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# Industry contagion effects of internal control material weakness disclosures

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### ABSTRACT

This study examines whether there is an industry contagion effect for negative market reactions to internal control material weakness (ICMW) disclosures. From a sample of companies experiencing market share price declines to disclosures of ICMW over the years 2005–2014, results indicate that peer industry companies also experience market share price declines. We also find that the decline in share prices is related to accounting quality in that peer industry companies with higher accrual, relative to cash flow, components of earnings have larger negative market reaction compared to companies with lower accrual components of earnings. Our study contributes to the literature streams examining accounting information transfer and internal control quality.

Data availability: Data are publicly available from sources identified in the paper.

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*“There has never been more pressure on finance leaders to ensure integrity in internal auditing and controls. Boards of directors want assurance that official financial statements are squeaky clean, with every piece of data in tables and in footnotes double-checked. There’s zero tolerance for such funny business, as a business unit booking revenue in one quarter while pushing related costs to the next.” CFO.com, April 19, 2016.*

## 1. Introduction

Following accounting scandals including Enron in 2001 and Worldcom in 2002, the Sarbanes-Oxley Act of 2002 (SOX) was enacted to restore investor confidence by improving the integrity of reported financial information. Section 404 of SOX specifically addresses internal controls and requires the reporting of internal control material weaknesses (ICMW). Given the higher visibility and accountability related to internal controls, it is important to understand both factors associated with ICMW and costs associated with reporting ICMW. Post-SOX studies provide evidence that ICMW companies are more likely to be complex, small, financially weak, high growth, and to have undergone a restructuring (Ashbaugh-Skaife, Collins, & Kinney, 2007; Doyle, Ge, & McVay, 2007). Prior research finds ICMW impose costs on companies including negative market reaction (Hammersley, Myers, & Shakespeare, 2008), increased cost of capital (Ashbaugh-Skaife et al.,

2007), shareholder dissatisfaction (Ye & Krishnan, 2007) and subsequent turnover of members of boards of directors, audit committees, and top management (Johnstone, Li, & Rupley, 2011).

This study examines whether there is an industry contagion effect for negative market reactions to internal control material weakness (ICMW) disclosures. Industry information contagion effects have been documented in numerous areas including restatements (Gleason, Jenkins, & Johnson, 2008), stock price declines (Akhigbe, Madura, & Martin, 2015), earnings management (Kedia, Koh, & Rajgopal, 2015) merger withdrawal announcements (Madura & Ngo, 2012), earnings announcements (Freeman & Tse, 1992, Ramnath, 2002), and bankruptcy filings (Ferris et al., 1997). In this study, we specifically examine whether announcement market share price declines for ICMW firms impact market share prices for companies in the same industry. From a sample of companies disclosing ICMW accompanied by announcement share price declines in the years 2005 to 2014, we empirically examine whether peer industry firms experience share price declines and whether peer industry firm abnormal returns are associated with cross-sectional differences. Consistent with our expectations, results indicate that peer industry companies also experience negative investor sentiment. Further analysis indicates the declines in share prices are related to accounting quality as peer industry companies with higher accrual components of earnings have larger negative market reaction compared to companies with lower accrual components of earnings.

When we consider the peer industry firm contagion effects over time, results indicate that the effects are time invariant and do not change across different time subsamples: the peer industry firm abnormal returns for 2007–2014 are similar to those experienced in 2005–2006. For companies with an ICMW, the probability of a peer industry

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firm experiencing an ICMW within three years is negatively associated with the size of the peer industry abnormal return. That is, peer industry firms are more likely to report an ICMW within 3 years when the initial market reaction to the ICMW of another firm is more negative. This suggests that there is industry learning that takes place over time and that peer industry firms are impacted by the initial market reaction.

Our paper contributes to literature in the following ways. First, there are no studies to our knowledge documenting industry contagion effects related to ICMW. We further the industry information transfer research stream by examining industry effects in a new context – as related to internal controls. Second, we further the internal control research stream by examining another cost, the impacts to peer industry firms, imposed by the reporting of ICMWs. Third, our study provides policy makers new empirical evidence that investors use ICMW disclosures to evaluate peer industry firms. This is important as it could have implications for policy makers, including Congress, the Public Company Accounting Oversight Board (PCAOB), and industry regulators, in determining what types of information should be included in internal control disclosures.

The remainder of the paper is organized as follows. [Section 2](#) discusses institutional background, prior research and develops the hypotheses. [Section 3](#) discusses the sample and methods. [Section 4](#) provides a discussion of results and the final section describes conclusions and limitations.

