Investor reactions to restatements conditional on disclosure of internal control weaknesses

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Abstract

Purpose – The purpose of this paper is to investigate investor reactions to financial restatements conditional on disclosures of internal control weaknesses under Section 404 of the Sarbanes-Oxley Act.

Design/methodology/approach – The research uses cumulative abnormal stock returns (CARs) as a proxy for investor reactions. Restatements and internal control reports are available on audit analytics. Multivariate regression analyses were used for testing.

Findings – Using a sample of restating firms whose original misstatements are linked to underlying internal control weaknesses, the research finds that cumulative abnormal returns for firms disclosing internal control weaknesses in a timely manner is negative in a three-day window around the restatement announcements. The finding indicates that restatements with early disclosure of internal control weaknesses provide more persuasive evidence of the ineffectiveness of a firm's internal control over financial reporting, rather than early disclosure lowering the information asymmetry between a firm and investors.

Research limitations/implications – This study employs CARs to examine the market reaction to restatements conditional on disclosure of internal control weaknesses.

Practical implications – Further study on reactions by creditors who have access to private information on firms could extend the implications of the finding.

Originality/value – The study contributes to the existing research by documenting that early disclosure of material weaknesses in internal control affects investors' reactions to financial restatements.

Keywords Disclosures, Financial restatements, Internal control weakness, Investor reactions

Paper type Research paper

1. Introduction

This study investigates investor reactions to financial restatements conditional on disclosures of internal control weaknesses under Section 404 of the Sarbanes-Oxley Act (hereafter SOX 404) and how early disclosure of material weaknesses in internal control affects investors' reactions to financial restatements. The restatement of previously reported financial statements implies the potential presence of material weakness(es) in internal control over financial reporting (McMullen *et al.*, 1996; Rice and Weber, 2012; Srinivasan *et al.*, 2015)[1]. Although one expects financial restatements to be preceded by the disclosure of internal control weaknesses, Rice and Weber (2012) find that only 32.4 percent of their sample firms have disclosures of material weaknesses in their internal control system during the misstatement periods. This phenomenon indicates that either those firms are unable to detect existing internal control weaknesses or they hide accounting problems intentionally. In addition, recent studies report that financial restatements have increased, whereas timely disclosures of material weaknesses in internal controls have declined over time (e.g. Rice and Weber, 2012). This conflicting phenomenon is inconsistent with the presumed notion that a high quality internal control

system lessens financial restatements, has cast doubt on the effectiveness of SOX 404, and has gained the attention of regulators and the public (Besch, 2009; Whitehouse, 2010, 2015; Croteau, 2014).

To understand the phenomenon, Hogan *et al.* (2013) analyze restatement-related lawsuits and defendant firms' disclosures of material weaknesses. They find that the ligation risk for firms with late disclosures of internal control weaknesses is not significantly different from that of firms with timely disclosure, indicating that litigation costs, as part of the cost of compliance with SOX 404, may not be great enough to deter managers from withholding news of ineffective internal control. Rice *et al.* (2015) also report that penalties such as lawsuits, Securities and Exchange Commission (SEC) sanctions and management turnover follow financial restatements by firms that previously disclosed ineffective internal controls. However, they could not find evidence of those penalties applying to restatement firms without previous disclosures, indicating that those penalties are likely to result from the disclosed material weaknesses, rather than from the financial restatements. The evidence implies that managers are discouraged from reporting internal control weaknesses under SOX 404, because the compliance costs exceed the benefits.

Although prior studies indicate that financial restatements are associated with an increase in the cost of equity and debt capital, lawsuits, SEC sanctions and management turnover, those studies are based on financial restatements that were not conditional on previously disclosed material weakness (e.g. Hribar and Jenkins, 2004; Graham *et al.*, 2008; Hennes *et al.*, 2008). Financial restatements are the realized bad news resulting from the underlying internal control over financial reporting, and the disclosure of weaknesses in internal control can serve as a warning for the forthcoming financial restatements. Thus, one might expect that investor reactions to restatements with previous disclosure of material weaknesses would be different from reactions to restatements without a warning of the forthcoming bad news.

Specifically, we are interested in the signed impact of the disclosures/non-disclosures of internal control reports before restatements on the investor reactions to restatements. Financial restatements without earlier disclosure of material weaknesses imply that management hides internal control weaknesses intentionally or, at least, could not detect it, which, in turn, increases the information asymmetry between firms and investors and potentially casts doubt on the competence and integrity of management. If this is the case, restating firms disclosing internal control weaknesses in a timely manner during the misstated periods would experience less negative reaction from the market than those firms that do not disclose internal control weaknesses before restatement. On the other hand, the market may react more negatively to financial restatements following disclosure of internal control weaknesses because a restatement announcement provides persuasive evidence of material weaknesses in internal control over financial reporting (He *et al.*, 2014). Investors might penalize firms with restatements resulting from ineffective internal control that managers are aware of more than firms with restatements resulting from internal control weaknesses which managers might not have known.

Using cumulative abnormal stock returns (CARs hereafter) as a proxy for investor reactions, we find that CARs for restatements with previous disclosure of internal control weaknesses are more negative than those for restatements without previous disclosures. This finding implies that disclosures of internal control weaknesses before restatement announcements do not necessarily lower the information asymmetry between firms and the equity market investors. Rather, restatements with early disclosures of material weaknesses are penalized more than those without early disclosure. That is, investors view restatements with previous disclosure as the bad news realized, which leads to more disappointment for those firms. This finding is robust to the two-stage estimation controlling for endogeneity when firms' disclosure choice may be determined by non-random characteristics of the firms.

