McVay (2005), Doyle et al. (2007a) and Doyle et al. (2007b), this study considers three measurement methods as proxies for internal control quality: (1) occurrence of internal control weakness; (2) type of internal control problem; and (3) number of internal control weaknesses to examine whether a positive relationship exists between internal control weaknesses and core account restatements. This study thus hypothesizes the following.

H_1: Core account restatements are positively associated with internal control weaknesses.

2.2. Credit Rating and Internal Control Quality

Financial advisors maintain that investors should demand a higher risk premium for companies with internal control weaknesses. Credit rating agencies note that internal control weakness is an important consideration in the rating process (Wilfert 2005; Moody's Investor Service 2004; Moody's Investor Service 2006; Fitch Ratings 2005; Ogneva et al. 2007), because internal control weaknesses usually arise from company-wide problems and significantly influence credit rating decisions (Moody's Investor Service 2004; Moody's Investor Service 2006; Fitch Ratings 2005). Credit ratings are an important outcome of *credit evaluation* and reflect the *financial* state of a company' and hence play an important role in financial markets. Unfortunately, the credit rating of a company does still not fully reflect the uncertainty in financial reporting (Moody's Investor Service 2005) associated with the company *even* though credit rating agencies have been criticized for failing to provide *accurate ratings since Enron's* bankruptcy. This raises the question of how rating agencies assess internal controls over financial reporting in formulating ratings.

Although rating agencies argue that internal control quality is an important factor in the rating process (Moody's Investor Service 2004), little empirical research has attempted to examine the relationship between internal controls and credit ratings. For example, Ogneva et al. (2007) found that a higher implied cost of equity in companies with internal control weaknesses than in a control sample of companies that disclosed no internal control weaknesses. Elbannan (2009) further documented that companies with lower internal control quality are more likely to have lower credit ratings or speculative grade ratings, resulting in higher debt financing costs. As discussed above, prior studies have investigated the influence of internal control quality on the cost of capital but they have not considered the information content of internal controls (e.g., account-specific material weaknesses and

company-level material weaknesses). In short, prior studies have not investigated, from *different perspectives,* the question of how rating agencies react to internal control quality. This study takes a new perspective and attempts to more thoroughly examine how credit rating agencies, which have been criticized for poorly handling information as a result of the Enron collapse, react to restating companies' internal control quality.

H_2: Unfavorable credit ratings are positively associated with internal control weaknesses.

3. Research Design

This study investigates financial accounting restatements announced between 2004 and 2005, using the ordered probit and probit models. This section first details the data sources and selection methods used to generate the research sample. Next, the research models are introduced, and the test and control variables are discussed.

3.1. Data and Sample Selection

3.1.1. Internal Control Weakness

This study uses the search term "did not maintain effective internal control" to identify internal control weaknesses by searching each SEC filing (e.g., 10-K, 10-K/A, etc.). This term is frequently used in audit reports on internal control over financial reporting (DEKP 2004). Prior studies mostly focus on the existence of control weakness. However, different types of weakness have different effects. Following Ge and McVay (2005), Doyle et al. (2007a) and Doyle et al. (2007b), this study classifies various types of internal control weakness disclosure into two types: account-specific material weaknesses and company-level material weaknesses.

3.1.2. Restatement Announcements and Characteristics

This study hand-collects data on the dates of initial restatement announcements and restatement characteristics from the *Lexis-Nexis News Library*, which covers all interim and annual restatements announced from 2004 through 2005. Identifying precise announcement dates for restatements is challenging. This study thus only considers the first release of the restatement announcement of each company in a given year. Similar to Palmrose et al. (2004) and Kinney et al. (2004), this study uses several key words to search for restatements, including "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*. This study also searches the EDGAR database to double-check the correctness of the event days. Finally, this investigation adds restating companies mentioned in other sources discussing restatements, such as the GAO (2006) report, *SEC Filing Library*, *Accounting Today News*, *BNET Today News*, *CFO.com News* and *Compliance Week News*.