## 2. Institutional background, prior research and hypotheses development

### 2.1. Institutional background

The SEC adopted SOX Section 404, “Management Assessment of Internal Controls” on June 5, 2003 (SEC, 2003). SOX Section 404, effective for accelerated publicly traded firms with fiscal year-ends subsequent to November 15, 2004, requires an annual management report on internal controls over financial reporting to be filed with the SEC 10-K annual report. This report must be accompanied by an auditor attestation report by the accounting firm that audited the company’s financial statements. The auditor attestation report includes both the auditor’s opinion on management’s assessment of internal controls over financial reporting and the auditor’s opinion on the effectiveness of the company’s internal control over financial reporting. Additionally, SOX Section 302 requires SEC registrants to disclose management’s conclusions regarding the effectiveness of firm disclosure controls and procedures and corrective actions taken to address identified material weaknesses and significant deficiencies in quarterly and annual certifications. Prior to SOX, the only required public disclosures of internal control deficiencies occurred in SEC Form 8-K change of auditor disclosures (SEC, 1988).

As with any new audit standard or reporting regulation, how the standard or regulation is implemented and interpreted will be critical. Firms within the same industry likely utilize similar accounting practices – for example, in terms of how they account for certain accruals or how they account for sparsely traded security “mark to market” transactions (e.g. Enron). While Audit Standard 5 (PCAOB, 2007) and SOX Section 404 provides guidelines for internal control testing and reporting, how it is executed may vary across different industries. Further, there may be a learning process – by firms and by their auditors – about how to implement the new standards and regulations over time. Many industries have their own industry audit guides and accounting specific guidance in the FASB codification that may also help to explain some industry differences. Understanding relationships within industries and over time should shed light on the economic effects of any consequences of ICMW reporting. To support this notion of learning, Francis and Michas (2013) examine the effect of low-quality audits from the perspective of audit firms by studying the likelihood that the same audit firm produces other low-quality audits.

They find evidence of such a contagion effect in that a low-quality audit in an office is associated with the same office producing other low-quality audits. However, this effect depends on the size of the audit firm office, and this contagion effect can disappear if the audit occurs in an industry in which the office is the industry leader. Thus, it appears intra-industry learning does take place within audit firm offices.

### 2.2. ICMW prior research

Prior internal control research focuses on firm factors associated with the existence and remediation of an ICMW and subsequent costs following the disclosure of an ICMW. Doyle et al. (2007) find that compared to non-ICMW firms, firms reporting ICMW are smaller, younger, more complex (with a greater number of segments), financially weak, have higher growth and more likely to have undergone a restructuring. Ashbaugh-Skaife et al. (2007) find ICMW firms have more complex operations and are more likely to have: 1) undergone a recent organization structure change, and 2) had a recent auditor resignation. Chen, Eshleman, and Soileau (2016) find firms with greater numbers of females represented on the board of directors are less likely to have ICMW. Lenard, Petrusk, Alam, and Yu (2016) find that ICMW firms have higher levels of real activity manipulation by altering operations to get higher short-term income and cash flow at the expense of future income.

Johnstone et al. (2011) examine characteristics associated with companies remediating ICMW revealing that improvements in audits committee influence, competence and incentives are associated with ICMW remediation. Li, Sun, and Ettredge (2010) find that improvements in CFO accounting and work experience are associated with ICMW remediation. He and Thornton (2013) study the relationship between ICMW disclosure and perceived earnings quality and find that there is no effect on investors’ perception of earnings quality upon the initial disclosure and that the perception improves when the ICMW firm remediates their previously disclosed ICMWs.

Findings in prior literature on costs imposed on companies from ICMW disclosures include decreased stock price (De Franco, Guan, & Lu, 2005; Gupta & Nayar, 2007; Hammersley et al., 2008), increased cost of equity (Ashbaugh-Skaife, Collins, Kinney, & LaFond, 2009), subsequent turnover of members of boards of directors, audit committees and top management (Johnstone et al., 2011), higher audit fees (Raghunandan & Rama, 2006), auditor realignments (Ettredge, Heintz, Li, & Scholz, 2011) and shareholder dissatisfaction (Ye & Krishnan, 2007). Hoitash, Hoitash, and Johnstone (2012) study CFO compensation and find that, generally, ICMW disclosure leads to decreased CFO compensation. Their results indicate that the association between ICMW disclosure and CFO compensation is most pronounced at firms with strong corporate governance and at firms with greater expected costs of misreporting (such as those with a greater analyst following or those in more litigious industries). Feng, Li, and McVay (2009) provide evidence that firms that disclosing ICMWs also provide less accurate financial statement guidance and these inaccuracies are largest when the ICMW is related to revenues or costs of goods sold. Brown and Lim (2012) find a weaker relationship between earnings and executive compensation for ICMW companies as compared to non-ICMW companies. Taken together, these studies indicate that market participants view disclosures of ICMW negatively and constantly incorporate ICMW disclosure information into their analyses of other firm attributes.