This study contributes to the literature by empirically documenting how early disclosure of material weaknesses in internal control affects investors' reactions to financial restatements. Our finding extends the findings by Hogan *et al.* (2013) that litigation costs for managers are not high enough to constrain compliance with internal control weakness reporting and the findings by Rice *et al.* (2015) that restating firms with previous disclosures of internal control weaknesses experience penalties, such as lawsuits, sanctions by SEC and management turnover, while restatement firms without previous disclosures do not. This study also helps us to understand the negative consequences of disclosing weak internal controls over financial reporting in the stock market, as the law requires, and to comprehend the reliability of SOX reports, especially for the restating firms previously claimed to have effective internal controls.

Our research is distinctive from previous studies on market reactions to restatements, because we consider the possible information release through internal control reporting before financial restatements and the effect of the information released before restatements on investor reactions to restatements. Prior research shows that restatement announcements result in significant negative impact on stock price (Dechow *et al.*, 1996; Hribar and Jenkins, 2004; Palmrose *et al.*, 2004; Files *et al.*, 2009). Furthermore, Myers *et al.* (2013) report the different market reactions to restatements depending on the venue of the restatement disclosures[2]. However, restatements used in those studies are unconditional on the cautionary information possibly released through internal control weaknesses reporting before restatement announcements.

Our finding provides a potential explanation why restating firms fail to disclose their internal control weakness over financial reporting to the public in advance. Consistent with existing evidence (Rice *et al.*, 2015), firms do not have an incentive to disclose bad news of weak internal controls in a timely manner and the compliance costs outweigh the benefits. Our finding supports practitioners' concerns about whether SOX 404 reports are trustworthy. Although the law requires firms to disclose material weakness of internal controls over financial reporting to inform the public of potential accounting issues, managers are discouraged to do so until a restatement is inevitable because a timely disclosure of weak internal controls tends to breed more negative reactions to restatements in stock market, lawsuits, SEC sanctions and employment. The SEC and other monitoring agencies need to strengthen the enforcement of SOX 404 and provide stronger incentives for companies to disclose internal control weaknesses in a timely manner.

The remainder of the paper is organized as follows. Section 2 reviews literature and develops the hypothesis of the study, followed by research design in Section 3. Section 4 discusses sample selection and empirical findings and Section 5 concludes the paper.

2. Literature review and hypothesis development

2.1 Internal control and financial restatements

Under SOX 404, management of a public company is required to assess the effectiveness of its internal control over financial reporting and to include the assessment about whether the company's internal control is effective in its annual report. Firms are required to disclose internal control weaknesses with a description of their nature if any significant deficiency exists (Public Company Accounting Oversight Board (PCAOB), 2007a). Moreover, a company's independent auditor is required to attest to and report on the assessment made by management (PCAOB, 2007b). In addition, firms are obligated to restate financial statements in SEC filings if the statements are "later discovered to have been false and misleading from the outset, and the issuer knows or should know that persons are continuing to rely on all or any material portion of the statements" (Skinner, 1997, p. 252). Internal control weakness reports and financial restatements are supposed to inform market participants about potential or existing errors in parts of a firm's financial statements (Kravet and Shevlin, 2010; Costello and Wittenberg-Moerman, 2011).

Financial restatements and internal control weaknesses result in unfavorable responses by market participants. First, both restatements and internal control weaknesses cause stakeholders to question the quality of a firm's financial reporting (Badertscher *et al.*, 2011). Specifically, firms with weak internal control systems fail to curtail large forecast errors effectively, resulting in biased financial reports and thereby higher information asymmetry (Coller and Yohn, 1997; Feng *et al.*, 2009). Investors and creditors revise their beliefs downward about those firms' expected economic prospects including the cost of remediating the weaknesses. Similarly to internal control weaknesses, financial restatements affect stakeholders' perception of the firm's future earnings. Since stakeholders use a firm's historical financial numbers to form their belief about its future prospects, correction of misstatements can drive stakeholders to revise their assumptions for forecasting expected cash flows of the firm, such as the earnings growth rate derived from the misstated earnings (Gleason *et al.*, 2008; Chen *et al.*, 2013). Second, market participants may doubt the competence and the integrity of management when internal control weaknesses and/or financial restatements are known to exist (Hribar and Jenkins, 2004; Ittonen, 2010; Badertscher *et al.*, 2011).

Prior research on unfavorable economic consequences of internal control weaknesses under SOX 404 indicates an increase in the cost of capital[3]. Ashbaugh-Skaife *et al.* (2009) find that firms with internal control deficiencies have significantly higher idiosyncratic risk, systematic risk and cost of equity, concluding that internal control reports affect investors' risk assessments and firms' cost of equity. As for the cost of debt, Dhaliwal *et al.* (2011) find that the credit spread is higher for firms with internal control weaknesses than firms without internal control weaknesses under SOX 404. Kim *et al.* (2011) also find that firms with internal control weaknesses are likely to have higher loan spreads and tighter non-price terms than firms without internal control weaknesses. Those studies suggest that internal control weakness is associated with greater cost of capital. Furthermore, the experimental study by Church and Schneider (2016) reports that prospective investors react negatively to material weaknesses of internal control system.