3.1.3. Credit Ratings and Others

For company credit ratings, this study uses the long-term issuer credit ratings compiled by Standard & Poor's. Standard & Poor's credit ratings are collected from the *COMPUSTAT* annual database. The ratings range from AAA (highest rating) to D (lowest rating-debt in payment default), and reflect Standard & Poor's assessment of the creditworthiness of the obligor with respect to its senior debt obligations. Company-level accounting data are obtained from the Standard & Poor's *COMPUSTAT* Annual Industrial, Research, and Full Coverage files. The *COMPUSTAT* database includes not only data found in balance sheets, income statements, and cash flow statements, but also industry classifications and audit opinions for U.S. companies. Most variables of interest in this study are available from the database.

3.2. Research Models

This study estimates Eqn. (1) to test whether restating companies with internal control weakness are more likely to involve core account restatements. Further, this study employs Eqn. (2) to test whether and how credit rating agencies react to internal control weaknesses of restating companies. Additionally, this study uses three measures of internal control weakness: (1) existence of internal control weakness; (2) type of internal control deficiencies; and (3) number of internal control deficiencies.

$$CORE_{i,t} = \alpha_0 + \alpha_1 ICQUALITY_{i,t} + \alpha_2 BIGN_{i,t} + \alpha_3 DEBT_{i,t} + \alpha_4 SALEGRW_{i,t} + \alpha_5 ROA_{i,t} + \alpha_6 LOSS_{i,t} + \alpha_7 SIZE_{i,t} + \alpha_8 CEOTURN_{i,t} + \alpha_9 ATTAU_{i,t} + \alpha_{10} ATTSEC_{i,t} + \varepsilon_{i,t} \quad (1)$$

$$RATING_{i,t} = \alpha_0 + \alpha_1 ICQUALITY_{i,t} + \alpha_2 BIGN_{i,t} + \alpha_3 DEBT_{i,t} + \alpha_4 SALEGRW_{i,t} + \alpha_5 ROA_{i,t} + \alpha_6 LOSS_{i,t} + \alpha_7 SIZE_{i,t} + \alpha_8 CEOTURN_{i,t} + \alpha_9 ATTAU_{i,t} + \alpha_{10} ATTSEC_{i,t} + \varepsilon_{i,t} \quad (2)$$

The dependent variable of Eqn. (1), *CORE*, is an indicator variable for core-earnings, 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. Previous investigations have demonstrated that market participants regard core account restatements as more serious due to their potential litigations and react negatively (Palmrose and Scholz 2004; Palmrose et al. 2004). Therefore, restating companies with internal control weaknesses are more likely to restate accounts of core earnings. In Eqn. (2), the dependent variable, *RATINGS*, is assigned a value of 1 if the company is rated AAA, and is increased by 1 as the bond rating declines by one notch (i.e., AA+ equals 2, AA equals 3, etc.). Standard & Poor's (S&P) usually assigns each company a long-term ''issuer rating'' for measuring the ability of a company to meet its senior obligations, and specific ratings for each debt issuance, according to the debt contract. Hence, companies with internal control weaknesses are more likely to receive unfavorable credit ratings.

Meanwhile, the test variable, *ICQUALITY*, captures company internal control quality. This study uses three measurement methods to proxy for internal control quality: (1) occurrence of internal control weakness; (2) type of internal control problem; and (3) number of internal control weaknesses. Following Ge and McVay (2005), Doyle et al. (2007a) and Doyle et al. (2007b), this study categorizes the disclosed internal control problems into two major deficiency types: account-specific and company-level. Account-specific material weaknesses relate to controls over specific account balances or transaction-level processes. Meanwhile, company-level material weaknesses relate to more macro-level controls such as control environment or overall financial reporting process. To understand degree of internal control deficiency, this study also considers number of internal control weaknesses disclosured in their Internal Control over Financial Reporting.