### 2.3. Industry information transfer prior research

Considerable research has studied industry contagion effects in a wide variety of situations. Studying more than 2000 restatements from 1997 to 2008, Kedia et al. (2015) find that firms are more likely to begin managing earnings after a rival firm within their industry publicly announces a restatement; however, this effect disappears if the

restating firm faces explicit discipline from the SEC or through a lawsuit. Importantly, the contagion effect also disappears during 2003–2005, the first three years after SOX was introduced, further showing that enforcement and discipline can change the actions of rival firms. Akhigbe et al. (2015) use an option-pricing model to study the industry contagion effect of firms in relation to a rival firm's stock price decline. They find that there is such a negative contagion effect and it is most significant for those rival firms with the highest likelihood of default. Further, the negative impact was pronounced during 2007–2008, revealing that the intra-industry relationships are impacted by underlying macroeconomic dynamics. Madura and Ngo (2012) specifically study intra-industry effects upon announcement of a merger withdrawal. When a rival firm has a takeover offer withdrawn, rival firms within the industry lose about 35% of any stock price appreciation relative to when the takeover was announcement. They attribute the lost valuation both to the lower likelihood of a rival firm becoming a takeover target and to weaker industry dynamics that may have led to the takeover withdrawal. Gleason et al. (2008) document accounting information transfers for restatement firms. For restating firms that experience price declines around the restatement announcement date, they find that peer industry firms also exhibit negative announcement period abnormal returns surrounding the announcement period. In this study, we follow Gleason et al.'s (2008) methodology in the examination of peer contagion abnormal returns related to the reporting of an unfavorable event. We specifically examine the unfavorable event of disclosing an ICMW.

Other information transfers have been documented in prior literature related to analyst stock revisions (Akhigbe, Madura, & Newman, 2006), bank failures (Aharony & Swary, 1983), bank loan-loss reserve announcements (Docking, Hirschev, & Jones, 1997), bankruptcy filings (Lang & Stulz, 1992), corporate security offerings (Szewczyk, 1992), dividend changes (Firth, 1996, Laux, Starks, & Yoon, 1998), earnings announcements (Freeman & Tse, 1992, Ramnath, 2002), going private transactions (Slovin, Sushka, & Bendeck, 1991), management forecasts (Han, Wild, & Ramesh, 1989), sales announcement (Olsen & Dietrich, 1985), and share repurchases (Hertzel, 1991). See Table 1 for a summary of the findings included in these industry contagion studies.

#### 2.4. Hypotheses development

Firms in the same industry likely share the same business practices and encounter similar issues as related to internal controls. Thus, it is plausible that investors would incorporate ICMW disclosures at one firm into their assessment of a peer industry firm. Given prior findings that the market reacts negatively to reports of ICMW (De Franco et al., 2005; Gupta & Nayar, 2007; Hammersley et al., 2008), we further examine whether there are industry effects when ICMW companies experience negative market reaction in the ICMW announcement period. Specifically, we examine stock price behavior for peer industry firms around the ICMW announcement date to assess whether peer industry firms also exhibit a negative abnormal return. This leads to our first hypothesis:

**H1.** *During the announcement period when ICMW firms have market share price declines, peer industry firms also have market share price declines.*

Prior studies find the accrual, relative to the cash flow, component, of current earnings are associated with accounting quality (Dechow, Sloan, & Sweeney, 1996, Richardson, Tuna, & Wu, 2003). Dechow et al. (1996) find firms with higher accrual components of earnings are more likely to be subject to Securities Exchange Commission (SEC) enforcement actions and Richardson et al. (2003) document that information in accruals, specifically the operating and investing components of earnings are predictors of earnings restatements. We examine the accrual component of earnings to assess whether the ICMW industry

contagion effect is associated with cross-sectional differences between the peer firms. It is likely that investors would be more likely to incorporate negative industry information (i.e. disclosure of an ICMW) into their perceptions and pricing of peer firm shares when that peer firm has poor accounting quality. This leads to our second hypothesis:

**H2.** *ICMW peer industry firm market share price declines are negatively associated with the accrual component of earnings.*

### 3. Sample and methods

#### 3.1. Sample

The sample of ICMW events includes 899 ICMW firm-years from publicly traded companies disclosing an ICMW between the years 2005 and 2014 with data available in Audit Analytics, CRSP, and Compustat.<sup>1</sup> If a firm discloses an ICMW prior to the 10-K filing (i.e. in a quarterly 10-Q or auditor change 8-K filing), we use the earliest reporting date to measure investor reaction. Consistent with the Gleason et al. (2008) restatement industry contagion paper, we only keep ICMW events that have cumulative abnormal returns (CAR) for the three-day window (day  $-1$  to day  $+1$ ) surrounding the ICMW announcement less than  $-1.0\%$  to focus on events that convey unfavorable information about the reporting of an ICMW. We further require that each firm with an ICMW reporting event has at least five industry peer firms.