Previous studies consistently find an increase in the cost of capital after financial restatements. Hribar and Jenkins (2004) document that the cost of equity capital increases by 7 to 19 percent in the month immediately following a firm's restatement. Kravet and Shevlin (2010) find that the factor loadings on the discretionary information risk significantly increase following a restatement announcement, resulting in an increase in the cost of equity capital. Regarding the cost of debt, Graham *et al.* (2008) report that financial restatements lead to stricter bank loan contracts. Baber *et al.* (2013) find that for restatement firms, the mean municipal debt costs are greater following the financial restatements. In addition, restatement firms tend to experience significant negative reactions from both the bond market and the secondary loan market (Shi and Zhang, 2008; Park and Wu, 2009).

2.2 Hypothesis development

Previous studies report that firms with internal control weaknesses under SOX 404 bear higher costs of debt and unfavorable changes in the existing debt contracts. Specifically, Dhaliwal *et al.* (2011) find that the credit spread is higher for firms disclosing material weaknesses under SOX 404. Kim *et al.* (2011) also report that firms with internal control weaknesses under SOX 404 are likely to have greater loan spreads and tighter non-price terms than firms that have not disclosed internal control weaknesses. Costello and Wittenberg-Moerman (2011) provide consistent evidence that lenders are less likely to use financial statement numbers for firms with internal control weaknesses under SOX Section 302. They find that restating firms tend not to experience the same changes in debt contract as firms with internal control weaknesses and that lenders do not necessarily decrease their use of financial statement numbers. Their findings indicate that

the lenders consider weaknesses in internal control a more serious threat to accounting numbers than restatements[4].

The restatement of previously reported financial statements implies the presence of a material weakness in internal control over financial reporting (McMullen *et al.*, 1996; Rice and Weber, 2012; Srinivasan *et al.*, 2015). Although one would expect that disclosure of internal control weaknesses precedes financial restatements, Rice and Weber (2012) find that only 32.4 percent of their sample firms (with financial restatements linked to internal control weakness) have disclosures of material weaknesses in their internal control system during their misstatements. The finding indicates that either those firms are unable to detect the existing weaknesses or they hide the accounting problems on purpose. In addition, Rice and Weber (2012) report that firms' financial restatements have increased, whereas timely disclosures of material weaknesses in internal controls have declined over time.

The literature on bad news disclosure indicates that firms provide bad news as a defensive mechanism to reduce litigation costs (Skinner, 1994; Kasznik and Lev 1995; Skinner 1997; Field *et al.* 2005). Financial restatements are the realized bad news that may result from underlying ineffective internal control over financial reporting, and the undisclosed internal control weakness is information unavailable to the public. If we consider disclosure of internal control weakness as a warning for the forthcoming bad news of restatements, the contemporary trend of increasing financial restatements but decreasing disclosures of internal control weaknesses is inconsistent with the litigation cost argument for bad news disclosures.

To understand the conflicting trend, Hogan *et al.* (2013) analyze restatement-related lawsuits and defendant firms' disclosures of weaknesses in internal control. They find that the ligation risk of firms with late disclosures of internal control weaknesses is not significantly different from that of firms with timely disclosure, indicating that litigation costs, as part of compliance costs of SOX 404, may not be great enough to constrain managers' incentive to withhold bad news of material weaknesses. Rice *et al.* (2015) report the penalties such as lawsuits, sanctions by the SEC, and management turnover that follow financial restatements with previous disclosures of internal control weaknesses. However, they do not find evidence for those penalties for restatement firms without previous disclosure of material weaknesses in internal control, indicating that those penalties are likely to result from the disclosure of internal control weaknesses, rather than from financial restatements. These studies imply that managers are discouraged from reporting internal control weaknesses under SOX 404 because the compliance costs outweigh the benefits.

However, it is well-known in psychological research that an advance warning tends to make people predict better and adapt more easily to a coming stressful event and that predictable bad news have less influence than unpredictable (Bies, 2013). Accordingly, when weak internal controls are announced as an early warning, investors may be on the alert to the forthcoming bad news, and then the realized bad news, restatements, may have less impact on investor reactions. In addition, financial restatements without timely disclosure of internal control weaknesses can lessen market participants' reliance on accounting numbers, because the case is indicative of the reporting quality of firms as well as of the quality of internal control over financial reporting. Restatements without earlier disclosure of material weaknesses imply that management hides internal control weaknesses intentionally or, at least, could not detect it, which, in turn, increases the information asymmetry between firms and investors and potentially casts doubt on the competence and integrity of management. Thus, one can expect that restating firms disclosing internal control weaknesses in a timely manner during the misstated periods will experience less negative reaction from the market than those firms that do not disclose before restatement.

On the other hand, the market may react more negatively to financial restatements following disclosure of internal control weaknesses because a restatement announcement

provides persuasive evidence of material weaknesses in internal control (He *et al.*, 2014). This argument is in line with the confirmation bias theory in the psychological literature that people tend to be biased toward their preexisting beliefs or expectations when they interpret or search for information (Nickerson, 1998). That is, when an internal control weakness is reported, investors would form a belief that the firm may have potential accounting issues. Then, the following financial restatements would be solid proof that supports investors' previously-built belief, which may lead to more negative market reactions.