From a review of the literature (DeFond and Jiambalvo 1991; Kinney and McDaniel 1989; Sennetti and Turner 1999; Palmrose et al. 2004; Cahan and Zhang 2006), this study includes four control variables to control for company financial condition: *ROA*, *LOSS*, *DEBT*, and *SALEGRW*. Prior researches indicate that restatements prompted by external parties (SEC and auditors) are more severe (Palmrose et al. 2004; Desai et al. 2006b), I control for external prompter effects (*ATTSEC*, *ATTAU*). Boards replace CEOs more often for financial reporting problems (Srinivasan 2005), I control for CEO replace effect (denoted by *CEOTURN*). Consistent with Dechow et al. (1996), Richardson et al. (2003), and Desai et al. (2006a), this study controls for the company size effect (denoted by *SIZE*). Additionally, Farber (2005) reports a smaller proportion of brand-name audit firms in fraud companies compared to control companies. This study thus includes Big N CPA firms (denoted by *BIGN*) to control for auditor industry leadership.

4. Empirical Results

4.1. Sample Selection

The sample consists of companies that announced restatements from 2004 to 2005. Table 1 explains the sample construction. As reported in Table 1, Panel A, a number of companies are excluded from

my sample for the following reasons. First, I exclude technical restatements for 33 companies. Second, I exclude 3 companies lacking identifying information, such as perm number, cusip, gvkey, or cnum. Third, internal control data is missing for 182 companies and thus these companies are excluded. Fourth, 72 companies are excluded because of missing *Compustat* financial data. My final sample is composed of 506 restating companies. Additionally, in tests of H_2, 248 companies are excluded because of missing credit rating data.

Table 1: Sample selection

Panel A: Number of observations lost due to data requirements

Total number of restatements announced from 2004 to 2005	796
Less: Restatements of technical reasons	33
Less: Observations without perm number, cusip, gvkey, cnum, etc.	3
Less: Observations with missing internal control data	182
Less: Observations not on Compustat or with missing Compustat data	72
Final Sample	506

Panel B: Year of restatement announcement

	ICW [a]		Non-ICW		Total	
Year	**Obs.**	**%**	**Obs.**	**%**	**Obs.**	**%**
2004	54	28.13%	88	28.03%	142	28.06%
2005	138	71.87%	226	71.97%	364	71.94%
Total	192	100%	314	100%	506	100%

Panel C: Industry distribution of sample companies

	ICW		Non-ICW		Total	
Industry [b]	**Obs.**	**%**	**Obs.**	**%**	**Obs.**	**%**
Food	3	1.56%	5	1.59%	8	1.58%
Textiles & printing / publishing	2	1.04%	2	0.64%	4	0.79%
Chemicals	5	2.60%	11	3.50%	16	3.16%
Pharmaceuticals	1	0.52%	5	1.59%	6	1.19%
Extractive	7	3.65%	12	3.82%	19	3.75%
Durable manufacturers	2	1.04%	8	2.55%	10	1.98%
Transportation	37	19.27%	31	9.87%	68	13.44%
Utilities	11	5.73%	24	7.64%	35	6.92%
Retail	3	1.56%	19	6.05%	22	4.35%
Financial services	36	18.75%	72	22.93%	108	21.34%
Services	23	11.98%	29	9.24%	52	10.28%
Computers	36	18.75%	29	9.24%	65	12.85%
Total	192	100.00%	314	100.00%	506	100.00%

[a] ICW and Non-ICW divide samples based on whether companies with internal control weaknesses or without internal control weaknesses.

[b] Industry membership is determined by SIC code as follows: 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).

Panel B provides the distribution of research samples by the year of announcement. The distribution shows a higher percentage of restatements announced in 2005, moreover, about 71.94% of the restatements in the internal control weakness subsample. Panel C details the industry composition of restatement companies. The industry that is most heavily represented (21.34% of sample companies) is financial services. Moreover, Panel C also shows that transportation, financial services and

computers industries have the highest percentages of restatements in the internal control weakness subsample (19.27%, 18.75% and 18.75%, respectively).