The industry peer firms include 49,092 firm-year observations with the same eight-digit Global Industry Classification Standard (GICS) code as the corresponding ICMW firm. We require that (1) the peer firm has not announced an ICMW within the preceding 24 months; and (2) the peer firm's stock price in the trading day before announcement date is at least \$5.<sup>2</sup> See Table 2 for sample selection detail and ICMW and industry peer firms by year.

We separately examine CAR for ICMW firm-years and peer firm-years by the nature of the ICMW disclosed including revenue-related (244 firms), expense-related (80 firms), acquisition-related (71 firms) and general-type (547 firms).

#### 3.2. Hypothesis 1: peer industry negative investor sentiment

We examine stock price behavior for peer industry firms around the ICMW announcement date to assess whether peer industry firms also exhibit a negative CAR. The CAR is calculated as the daily return on a firm minus the concurrent equally-weighted market return for firms in the same market capitalization decile. The CAR for firms over  $(t_1, t_2)$  around the reporting date (date 0) is measured as  $CAR_{-t_1+t_2}^i = \sum_{t=-t_1}^{+t_2} AR_{it}$ . The market capitalization decile is based on all NYSE, AMEX, and NASDAQ listed firms from CRSP. p-Values test whether CARs are significantly different from zero. We further examine the CAR by type of ICMW disclosed, specifically revenue-related, expense-related, acquisition-related, and general-type ICMW. General-type ICMW include firm level ICMWs that may have more pervasive effects on a firm's control structure. We examine general-type ICMW because prior research finds evidence that general ICMWs are less likely to be remediated (Johnstone et al., 2011) and relate to specific ICMWs, have more pervasive effects on financial reporting (Doyle et al., 2007; Ettredge, Li, & Sun, 2006; Ettredge et al., 2011).

<sup>1</sup> Due to the availability of internal control data in Audit Analytics, our internal control test sample starts from 2004 ICMW disclosures which are announced in 2005.

<sup>2</sup> In their industry contagion paper regarding announcement CAR for restatement firms, Gleason et al. (2008) also exclude industry peers with stock prices less than \$5 to mitigate adding noise related to trading liquidity problems to the analysis.

**Table 1**  
Prior literature on industry contagion effect.

Event/authors	Sample period	Findings
<i>Restatements</i> Gleason et al. (2008)	1990–2002	For restating firms experiencing significant share price declines around the restatement announcement, their non-restating industry peers also suffer share price declines. These price declines are more pronounced for peer firms with high (than low) accruals, indicative of investors' concerns over accounting quality at these firms.
<i>Earnings management</i> Kedia et al. (2015)	1997–2008	Firms are more likely to begin managing earnings after a peer firm (in their industry or neighborhood) announces a restatement. Such contagion disappears if the restating firm faces the SEC enforcement or class action lawsuits, as well as during the three years immediately following SOX (2003–2005), suggesting that peer firms' behaviors may change in response to discipline.
<i>Merger withdrawal announcements</i> Madura and Ngo (2012)	1980–2005	When a firm announces a merger withdrawal, rival firms in the same industry lose approximately 35% of the original stock price appreciation at the time of the merger announcement. This negative industry contagion may be attributed to either a low likelihood of rival firms becoming a takeover target or to weak industry prospects.
<i>Corporate security offerings</i> Szewczyk (1992)	1970–1983	When a firm announces public offerings of common stock, convertible debt, and straight debt, non-issuing industry peers experience negative announcement abnormal returns. Such a negative industry effect suggests that share prices incorporate unfavorable information regarding the general prospects of the industry.
<i>Stock price declines</i> Akhigbe et al. (2015)	1998–2011	Significant stock price declines induce negative valuation effects for industry rivals. Results from an option pricing model show that this negative contagion effect is more pronounced for rival firms with the highest likelihood of default. However, such pronounced effect disappears during the 2007–2008 financial crisis period, suggesting that intra-industry relationships are influenced by underlying macroeconomic factors.
<i>Earnings announcements</i> Freeman and Tse (1992)	1979–1988	Non-announcing rival firms experience significant price reactions at the time of peers' earnings announcement. On average, the intra-industry information transfer is positive and most pronounced for industries with the greatest earnings co-movement.
Ramnath (2002)	1995–1997	Reactions of investors and analysts of non-announcing firms to the earnings report of the first announcers in the industry indicate contagion effects. Specifically, the error in the earnings report of the first announcer is useful in updating the earnings forecast for subsequent announcers. However, both investors and analysts appear to underreact to the earnings news of the first announcers.
<i>Sales announcements</i> Olsen and Dietrich (1985)	1972–1982	For retailers experiencing a significant stock price change at the monthly sales announcements, suppliers also exhibit a pronounced stock price change. This information transfer from retailer to supplier is stronger if the supplier has a larger proportion of sales to the announcing retailer.