This prediction is supported by the findings that timely disclosures of internal control weaknesses do not lead to significant or worse penalties for restatements (Hogan *et al.*, 2013; Rice *et al.*, 2015), and the findings by Costello and Wittenberg-Moerman (2011) that internal control weaknesses lead to more serious changes in loan contractual terms than restatements. Rice *et al.* (2015) report that penalties such as lawsuits, sanctions by the SEC and management turnover follow financial restatements with previous disclosures of internal control weaknesses but do not report such penalties for restatement firms without previous disclosures. For instance, they conjecture that the SEC, with scarce resources, would be able to build a strong case for investigation if a firm discloses material weaknesses before a restatement announcement. Hogan *et al.* (2013) report that the ligation risk for firms with late or no disclosure of internal control weaknesses after announcing restatements is not significantly different from that of firms disclosing internal control weaknesses before restatements. As suggested by Rice *et al.* (2015) and Hogan *et al.* (2013), the previous and timely disclosure of internal control weaknesses can be used as evidence that managers were aware of an underlying problem that caused financial restatements. Their assertion can be applied to market reactions by investors. Investors might penalize firms with restatements resulting from ineffective internal control of which managers are aware more than firms with restatements resulting from internal control weaknesses about which managers might not have known. That is, reactions to restating firms that disclose material weaknesses in a timely manner during misstated periods would be more negative than those to restating firms that fail to report material weaknesses before the restatement.

Since a timely disclosure of weak internal control can affect investor reactions in either direction, we state our hypothesis in an alternate form as follows:

H1. Investor reactions to restatement with early disclosure of material internal control weakness are different from that to firms without early disclosure.

3. Research design

To test the hypothesis, a multivariate regression model (1) is used. The dependent variable for investor reactions is three-day cumulative abnormal returns around a restatement announcement. In the model (1), *CAR* is the cumulative abnormal returns from one trading day prior to the restatement announcement to one trading day after a restatement announcement (−1, +1), adjusted for equally weighted returns. The variable of interest, *EDMW,* is an indicator variable that equals 1 if a firm disclosed a material weakness of its internal control during the misstatement period, and zero otherwise. A positive coefficient of early disclosure of internal control weakness (*EDMW*) implies that early disclosures lower the information asymmetry between firms and investors, which, in turn, reduces the negative market reactions. A negative coefficient implies that investors penalize restatements resulting from the ineffective internal control of which managers are aware more than they penalize restatements resulting from internal control weaknesses of which managers are not possibly aware.

Consistent with prior research, the following control variables are included in the regression model (1): whether the restatement has a reducing impact on net income, whether

the SEC investigates the restatement, whether the restatement is related to fraud, whether the restatement is related to revenue, whether the restatement is related to lease, the number of days from the end date of restatement to the announcement, whether the restatement is disclosed through 10-K or 10-Q, firm size, the market-to-book ratio, earnings volatility, cash flow from operations, unexpected earnings, leverage, lagged returns on assets and sales growth in percentage (Palmrose *et al.*, 2004; Files *et al.*, 2009; Badertscher *et al.*, 2011; Gordon *et al.*, 2013; Myers *et al.*, 2013):

$$CAR = \beta_1 EDMW + \beta_2 RESADVERSE + \beta_3 SEC + \beta_4 FRAUD + \beta_5 REVENUE$$

$$+ B_6 LEASE + \beta_7 DISCLAG + \beta_8 PERIODIC + \beta_9 SIZE + \beta_{10} MBRATIO$$

$$+ \beta_{11} STDEPS + \beta_{12} CFO + \beta_{13} UE + \beta_{14} LEV + \beta_{15} LAGROA$$

$$+ \beta_{16} SGROWTH + \text{Industries}. \tag{1}$$

The variables are defined as follows: *RESADVERSE* is an indicator variable that equals 1 if the restatement has a reducing impact on net income, and zero otherwise; *SEC* is an indicator variable that equals 1 if the SEC investigates the restatement, and zero otherwise; *FRAUD* is an indicator variable that equals 1 if the restatement is related to fraud, and zero otherwise; *REVENUE* is an indicator variable that equals 1 if the restatement is related to revenue, and zero otherwise; *LEASE* is an indicator variable that equals 1 if the restatement is related to lease, and zero otherwise; *DISCLAG* is the natural logarithm of the number of days from the end date of restatement to the announcement; *PERIODIC* is an indicator variable that equals 1 if the restatement is disclosed through 10-K or 10-Q, and zero otherwise; *SIZE* is the natural logarithm of lagged total assets; *MBRATIO* is the market-to-book ratio; *STDEPS* is earnings volatility, as measured by standard deviation of earnings per share; *CFO* is cash flow from operations, deflated by lagged market value; *UE* is unexpected earnings, as measured by current earnings per share minus lagged earnings per share divided by lagged closing price; *LEV* is leverage, measured by total debts to total assets; *LAGROA* is lagged returns on assets; and *SGROWTH* is sales growth in percentage[5].

The coefficients of *RESADVERSE*, *SEC*, *FRAUD* and *REVENUE* are expected to be negative, because cumulative abnormal returns tend to be more negative when restatements are more severe (Palmrose *et al.*, 2004; Files *et al.*, 2009; Badertscher *et al.*, 2011; Gordon *et al.*, 2013; Myers *et al.*, 2013). We expect positive signs on *DISLAG* and *PERIODIC*, as prior studies suggest that the market reacts more positively to restatements with longer periods and restatements announced in periodic SEC filings (Gordon *et al.*, 2013; Myers *et al.*, 2013). We also expect positive signs on *SIZE*, *MBRATIO*, *CFO*, *UE* and *LEV* (Badertscher *et al.*, 2011; Myers *et al.*, 2013).

4. Empirical findings
4.1 Sample selection
We obtain data of restatements and internal control weakness under SOX 404 from audit analytics. We obtain financial data from Compusat and stock returns data from CRSP. Panel A of Table I represents the sample selection process. The initial sample includes 8,191 restatements from 2004 to 2014. Restricting internal control reports filed during the misstated period excludes 7,283 restatements. We remove 32 observations with missing data in audit analytics. After excluding 93 observations with unavailable financials from Compustat and 146 observations with missing stock returns from CRSP, our final sample comprises of 637 observations.