4.2. Descriptive Statistics and Univariate Tests

Table 2 presents the descriptive statistics for all the variables used in my analyses, partitioned by two subsamples: restating companies with internal control weakness (n = 192), and restating companies without internal control weakness (n = 314). As such, comparing two subsamples provides evidence regarding whether internal control environment affects the probability of core account restatements.

Table 2: Descriptive Statistics

Variable [a]	ICW [b] (n=192)		Non-ICW (n=314)		Differences [c]	
	Mean	Median	Mean	Median	*t* test	*z* test
CORE	0.69	1.00	0.56	1.00	-2.98***	-2.96***
BIGN	0.86	1.00	0.87	1.00	0.32	0.32
DEBT	0.36	0.00	0.30	0.00	-1.44	-1.44
SALEGRW	0.13	0.08	0.15	0.10	0.66	1.41
ROA	-0.04	0.01	0.03	0.03	5.30***	6.52***
LOSS	0.41	0.00	0.18	0.00	-5.94***	-5.75***
SIZE	7.01	6.73	7.50	7.33	2.82**	3.01***
CEOTURN	0.39	0.00	0.27	0.00	-2.79***	-2.77***
ATTAU	0.05	0.00	0.04	0.00	-0.38	-0.39
ATTSEC	0.04	0.00	0.04	0.00	0.16	0.16

[a] The definitions of the variables reported in this table are: *CORE* = 1 if a restatement involves revenue, cost of sales or on-going operating expenses, and 0 otherwise; *BIGN* = 1 if the company's auditor is a Big N firm at announcement year, and 0 otherwise; *DEBT* = 1 if the company has notes payable, and 0 otherwise; *SALEGRW* = One-year percentage change in sales reported at announcement year; *ROA* = Net income divided by book value of total assets reported at announcement year; *LOSS* = 1 if operating income is less than zero reported at year end prior to restatement announcement, and 0 otherwise; *SIZE* = Natural log of book value of total assets reported at announcement year; *CEOTURN* = 1 if the CEO leaves the company within 24 months around (6 months before and 18 months after) the restatement announcement, and 0 otherwise; *ATTAU* = 1 if companies having restatements prompted by the auditor, and 0 otherwise; *ATTSEC* = 1 if companies having restatements prompted by SEC, and 0 otherwise.

[b] ICW and Non-ICW divide samples based on whether companies with internal control weaknesses or without internal control weaknesses.

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

The mean (median) of *CORE* reported in the ICW subsample is significantly larger than those reported in the non-ICW subsample at the 0.01 level for both tests. Univariate comparisons indicate that ICW companies are more likely to restate core earnings than non-ICW companies. Additionally, ICW companies have higher CEO turnover rate (*CEOTURN*), have smaller company size (*SIZE*), perform worse (*ROA*) and suffer more losses (*LOSS*). Overall, these findings suggest that core account restatements are more likely to be associated with internal control environment.

4.3. Multivariate Analysis

4.3.1. Core Account Restatement and Internal Control Quality

Table 3 documents the results of core account restatements regressed on internal control weaknesses. Consistent with my prediction, in Model (1), the coefficient on *ICQUALITY* is 0.38 (significant at $p < 0.01$), suggesting that restating companies with internal control weaknesses are more likely to restate core earnings. In Model (2), the coefficient on *ICQUALITY* is 0.20 (significant at $p < 0.01$), suggesting that restating companies involve company-level material weaknesses may associate with core account restatements. In Model (3), the coefficient on *ICQUALITY* is 0.05 (significant at $p < 0.01$), suggesting that the probability of core account restatements increases in number of internal control weaknesses. Additionally, among the control variables, performance (*SALEGRW*, *DEBT*), company size (*SIZE*), and

SEC-prompted restatements (*ATTSEC*) are significantly correlated with restatement of core earnings. Overall, these results are consistent with the idea that the probability of core account restatements significantly increases for companies with material internal weaknesses.