<i>Management forecasts</i> Han et al. (1989)	1979–1982	A positive relation is uncovered between the information contained in management earnings forecasts and the market-adjusted abnormal returns of non-forecast rival firms. However once industry cross-sectional covariation is removed from abnormal returns, the non-forecast firms' return is unrelated to either the forecast firms' return or the forecast information, indicating that industry-wide commonalities (rather than competitive shifts) are a primary component of intra-industry information transfers.
<i>Bank loan-loss reserve announcements</i> Docking et al. (1997)	1985–1990	Significant and negative abnormal returns are found at bank loan-loss reserve announcements for event firms. More interestingly, industry contagion effect occurs in that announcements by regional banks are accompanied by value decreases at both money-center banks and non-announcing regional banks. This evidence indicates a linkage between asset quality of regional and money-center bank loan portfolios.
<i>Bank failures</i> Aharony and Swary (1983)	1973–1976	Analyses using the three largest bank failures in U.S. history suggest no contagion effect if the failure is driven primarily by bank-specific issues, e.g., fraud. However, if the failure is due to problems correlated across banks, then solvent banks also suffer declines in stock prices, indicative of investors' concerns over a common problem shared by the banking industry.
<i>Bankruptcy filings</i> Lang and Stulz (1992)	1970–1989	Upon bankruptcy announcements, a value-weighted portfolio of rival firms in the same industry experiences a significant loss. The negative effect is more pronounced for highly levered industries and industries where the stock returns of the bankrupt firms and their non-bankrupt rivals are highly correlated (contagion effect). However, the effect is positive for highly concentrated industries with low leverage, suggesting that rivals benefit from the difficulties of the bankrupt firm in these industries (competitive effect).
<i>Dividend changes</i> Firth (1996)	1980–1991	Announcements of unexpected dividend increases (decreases) lead to increases (decreases) in abnormal stock returns for rival firms. The dividend contagion effect indicates that dividend changes, in addition to signaling the future cash flows of the announcing firms, also signal the future prospects of rival firms in the same industry.
Laux et al. (1998)	1969–1988	Substantial changes in dividends induce share price changes in rival firms within the same industry. However, cross-sectional differences are observed in that such contagion effect is only pronounced for rivals unlikely to be affected by the competitive shift within the industry. For rival firms subject to the competitive realignment, the effect disappears. The evidence suggests that both contagion and competitive effects may be at work for some rival firms.
<i>Analyst stock revisions</i> Akhigbe et al. (2006)	1997–2002	Upon analyst revision announcements, industry rivals exhibit significant abnormal returns. While on average the stock price reaction suggests contagion effects, there is also evidence of competitive effects. The actual effect is determined by the magnitude of the rated firm's announcement return and analyst-specific and industry-specific characteristics.
<i>Share repurchases</i> Hertzel (1991)	1970–1984	At the announcements of stock repurchases, rival firms in the same industry exhibit insignificant abnormal returns, suggesting that share repurchases primarily convey firm-specific information.
<i>Going private transactions</i> Slovin et al. (1991)	1980–1988	Going-private buyout bids yield positive announcement abnormal returns to industry rivals of the target firm. This contagion effect is negatively related to the capitalized values of industry rivals relative to the target firm.

**Table 2**  
Sample.

Panel A: sample selection		
<i>Sample selection of ICMW firms</i>		
Firms reporting ICMW from Audit Analytics database		3138
Less		
10-K reports with non-remediated ICMW from prior fiscal year(s)	(21)	
CAR (−1, +1) ≥ −0.01	(2178)	
Missing GICS codes	(4)	
Subsequent reports on ICMW for the same firm-fiscal year	(11)	
Missing information to calculate CARs	(4)	
Firms with less than 5 matching firms	(21)	
	899	
<i>Sample selection of industry peer firms</i>		
Firms with same eight digit GICS code as corresponding 899 ICMW firms	49,092	
Panel B: ICMW and peer firms by year		
Announcement	ICMW	Peer
Year	Firms	Firms
2005	184	10,877
2006	127	6361
2007	148	8112
2008	121	5426
2009	67	3951
2010	43	3178
2011	42	3246
2012	55	2955
2013	48	2080
2014	64	2906
Total	899	49,092

### 3.3. Hypothesis 2: ICMW stock price declines association with accruals quality

We follow the Gleason et al. (2008) accounting quality model to test the association of peer industry firm CAR with the accrual, relative to cash, component of current earnings in order to assess whether there are cross-sectional differences in peer firms using the following OLS model:

$$CAR\_PEER = EARN + EP + BM + SIZE + EPS\_Growth + MW\_RET + MW\_SIZE + LEV + \text{fixed year effects} + e. \quad (1)$$

### 3.4. Dependent variable

The dependent variable, CAR\_PEER, is equal to peer industry 3-day abnormal returns (−1,0,1), measured as the size-adjusted CAR for each non-ICMW reporting peer firm cumulated over the three trading days centered on the ICMW reporting date for firms reporting financial ICMW in year t.