4.2 Descriptive statistics

Panel A of Table II shows that CARs, firm size, unexpected earnings and lagged ROA are left-skewed, but other independent variables are right-skewed. The sample includes 52 firms with early disclosure of internal control weaknesses and 585 firms without early disclosure ($\chi^2 = 446$). Most restatements in the sample do have a negative impact on net income (79 percent), are not investigated by SEC (91 percent), but are not related to fraud (98 percent), revenue (86 percent) or lease (95 percent). Most restatements of the sample are not disclosed through periodic reports, 10-K or 10-Q (66 percent). Data are winsorized at the top and the bottom at 5 percent.

Panel B of Table II reports descriptive statistics for the two groups of restatements with and without early disclosure of internal control weaknesses. CARs using either equally- or value-weighted returns for restatement with early disclosure of material weakness is significantly lower than those of restatements without early disclosure. The number of days to announce the restatements from the end date of misstatements is not significantly different. Firms with early disclosure of material weakness tend to be smaller, have lower cash flows from operations, and have lower lagged return on assets. Only 4 percent of restatements with early disclosure of internal control weaknesses are lease-related, compared to 5 percent of restatements without early disclosure.

Table III presents the Pearson and Spearman correlation coefficients for the variables used in the regression analysis. The variable of interest, *EDMW*, is negatively correlated with CARs, indicating that the market reaction to restatements with early disclosure of internal control weaknesses is more negative than its reaction to restatements without such disclosure. The variable, *EDMW,* is also negatively correlated with firm size and cash flows from operations.

4.3 Regression analysis

The regression result in Table IV shows that CARs of restatements with disclosure of internal control weaknesses before restatement announcements are more negative than those of restatements without early disclosure. The result indicates that investors penalize restatements resulting from ineffective internal control of which managers are aware more than they penalize restatements resulting from internal control weaknesses of which managers are not possibly aware. That is, timely disclosures of material weaknesses do not provide the benefit of lowering the information asymmetry between firms and the market, which is not line with the disclosure literature. Rather, restatements with early disclosure of material weaknesses provide more persuasive evidence of weaknesses in internal control, consistent with He *et al.* (2014). This finding is also in line with existing evidence that timely disclosures of internal control weaknesses do not lead to significantly worse differences in penalties for restatements (Hogan *et al.*, 2013; Rice *et al.*, 2015). This finding explains the phenomenon of firms not disclosing their weakness in internal control over financial reporting until weak internal control system actually generates a restatement.

The control variables indicate that the market reacts more negatively to restatements that lower net income, and those related to fraud and revenue. However, restatements disclosed

Selection criteria	No. of observations
Initial sample with restatements from 2004 and 2014	8,191
Internal control reports not filed during misstated period	(7,283)
Test-related restatements unavailable from audit analytics	(32)
Restatements with unavailable financials from compustat	(93)
Restatements with unavailable stock returns from CRSP	(146)
Final sample	637

Table I.
Sample selection

Panel A: descriptive statistics for the full sample (n = 637)

Variable	Mean	Q25	Median	Q75	SD
CAR	-0.015	-0.041	-0.009	0.016	0.051
Disclosure Lag	182	120	135	202	135
DISCLAG	5.006	4.787	4.905	5.308	0.590
SIZE	6.938	5.684	6.921	8.142	1.654
MBRATIO	2.459	1.100	1.760	3.100	2.083
STDEPS	1.174	0.377	0.706	1.391	1.250
CFO	0.087	0.030	0.078	0.146	0.122
UE	-0.006	-0.036	0.000	0.026	0.127
LEV	0.229	0.033	0.188	0.350	0.212
LAGROA	0.009	-0.005	0.023	0.064	0.098
SGROWTH	0.089	-0.032	0.068	0.188	0.197

EDMW 52(8%) restatements with previous disclosure of MW vs 585(92%) without disclosure ($\chi^2 = 446$)

RESADVERSE 502(79%) restatements with negative impact on net income vs 135(21%) without negative impact ($\chi^2 = 211$)

SEC 56(9%) restatements investigated by SEC vs 581(91%) not investigated by SEC ($\chi^2 = 433$)

FRAUD 15(2%) restatements related to fraud vs 622(98%) not related to fraud ($\chi^2 = 578$)

REVENUE 92(14%) restatements related to revenue vs 545(86%) not related to revenue ($\chi^2 = 322$)

LEASE 30(5%) restatements related to lease vs 607(95%) not related to lease ($\chi^2 = 523$)

PERIODIC 216(34%) restatements disclosed through 10-K or 10-Q vs 421 (66%) not disclosed through 10-K or 10-Q ($\chi^2 = 66$)

Panel B: descriptive statistics for restatements with early disclosure and without early disclosure of material weakness