Table 3: Restatement of Core Earnings and Internal Control

Variable [a]	**Model 1** [c]	**Model 2**	**Model 3**
Constant	0.86*** (3.00)	0.87*** (3.03)	0.96*** (3.38)
ICQUALITY [b]	0.38*** (2.99)	0.20*** (2.64)	0.05** (1.81)
BIGN	0.06 (0.33)	0.06 (0.36)	0.07 (0.38)
DEBT	-0.28** (2.10)	-0.28** (2.08)	-0.27** (1.99)
SALEGRW	-0.50** (2.27)	-0.50** (2.28)	-0.50** (2.26)
ROA	0.11 (0.22)	0.12 (0.24)	0.12 (0.23)
LOSS	-0.20 (1.20)	-0.19 (1.13)	-0.16 (1.00)
SIZE	-0.08*** (2.34)	-0.08*** (2.32)	-0.09*** (2.51)
CEOTURN	0.08 (0.62)	0.08 (0.65)	0.09 (0.74)
ATTAU	0.08 (0.28)	0.07 (0.24)	0.02 (0.06)
ATTSEC	0.62** (1.92)	0.61** (1.88)	0.66** (2.02)
Pseudo-R^2	5.33%	5.04%	4.50%
n	506	506	506

[a] The definitions of the variables reported in this table are: *CORE* = 1 if a restatement involves revenue, cost of sales or on-going operating expenses, and 0 otherwise; *ICQUALITY* = Uses three measurement methods to proxy for the weakness of internal control, (1) 1 if a company has weak internal control, and 0 otherwise; (2) type of internal control weaknesses; (3) number of internal control weaknesses; *BIGN* = 1 if the company's auditor is a Big N firm at announcement year, and 0 otherwise; *DEBT* = 1 if the company has notes payable, and 0 otherwise; *SALEGRW* = One-year percentage change in sales reported at announcement year; *ROA* = Net income divided by book value of total assets reported at announcement year; *LOSS* = 1 if operating income is less than zero reported at year end prior to restatement announcement, and 0 otherwise; *SIZE* = Natural log of book value of total assets reported at announcement year; *CEOTURN* = 1 if the CEO leaves the company within 24 months around (6 months before and 18 months after) the restatement announcement, and 0 otherwise; *ATTAU* = 1 if companies having restatements prompted by the auditor, and 0 otherwise; *ATTSEC* = 1 if companies having restatements prompted by SEC, and 0 otherwise.

[b] Model 1 measures *ICQUALITY* by (1) 1 if a company has weak internal control, and 0 otherwise, model 2 measures *ICQUALITY* by (2) type of internal control weaknesses, and model 3 measures *ICQUALITY* by (3) number of internal control weaknesses.

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

4.3.2. Credit Rating and Internal Control Quality

To investigate whether and how credit rating agencies react to internal control weakness, this study uses three measures of internal control weakness: (1) existence of internal control weakness; (2) type of internal control deficiencies; and (3) number of internal control deficiencies to examine the relation between credit ratings and internal controls.

Table 4: Credit Rating and Internal Control

Variable [a]	Model 1 [c]	Model 2	Model 3
ICQUALITY [b]	0.41*** (2.84)	0.26*** (3.02)	0.06*** (2.32)
BIGN	0.26 (0.95)	0.24 (0.90)	0.26 (0.95)
DEBT	-0.54*** (3.69)	-0.55*** (3.76)	-0.51*** (3.53)
SALEGRW	0.08 (0.20)	0.09 (0.22)	0.03 (0.07)
ROA	-1.64** (1.85)	-1.60** (1.80)	-1.62** (1.81)
LOSS	1.03*** (5.12)	1.05*** (5.22)	1.04*** (5.19)
SIZE	-0.45*** (9.49)	-0.45*** (9.40)	-0.45*** (9.54)
CEOTURN	0.08 (0.54)	0.07 (0.46)	0.08 (0.55)
ATTAU	-0.65** (2.04)	-0.67** (2.10)	-0.71** (2.23)
ATTSEC	0.08 (0.26)	0.04 (0.13)	0.11 (0.37)
Pseudo-R^2	16.70%	16.78%	16.49%
n	258	258	258