### 3.5. Independent variables

#### 3.5.1. Accounting quality

The primary independent variables of interest are the accounting quality measures. Prior studies have found the accrual, relative to the cash, component of earnings to be indicative of accounting quality, with higher accrual components of earnings associated with lower accounting quality (Dechow et al., 1996, Richardson et al., 2003). Gleason et al. (2008) examine accounting quality through the components of earnings in their restatement industry contagion study. They find that peer industry firms with larger accrual components of earnings experience a more negative CAR than peer firms with smaller accrual components of earnings. Following the Gleason et al. (2008) methodology, we further examine whether the accrual relative to the cash component of earnings is associated with negative CAR in the context of ICMW. We include the accounting quality

variables used in the Gleason et al. (2008) paper: EARN, CFO, TACC, OPER\_ACC, and INV\_ACC in our model. EARN is measured as the industry median adjusted income before extraordinary items scaled by average assets (raw EARN) for the same time period. The industry median is the median of all Compustat firms that do not report ICMW in the same GICS group.

In Model 2, we examine the accrual component of current earnings relative to the cash flow component by replacing the EARN variable with CFO and TACC as follows:

$$CAR\_PEER = CFO + TACC + EP + BM + SIZE + EPS\_Growth + MW\_RET + MW\_SIZE + LEV + \text{fixed year effects} + e. \quad (2)$$

In Model 2, CFO is the industry median adjusted cash flow from operations scaled by average assets (raw CFO) for the same time period. TACC is the industry median adjusted total accruals (raw TACC). The total accrual is raw EARN minus the sum of raw CFO plus the cash flow from investing activities scaled by average assets for the same time period.

In Model 3, we decompose the TACC variable into OPER\_ACC and INV\_ACC as follows:

$$CAR\_PEER = CFO + OPER\_ACC + INV\_ACC + EP + BM + SIZE + EPS\_Growth + MW\_RET + MW\_SIZE + LEV + \text{fixed year effects} + e. \quad (3)$$

In Model 3, OPER\_ACC is the industry median adjusted operating accruals (raw OPER\_ACC), defined as raw EARN minus raw CFO. INV\_ACC is the industry median adjusted investing accruals, defined as raw TACC minus raw OPER\_ACC.

#### 3.5.2. Capital market pressure

To control for the impact of capital market pressure on returns, we follow the methodology of Gleason et al. (2008) and include the following capital market pressure variables in the model: EP, BM, SIZE and EPS\_Growth. Earnings pressure, EP, is measured as income from continuing operations divided by equity market value. The equity market value is measured at the end of the fiscal year preceding the reporting date of MW. Book to market value, BM, is the book value of equity divided by equity market value. Because firms with low book to market values and low earnings may be subject to greater market pressures to aggressively produce earnings growth, we predict a positive association between EP and BM and CAR\_PEER. As larger firms may be subject to higher expectations from market participants, we include the variable SIZE, measured as the natural logarithm of equity market value. EPS\_Growth is equal to 1 if the firm reports consecutive increases in year-over-year quarterly EPS for each of the prior four quarters before the reporting date of the ICMW, and zero otherwise. Firms with consistent growth again may be subject to higher market expectations. Thus, we expect a negative association between SIZE and EPS\_Growth and CAR\_PEER.

#### 3.5.3. Control variables

To control for other factors affecting stock price, we include MW\_RET, MW\_SIZE, LEV, BIG4, ICMW\_#, STRING, REVISION, and fixed year effects in the model. MW\_RET is the ICMW firm's three-day CAR. MW\_SIZE is the ICMW firm's CRSP size decile rank at the beginning of the calendar year in which the ICMW was reported. LEV is total debt divided by equity book value at the end of fiscal year preceding the reporting date of the ICMW. BIG4 is equal to one if the peer firm auditor is a Big 4 auditor, and zero otherwise. ICMW\_# is the total number of ICMW a firm reports in a given ICMW announcement. STRING is equal to 1 if the firm reports a small positive EPS forecast error (less than 4 cents per share) in each of the prior four quarters, and 0 otherwise. We calculate EPS forecast error using the 1/B/E/S actual EPS minus the

last available I/B/E/S median EPS forecast.<sup>3</sup> REVISION is the composite change in analysts' median one- and two-year-ahead EPS forecast scaled by share price measured at the fiscal year end before the ICMW disclosure. See Table 3 for variable definitions. Due to the number of firms included in the I/B/E/S databased, the sample is reduced to 17,406 peer firm years for the cross-sectional tests.