Variable	EDMW = 0 (n = 585)					EDMW = 1 (n = 52)					t-tests	Wilcoxon tests
	Mean	Q25	Median	Q75	SD	Mean	Q25	Median	Q75	SD	t-statistic (p-value)	z-value (p-value)
CAR	-0.013	-0.037	-0.007	0.016	0.050	-0.035	-0.087	-0.043	0.017	0.063	2.97 (< 0.01)***	-2.64 (< 0.01)***
Disclosure Lag	184	121	135	206	137	162	96	134	191	107	1.11 (0.27)	-0.87 (0.38)
DISCLAG	5.016	4.796	4.905	5.328	0.584	4.889	4.563	4.894	5.249	0.653	1.49 (0.14)	-0.89 (0.37)
SIZE	7.026	5.753	7.105	8.204	1.648	5.957	4.932	5.790	6.784	1.392	4.53 (< 0.01)***	-4.56 (< .01)***
MBRATIO	2.443	1.096	1.729	3.016	2.107	2.630	1.271	2.352	3.581	1.807	-0.62 (0.54)	1.55 (0.12)
STDEPS	1.167	0.380	0.708	1.382	1.236	1.250	0.313	0.585	1.622	1.406	-0.46 (0.65)	-0.40 (0.69)
CFO	0.092	0.036	0.082	0.151	0.121	0.040	-0.017	0.032	0.099	0.128	2.93 (< 0.01)***	-3.56 (< 0.01)***
UE	-0.005	-0.033	0.000	0.027	0.126	-0.022	-0.062	-0.005	0.016	0.139	0.95 (0.34)	-1.16 (0.25)
LEV	0.224	0.046	0.194	0.355	0.211	0.175	0.000	0.056	0.314	0.220	1.91 (0.06)*	-2.54 (0.01)**
LAGROA	0.011	-0.002	0.024	0.066	0.097	-0.014	-0.049	0.018	0.044	0.101	1.75 (0.08)*	-1.80 (0.07)*
SGROWTH	0.091	-0.027	0.070	0.186	0.195	0.061	-0.122	0.052	0.208	0.218	1.05 (0.30)	-1.03 (0.30)

(continued)

Table II.
Descriptive statistics

Table II.

RESADVERSE	458(78%) restatements with negative impact on net income vs 127(22%) without negative impact on net income ($\chi^2 = 187$)	44(85%) restatements with negative impact on net income vs 8(15%) without negative impact on net income ($\chi^2 = 25$)
SEC	53(9%) restatements investigated by SEC vs 532 (91%) not investigated by SEC ($\chi^2 = 392$)	3(6%) restatements investigated by SEC vs 49 (94%) not investigated by SEC ($\chi^2 = 41$)
FRAUD	14(2%) restatements related to fraud vs 571 (98%) not fraud-related ($\chi^2 = 530$)	1(2%) restatements related to fraud vs 51(98%) not related to fraud ($\chi^2 = 48$)
REVENUE	86 (15%) restatements related to revenue vs 499 (85%) not revenue-related ($\chi^2 = 292$)	6 (12%) restatements related to revenue vs 46 (88%) not revenue-related ($\chi^2 = 31$)
LEASE	28(5%) restatements related to lease vs 557 (95%) not lease-related ($\chi^2 = 478$)	2(4%) restatements related to lease vs 50 (96%) not lease-related ($\chi^2 = 44$)
PERIODIC	206(35%) restatements disclosed though 10-K or 10-Q vs 379 (65%) not disclosed through 10-K or 10-Q ($\chi^2 = 51$)	10(19%) restatements disclosed though 10-K or 10-Q vs 42 (81%) not disclosed through 10-K or 10-Q ($\chi^2 = 20$)

Notes: Variable definitions are provided in Table AI. *, **, ***Significant at the 10, 5 and 1 percent levels, respectively

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
(1) CAR		-0.12	-0.12	-0.07	-0.21	-0.18	-0.01	0.13	0.19	0.12	0.04	0.05	0.13	0.01	0.06	0.07	-0.03
(2) EDMW	-0.10		0.04	-0.03	-0.01	-0.02	-0.01	-0.06	-0.09	-0.18	0.02	0.02	-0.12	-0.04	-0.08	-0.07	-0.04
(3) RESADVERSE	-0.11	0.04		0.01	0.06	0.07	-0.05	-0.06	-0.09	0.03	0.02	0.03	-0.02	0.06	-0.01	0.06	0.02
(4) SEC	-0.08	-0.03	0.01		0.10	0.07	0.06	-0.13	-0.22	-0.11	0.01	-0.06	-0.05	-0.00	0.03	-0.02	0.08
(5) FRAUD	-0.18	-0.01	0.06	0.10		0.11	0.06	-0.08	-0.11	0.01	-0.01	-0.01	0.01	-0.00	-0.02	0.06	0.01
(6) REVENUE	-0.16	-0.02	0.07	0.08	0.06		0.10	-0.01	-0.11	-0.04	-0.01	-0.05	-0.06	-0.01	-0.03	0.01	-0.05
(7) LEASE	-0.03	-0.01	-0.05	0.06	-0.10	0.10		-0.06	-0.10	0.04	-0.03	-0.06	0.01	0.06	0.04	-0.01	-0.06
(8) DISCLAG	0.13	-0.03	-0.08	-0.14	-0.10	-0.02	-0.03		0.28	0.09	-0.09	0.02	0.07	-0.05	0.01	0.00	-0.12
(9) PERIODIC	0.19	-0.09	-0.09	-0.22	-0.11	-0.12	-0.10	0.30		0.12	-0.02	0.06	0.05	0.01	0.02	0.06	-0.05
(10) SIZE	0.11	-0.18	0.03	-0.11	0.01	-0.04	0.04	0.05	0.13		-0.17	0.27	0.29	0.02	0.31	0.26	-0.02
(11) MBRATIO	0.00	0.06	0.05	0.03	0.01	0.01	0.01	-0.14	-0.02	-0.12		-0.14	-0.17	0.09	-0.01	-0.04	0.26
(12) STDEPS	0.06	-0.02	0.02	-0.04	0.01	-0.03	-0.04	0.03	0.07	0.32	-0.13		0.11	0.11	0.15	-0.10	-0.06
(13) CFO	0.11	-0.14	-0.02	-0.04	0.00	-0.07	0.02	0.07	0.05	0.32	-0.19	0.16		0.13	0.17	0.23	0.20
(14) UE	0.01	-0.05	0.04	0.03	0.00	0.00	0.06	-0.04	0.04	0.04	0.18	0.10	0.14		-0.03	-0.30	-0.04
(15) LEV	0.08	-0.10	-0.01	0.03	-0.02	-0.02	0.02	0.02	0.02	0.38	-0.12	0.20	0.21	-0.05		-0.05	-0.03
(16) LAGROA	0.05	-0.07	0.07	-0.01	0.06	0.03	-0.03	-0.01	0.05	0.09	0.21	-0.12	0.11	-0.24	-0.13		0.09
(17) SGROWTH	-0.06	-0.04	0.03	0.08	-0.01	-0.04	-0.05	-0.10	-0.05	0.01	0.34	-0.07	-0.02	0.28	-0.05	0.09	