[a] The definitions of the variables reported in this table are: *RATINGS* = *S&P* bond rating, calculated based on a numerical conversion process in which an AAA-rated bond is assigned a value of 1, and as the bond rating declines the numerical rating increases by 1; *CORE* = 1 if a restatement involves revenue, cost of sales or on-going operating expenses, and 0 otherwise; *ICQUALITY* = Uses three measurement methods to proxy for the weakness of internal control, (1) 1 if a company has weak internal control, and 0 otherwise; (2) type of internal control weaknesses; (3) number of internal control weaknesses; *BIGN* = 1 if the company's auditor is a Big N firm at announcement year, and 0 otherwise; *DEBT* = 1 if the company has notes payable, and 0 otherwise; *SALEGRW* = One-year percentage change in sales reported at announcement year; *ROA* = Net income divided by book value of total assets reported at announcement year; *LOSS* = 1 if operating income is less than zero reported at year end prior to restatement announcement, and 0 otherwise; *SIZE* = Natural log of book value of total assets reported at announcement year; *CEOTURN* = 1 if the CEO leaves the company within 24 months around (6 months before and 18 months after) the restatement announcement, and 0 otherwise; *ATTAU* = 1 if companies having restatements prompted by the auditor, and 0 otherwise; *ATTSEC* = 1 if companies having restatements prompted by SEC, and 0 otherwise.

[b] Model 1 measures *ICQUALITY* by (1) 1 if a company has weak internal control, and 0 otherwise, model 2 measures *ICQUALITY* by (2) type of internal control weaknesses, and model 3 measures *ICQUALITY* by (3) number of internal control weaknesses.

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

Consistent with my prediction, in Model (1), the coefficient on *ICQUALITY* is 0.41 (significant at $p < 0.01$), suggesting that restating companies with internal control weaknesses are more likely to be followed by unfavorable credit ratings. In Model (2), the coefficient on *ICQUALITY* is 0.26 (significant at $p < 0.01$), suggesting that company-level material weaknesses are viewed as high severity because they are related to more macro-level controls, possibly resulting in their receiving a more unfavorable credit rating. In Model (3), the coefficient on *ICQUALITY* is 0.06 (significant at $p < 0.01$), suggesting that unfavorable credit ratings are associated with number of internal control weaknesses. Additionally, among the control variables, performance (*ROA*, *LOSS*, *DEBT*), company size (*SIZE*), and auditor-prompted restatements (*ATTAU*) are significantly correlated with credit ratings. Overall, Table 4 reports results that credit ratings are associated with internal control deficiency under among three definitions of internal control quality. This result seems to be consistent with my conjecture that credit raters after the passage of SOX deliberate on internal control quality more cautiously when assigning credit ratings.

4.4. 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. First, following Hribar and Jenkins (2004), I 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. After rerun Eqn. (1), the results and conclusions remain unchanged. Second, I 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. After rerun my research models, the empirical results are similar to those reported in previous sections. Third, to ensure that the results are not sensitive to credit rating measure, this study also follows Ashbaugh-Skaife et al. (2006), Jorion et al. (2009) and Elbannan (2009) to replace the continuous credit ratings measure presented here with a measure that collapses the multiple S&P credit ratings into seven categories: AAA, AA+ to AA-, A+ to A-, BBB+ to BBB-, BB+ to BB-, B+ to B-, and CCC+ to SD. After rerun Eqn. (2), this study obtains results similar to those reported in the tables.

5. Conclusions

This study provides evidence that the probability of core account restatements increases for companies with internal control deficiency. Specifically, this study uses three measurement methods to proxy for internal control quality: (1) occurrence of internal control weakness; (2) type of internal control problem; and (3) number of internal control weaknesses. Further, my results suggest that credit rating agencies consider restating companies with material internal weaknesses as higher-risk clients, and thus assign a more unfavorable rating. The findings imply that SOX and public criticism have substantially and positively impacted rater perceptions, and have led raters to view the internal control quality of restating companies more discerningly.