## 4. Results

### 4.1. H1 stock price behavior (CAR) of ICMW firms and peer industry firms

Panel A of Table 4 includes the CARs for ICMW firms and their industry peers for the announcement date (Days  $-1, 0$ ), pre-announcement date (Days  $-10, -2$ ), short term post announcement date (Days  $+2, +10$ ), and long term post-announcement date (Days  $+2, +60$ ).

By sample construction, the ICMW include only firms with  $-1\%$  CAR during the announcement date, and we see that the mean ( $-5.71\%$ ) and median ( $-3.57\%$ ) is negative as expected and significantly different from zero. Consistent with our hypothesis 1, the peer firms also exhibit negative market reaction around the announcement with mean ( $-0.18\%$ ) and median ( $-0.21\%$ ) CAR and these are significantly different from zero. Thus, it appears that investors consider that internal control issues could be pervasive to a particular industry and this information is considered in their valuation of peer industry firms. The ICMW firms did not have CAR significantly different from zero for the pre-announcement or long term post-announcement periods. The ICMW firms have median significant negative CAR ( $-0.39\%$ ) for the short-term announcement period. Peer industry firms have positive mean ( $0.28\%$ ) and median ( $0.00\%$ ) CAR in the pre-announcement period that are significantly different from zero. The negative impact of peer industry firms reporting ICMW appears to be more than a temporary effect in that firms exhibit significantly negative CAR in both the short term and long term post-announcement periods (median  $-0.23\%$  and  $-0.12\%$ ) in the short-term and long-term post-announcement periods, respectively.

It is important to understand the economic significance of these negative market reactions. First, since we only consider industries that contain at least five peer firms, these results are unlikely to be spurious or to be driven by outliers. Second, the dollar amounts of these effects are nontrivial. The mean firm in our sample has an equity market value of around \$550 million (median of \$475 million), showing that most of these firms are relatively small. In dollar terms, the ( $-1, +1$ ) negative CAR reactions for the peer industry firms of  $-0.18\%$  (mean) and  $-0.21\%$  (median) equate to an immediate loss of approximately \$1 million in market value for the average firm – all as a result of an industry peer's ICMW announcement. For peer firms at the 75th percentile with a market value around \$1.7 billion, the loss is closer to \$3.5 million. And these are just the short term immediate economic costs; these short term losses likely lead to longer term consequences, such as a higher cost of capital or greater auditor (or regulator) scrutiny. Coates (2007) and Iliev (2010) provide further detail on these economic consequences and how they have are associated with the Sarbanes-Oxley Act.

Panel B of Table 4 reports the 3-day announcement period CAR for ICMW firms and peer industry firms by the nature of the ICMW disclosed. We separately report results for ICMW firms disclosing revenue-related, expense-related, acquisition-related and general-type ICMW, as classified in the Audit Analytics database. The frequency of ICMW by year and type are reported are included in Fig. 1. Given numerous past accounting scandals being linked to improper revenue recognition, improper capitalization of expenses and detection during

**Table 3**  
Variable definitions.

Panel A: accounting quality tests	
<i>Dependent variable</i>	
CAR_PEER	Contagion industry 3-day abnormal stock returns ( $-1, 0, 1$ ) measured as the size-adjusted, cumulative stock return for each non-ICMW reporting peer firm cumulated over the three trading days centered on the ICMW reporting date.
<i>Independent variables:</i>	
<i>Accounting quality</i>	
EARN	Industry median adjusted income before extraordinary items scaled by average assets (raw EARN) for the same time period. The industry median is the median of all Compustat firms that do not report ICMW in the same GICS group.
CFO	Industry median adjusted cash flow from operations scaled by average assets (raw CFO) for the same time period.
TACC	Industry median adjusted total accruals (raw TACC). The total accruals is raw EARN minus the sum of raw CFO plus the cash flow from investing activities scaled by average assets for the same time period.
OPER_ACC	Industry median adjusted operating accruals (raw OPER_ACC), defined as raw EARN minus raw CFO.
INV_ACC	Industry median adjusted investing accruals, defined as raw TACC minus raw OPER_ACC.
<i>Capital market pressure</i>	
EP	Income from continuing operations divided by equity market value. The equity market value is measured at the end of the fiscal year preceding the reporting date of MW.
BM	Book value of equity divided by equity market value.
SIZE	Natural logarithm of equity market value.
EPS_Growth	Equal to 1 if the firm reports consecutive increases in year-over-year quarterly EPS for each of the prior four quarters before the reporting date of MW, and 1 otherwise.
<i>Control variables</i>	
MW_RET	The ICMW firm's three-day CAR.
MW_SIZE	The ICMW firm's CRSP size decile rank at the beginning of the calendar year in which the ICMW was reported.
LEV	Total debt divided by equity book value at the end of fiscal year preceding the reporting date of the ICMW
Big 4	Equal to one if the firm auditor is a Big 4 auditor, and zero otherwise.
ICMW_#	The total number of ICMW a firm reports in a given ICMW announcement.
STRING	Equal to 1 if the firm reports a small positive EPS forecast error (less than 4 cents per share) in each of the prior four quarters, and 0 otherwise. EPS forecast error is calculated using the I/B/E/S actual EPS minus the last available I/B/E/S median EPS forecast.
REVISION	The composite change in analysts' median one- and two-year-ahead EPS forecast scaled by share price, measured at the fiscal year end before the ICMW disclosure.
Panel B: relationship between peer industry CAR and probability of future ICMW reporting	
<i>Dependent variable</i>	
ICMW_PEER	A binary variable equal to 1 if an industry peer firm reports an ICMW in the three years following another peer firm reporting an ICMW and 0 otherwise.
<i>Independent variables</i>	
Contagion return	The primary explanatory variable is the CAR associated with an industry peer firm reporting their own ICMW.
SIZE	Natural logarithm of equity market value.
Firm age	Natural logarithm of the number of years the firm has CRSP data.
Aggregate loss	Equal to 1 if earnings before extraordinary items in years $t$ and $t - 1$ sum to less than zero, and 0 otherwise. The year $t$ is the fiscal year preceding the reporting date of MW.
Segments	Nature logarithm of the number of reported business segments.
Foreign transactions	Equal to 1 if the firm has a non-zero foreign currency translation in fiscal year preceding the reporting date of MW, and 0 otherwise.
Extreme sales growth	Equal to 1 if the industry median adjusted sales growth falls into the top quintile, and 0 otherwise.
Restructuring charge	The aggregate restructuring charges in years $t$ and $t - 1$ scaled by the firm's year $t$ equity market value. The year $t$ is the fiscal year preceding the reporting date of MW.
BM	Book value of equity divided by equity market value.
Big_4	Equal to 1 if the firm is audited by a Big 4 auditor (Deloitte, PricewaterhouseCoopers, KPMG, or EY), and zero otherwise.