Notes: See Table AI for variable definitions. Pearson correlations are shown above the diagonal and Spearman correlations below the diagonal. Italic figures indicate significance at the 5 percent level

Table III.
Correlations among
variables

| Variable | Expected sign | Dependent variable = CAR | |
		Coef.	(t-statistic)
Intercept	?	0.017	(0.57)
EDMW	?	−0.017	(−2.13)**
RESADVERSE	−	−0.010	(−2.28)**
SEC	−	−0.001	(−0.22)
FRAUD	−	−0.060	(−5.23)***
REVENUE	−	−0.019	(−3.01)***
LEASE	+	0.004	(0.04)
DISCLAG	+	0.006	(1.67)*
PERIODIC	+	0.011	(2.85)***
SIZE	+	0.001	(0.45)
MBRATIO	+	0.002	(2.28)**
STDEPS	?	0.001	(0.60)
CFO	+	0.035	(1.91)*
UE	+	−0.005	(−0.27)
LEV	+	0.002	(0.27)
LAGROA	?	0.027	(1.14)
SGROWTH	?	−0.006	(−0.51)
n		637	
Adjusted R^2		0.144	

Table IV.
Market responses to restatements with early disclosure of material weakness

Notes: Variable definitions are provided in Table AI. Industry indicators are included in all regressions but are not tabulated for the sake of brevity. The t-statistics are based on White heteroscedasticity-consistent standard errors. *,**,***Significant at the 10, 5, and 1 percent levels, respectively

through 10-K or 10-Q tend to receive less negative reaction, which implies that those restatements may get less attention due to information revealed through periodic reports. Additionally, investors are likely to penalize restatements less by firms with higher market-to-book ratio. Although unexpected earnings, UE, have the negative sign, being different from the expected positive sign, the variable is statistically insignificant.

The adjusted R^2 of our regression model is 14.4 percent, which is consistent with other studies in the literature. Badertscher *et al.* (2011) regarding the market reactions to restatements report the adjusted R^2s ranging from 13 to 18 percent. Gordon *et al.* (2013) (that examines the association between discretionary disclosures prior to restatements and the market reaction to restatements) present the adjusted R^2 ranging from 14 to 16 percent. Myers *et al.* (2013) investigate the effect of disclosure venues on the market reactions and report the adjusted R^2 as 10 percent.

4.4 Robustness check

In this study, early disclosure of internal control weaknesses is a choice variable that may be endogenous if the choice is correlated with omitted variables that are also associated with the market reactions to the firm's restatement. We employ a two-stage estimation using the Heckman (1979) model to control for endogeneity. Table V reports the results of the Heckman two-stage estimation. The exclusion of unavailable data for the two-stage estimation reduces the sample size to 525 with 44 restatements with early disclosure of material weakness. The first stage estimation in Panel A shows the larger firms having foreign transactions and losses tend to disclose material weaknesses of internal control before restatements. The number of years since SOX 404 became effective, SOXYEAR, is significantly negative, indicating a decreasing trend of early disclosure of internal control weaknesses. The coefficient on the fitted value of EDMW, FEDMW, is significantly negative at the five percent level, consistent with the main results.

Panel A: 1st stage estimation

		Dependent variable = EDMW	
Variable	Expected sign	Coef.	(χ^2)
Intercept	?	1.416	(1.739)
SIZE	?	−0.166	(4.394)**
FIRMAGE	−	−0.240	(1.762)
NUMBSEG	−	0.160	(3.104)*
RC	+	2.610	(0.153)
FOREIGN	+	0.478	(4.996)**
BIG4	+	−0.305	(2.428)
LOSS	+	0.517	(6.453)**
UE	+	0.371	(0.258)
LEV	+	−0.458	(0.889)
SOXYEAR	−	−0.163	(14.671)***
n		525	
No. of EDMW = 1		44	
Likelihood ratio χ^2		56.7	(< 0.01)

Panel B: 2nd stage estimation

		Dependent variable = CAR	
Variable	Expected sign	Coef.	(*t*-statistic)
Intercept	?	0.034	(0.99)
FEDMW	?	−0.071	(−2.43)**
RESADVERSE	−	−0.010	(−1.97)**
SEC	−	−0.005	(−0.73)
FRAUD	−	−0.068	(−5.12)***
REVENUE	−	−0.023	(−3.12)***
LEASE	?	0.010	(0.93)
DISCLAG	?	0.008	(2.12)**
PERIODIC	?	0.010	(2.03)**
SIZE	?	−0.002	(−0.90)
MBRATIO	?	0.002	(2.52)**
STDEPS	?	0.001	(0.71)
CFO	?	0.029	(1.20)
UE	?	0.008	(0.34)
LEV	?	0.001	(0.13)
LAGROA	?	0.039	(1.61)
SGROWTH	?	−0.003	(−0.23)
n		525	
Adjusted R^2		0.162	