A potentially interesting line of future research is whether post-SOX restating companies improve their earnings quality or internal control quality in the post-restatement era. From a positive thinking perspective, this raises an important question of whether post-SOX restatements provide a good opportunity for restating companies to improve the future quality of their financial reporting. I believe that after SOX restating companies may have stronger incentives than non-restating companies to improve financial reporting quality and restore market confidence, because restatements incur *higher costs* and considerable public criticism.

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Reference

[1] Ashbaugh-Skaife, H., D. Collins, and R. LaFond. 2006. The effects of corporate governance on firms' credit ratings. *Journal of Accounting and Economics* 42: 203–243.

[2] _____, _____, and W. Kinney. 2007. The discovery and reporting of internal control deficiencies prior to SOX-mandated audits. *Journal of Accounting and Economics* 44: 166–192.

[3] Audit Analytics, 2007. Financial restatements and market reactions. Ives Group Inc.

[4] Baldwin, T., and D. Yoo. 2005. Traversing shaky ground: An analysis for investors. *Yellow Card Trend Alert*. Glass Lewis & Co., LLC.

[5] Boot, A. W. A., T. T. Milbourn, and A. Schmeits. 2006. Credit ratings as coordination mechanisms. *Review of Accounting Studies* 19: 81–118.

[6] Cahan, S.F. and W. Zhang. 2006. After Enron: Auditor conservatism and ex-Andersen clients. *The Accounting Review* 81: 49-82.

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

[8] DeFond, M.L. and J. Jiambalvo. 1991. Incidence and circumstances of accounting errors. *The Accounting Review* 66: 643-655.

[9] Deloitte & Touche LLP, Ernst & Young LLP, KPMG LLP, and PricewaterhouseCoopers LLP (DEKP). 2004. Perspectives on internal control reporting: A resource for financial market participants.

[10] **Desai, H.,** S. Krishnamurthy, and K. Venkataraman. **2006a.** Do short sellers target firms with poor earnings quality? Evidence from earnings restatements**.** *Review of Accounting Studies* 11: 71-90.

[11] _____, **C. Hogan, and M.S. Wilkins. 2006b. The reputational penalty for aggressive accounting: earnings restatements and management turnover.** *The Accounting Review* 81: 83-112.

[12] Doyle, J., W. Ge, and S. Mcvay. 2007a. Determinants of Weaknesses in Internal Control Over Financial Reporting. *Journal of Accounting and Economics*, 193–223.

[13] _____, _____, and _____. 2007b. Accruals Quality and Internal Control over Financial Reporting. *The Accounting Review* 85: 1141-1170.

[14] Elbannan, M. A. 2009. Quality of internal control over financial reporting, corporate governance and credit ratings. *International Journal of Disclosure and Governance* 6: 127-149.

[15] Farber, D. 2005. Restoring trust after fraud: Does corporate governance matter? *The Accounting Review* 80: 539-561.

[16] Fitch Ratings. 2005. Fitch's approach to evaluating management and auditor assessments of internal control. New York, NY, Fitch.

[17] Ge, W. and S. McVay. 2005. On the disclosure of material weaknesses in internal control after the Sarbanes-Oxley Act. *Working Paper*, University of Michigan.

[18] Government Accountability Office, 2006. Financial statement restatements: Updates of public company trends, market impacts, and regulatory enforcement actions, GAO-06-678.

[19] Grothe, M., A. Pham, and J. Saban. 2006. Getting it wrong the first time. *Yellow Card Trend Alert*. Glass Lewis & Co., LLC.

[20] _____, J. Goodwin, O. Iandera, H. Laurion, and J. Freeland. 2007a. The materially weak. *Yellow Card Trend Alert*. Glass Lewis & Co., LLC.

[21] _____, J. Saban, M. Plachecki, R. Lee, and B. Post. 2007b. The errors of their ways. *Yellow Card Trend Alert*. Glass Lewis & Co., LLC.

[22] Hammersley, J., L. Myers, and C. Shakespeare. 2008. Market reactions to the disclosure of internal control weaknesses and to the characteristics of those weaknesses under Section 302 of the Sarbanes-Oxley Act of 2002. *Review of Accounting Studies* 13: 141-165.

[23] Hribar, P. and N. Jenkins. 2004. The effect of accounting restatements on earnings revisions and the estimated cost of capital. *Review of Accounting Studies* 9: 337-356.

[24] Jorion, P. C. Shi., and S. Zhang. 2009. Tightening credit standards: The role of accounting quality. *Review of Accounting Studies* 14: 123–160.

[25] Kinney, W.R. and L.S. McDaniel. 1989. Characteristics of firms correcting previously reported quarterly earnings. *Journal of Accounting and Economics* 11: 71-93.

[26] _____, Z-V. Palmrose, and S. Scholz. 2004. Auditor independence, non-audit services, and restatements: Was the U.S. government right? *Journal of Accounting Research* 42: 561-588.

[27] Li, C. and Q. Wang. 2006. SOX 404 assessments and financial reporting errors. *Working paper*, University of Pittsburgh and Iowa State University.

[28] Li, C., S. Scholz, and Q. Wang. 2006. Internal control over financial reporting: Does the market really not care? *Working Paper*, University of Kansas.

[29] Moody's Investors Service (Moody's). 2004. Special Comment: Section 404 reports on internal control: Impact on ratings will depend on nature of material weaknesses reported. New York, NY, Moody's Investors Service.

[30] _____. 2006. Special Comment: The second year of section 404 reporting on internal control. New York, NY, Moody's Investors Service.

[31] Nagarajan, R. and P. Carey. 2008. Effectiveness of internal control over financial reporting and financial statement restatements: The role of management. *Working paper*, Monash University Australia.

[32] Ogneva, M., K. R. Subramanyam, and K. Raghunandan. 2007. Internal control weaknesses and cost of equity: Evidence from SOX Section 404 disclosures. *The Accounting Review* 82: 1255-197.

[33] Palmrose, Z-V., V.J. Richardson, and S. Scholz. 2004. Determinants of markets reactions to restatement announcements. *Journal of Accounting and Economics* 37: 58-89.

[34] _____, and S. Scholz. 2004. The circumstances and legal consequences of non-GAAP reporting: Evidence from restatements. *Contemporary Accounting Research* 21: 139-180.

[35] Plumlee, M. A. and T. L. Yohn. 2010. An analysis of the underlying causes attributed to restatements. *Accounting Horizons* 24: 41-64.

[36] Public Company Accounting Oversight Board. 2004. An audit of internal control over financial reporting performed in conjunction with an audit of financial statements. Auditing Standard No. 2. Washington, DC, PCAOB.

[37] ———. 2007. Changes in market responses to financial statement restatement announcements in the Sarbanes-Oxley era. Washington, DC, PCAOB.

[38] Richardson, S., I. Tuna, and M. Wu. 2003. Capital market pressures and earnings management: The case of earnings restatements. *Working paper*, University of Pennsylvania.

[39] Romanus, R. N., J. J. Maher, and D. M. Fleming. 2008. Auditor industry specialization, auditor changes, and accounting restatements. *Accounting Horizons* 22: 389-413.

[40] Sennetti, J.T. and J.L. Turner. 1999. Post-audit restatement risk and brand-name audits. *Working Paper*, Nova Southeastern University.

[41] Srinivasan, S. 2005. Consequences of financial reporting failure for outside directors: Evidence from accounting restatements and audit committee members. *Journal of Accounting Research* 43: 291-334.

[42] Wilfert, G. E. 2005. The first wave of Section 404 reporting. *Orange County Business Journal* 28: 4.