Table V.
Robustness checks
using two-stage
estimation

Notes: Variable definitions are provided in Table AI. Industry indicators are included in all regressions but are not tabulated for the sake of brevity. The *t*-statistics are based on White heteroscedasticity-consistent standard errors. *,**,***Significance at the 10, 5 and 1 percent levels, respectively

To control for the confounding effects from earnings announcements, we run the regression model (1) using a subsample of 321 restatements not confounded by earnings announcements in a (−3, +3) window. In other words, we exclude restatement announcements from three trading day prior to an earnings announcement to three trading day after an earnings announcement to obtain the subsample. The results are consistent with the ones using the full sample (*p*-value = 0.036).

5. Conclusion
This research investigates investor reactions to financial restatements conditional on disclosures of internal control weaknesses under Section 404 of the Sarbanes-Oxley Act.

Previous studies report that timely disclosures of internal control weaknesses lead to no significant difference in penalties for restatements (Hogan *et al.*, 2013; Rice *et al.*, 2015). Consistent with existing evidence in the literature, our finding indicates that market reactions to restatements with early disclosure of internal control weaknesses are worse than those to restatements without previous disclosure. This finding implies that timely disclosure of internal control weaknesses does not provide the benefit of lowering the information asymmetry between firms and the market, which is not line with the disclosure literature. Rather, restatements with early disclosure of internal control weaknesses provide more persuasive evidence of the ineffectiveness of a firm's internal control over financial reporting, in line with He *et al.* (2014). The finding is robust to the two-stage estimation that controls for the endogeneity. Further study on reactions by creditors who have access to private information on firms could extend the implications of our finding.

Notes

1. It is possible that restatements can be made even when a firm has the effective internal controls over financial reporting. In this research, we assume that the restatement of previously reported financial statements implies the presence of a material weakness in internal control systems.

2. In their regression model, Myers *et al.* (2013) include an indicator variable for restatements announcemened within +/− 1 year of the first fiscal year identified in a disclosure of material weaknesses in internal controls. By including the variable, they control for the confounding effects of information available through internal control reporting. We are interested in the information released before restatements and in comparing market reactions to restatements that reported internal control weaknesses before restatements with the ones that fail to do so. According to our research question, the variable of our interest is an indicator variable that equals 1 if a firm disclosed a material weakness of its internal controls during the misstatement period, and 0 otherwise. This measurement is consistent with the one used in Rice *et al.* (2015).

3. The recent studies such as Ashbaugh-Skaife *et al.* (2009) report the significant association between internal control weaknesses and the cost of equity capital, although the earlier studies including Ogneva *et al.* (2007) and Beneish *et al.* (2008) do not find such an association.

4. The study does not control for disclosures/non-disclosures of effective internal control systems. Since they examine bank loan contracts where lenders have private access to information, disclosures/non-disclosures of internal control weaknesses might not be meaningful to them.

5. The test results using CARs using value-weighted stock returns are consistent with the ones using equally weighted returns.

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Appendix

BIG4	=	An indicator variable that equals 1 if the firm is audited by a Big Four auditor, and 0 otherwise
CFO	=	Cash flows from operations, deflated by lagged market value
DISCLAG	=	The natural logarithm of the number of days from the end date of restatement to the announcement
CAR	=	Cumulative abnormal returns adjusted for equally weighted returns in a three-day window (−1, 1) around the restatement announcement
FEDMW	=	Fitted value of EDMW obtained from the first stage estimation of Heckman model
FIRMAGE	=	The natural logarithm of firm age
FOREIGN	=	An indicator variable that equals 1 if the firm has a non-missing income from foreign transactions, and 0 otherwise
FRAUD	=	An indicator variable that equals 1 if the restatement is related to fraud, and 0 otherwise
LAGROA	=	Lagged returns on assets
LEASE	=	An indicator variable that equals 1 if the restatement is related to lease, and 0 otherwise
LEV	=	The ratio of debts to total assets
LOSS	=	An indicator variable that equals 1 if the income before extraordinary items is less than zero, and 0 otherwise
MBRATIO	=	The ratio of market-to-book value
EDMW	=	An indicator variable that equals 1 if a firm disclosed a material weakness of its internal control during the misstatement period, and 0 otherwise
NUMBSEG	=	The natural logarithm of the number of business segments
NWEAK	=	The natural logarithm of the number of material weakness reported in internal control disclosure plus one
PERIODIC	=	An indicator variable that equals 1 if the restatement is disclosed through 10-K or 10-Q, and 0 otherwise
RC	=	The aggregate restructuring charges in current and last year, deflated by lagged market value
RESADVERSE	=	An indicator variable that equals 1 if the restatement has the reducing impact on net income, and 0 otherwise
REVENUE	=	An indicator variable that equals 1 if the restatement is related to revenue, and 0 otherwise
SEC	=	An indicator variable that equals 1 if the SEC is involved in the restatement, and 0 otherwise
SGROWTH	=	Sales growth percentage
SIZE	=	The natural logarithm of lagged total assets
SOXYEAR	=	Coded one for fiscal year-ends from November 2004 to October 2005, two for fiscal year-ends from November 2005 to October 2006, and so on
STDEPS	=	Standard deviation of earnings per share over last five years
UE	=	Unexpected earnings, deflated by lagged share price

Table AI.
Variable definitions

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