<sup>3</sup> Unadjusted I/B/E/S summary data is used to mitigate rounding problems related to split-adjusted earnings estimates. CRSP cumulative adjustment split factors are used to match unadjusted actual earnings with the unadjusted I/B/E/S EPS forecast consensus.

**Table 4**  
 Abnormal stock returns for firms reporting ICMW and their industry peer firms.  
 This table presents the cumulative abnormal stock returns (CARs) for firms that report ICMW and their industry peer firms. We require that the firms that report ICMW have the announcement return CAR (−1, 1) less than −1%. Industry peer firms are firms with same eight-digit GICS code as the corresponding ICMW firms. Abnormal returns are calculated as the daily return on a firm minus the concurrent equally-weighted market return for firms in the same market capitalization decile. The CAR for firms over (t<sub>1</sub>, t<sub>2</sub>) around the reporting date (date 0) is measured as  $CAR_{-1,+1}^i = \sum_{t=-1}^{+1} AR_{it}$ . The market capitalization decile is based on all NYSE, AMEX, and NASDAQ listed firms from CRSP. p values are for testing whether CARs are different from zero. Panel A reports CARs for all firms that report ICMW and their peer firms. Panel B reports CARs for firms that report ICMW by categories.

	ICMW firms			Peer firms				
	Mean	Median	N	Mean	Median	N		
<i>Panel A: CAR</i>								
Pre-announcement period (Days −10, −2)	−0.24%	−0.49%	899	0.28%	0.00%	49,092		
p-Value	0.5207	0.2417		0.0000	0.0089			
Announcement (Days −1, +1)	−5.71%	−3.57%	899	−0.18%	−0.21%	49,092		
p-Value	0.0000	0.0000		0.0000	0.0000			
Post-announcement (Days +2, +10)	−0.09%	−0.39%	899	−0.05%	−0.23%	49,092		
p-Value	0.8150	0.0608		0.1455	0.0000			
Post-announcement (Days +2, +60)	−0.77%	−1.18%	899	−0.24%	−0.12%	49,092		
p-Value	0.4488	0.1483		0.0048	0.0159			
<i>Panel B: CAR (−1, +1) by categories</i>								
Revenue related	−5.81%	−3.71%	244	−0.11%	−0.24%	11,031		
	0.0000	0.0000		0.0063	0.0000			
Expense related	−6.12%	−3.92%	80	0.00%	−0.06%	3904		
	0.0000	0.0000		0.9990	0.1458			
Acquisition related	−6.29%	−3.50%	71	0.19%	−0.01%	3095		
	0.0000	0.0000		0.0358	0.2641			
General-type	−6.22%	−3.85%	547	−0.13%	−0.19%	27,315		
	0.0000	0.0000		0.0000	0.0000			
<i>Panel C: abnormal returns CAR (−1, +1) by 2-digit GICS industry code</i>								
	MW firms				Peer firms			
	Mean	Median	N	%	Mean	Median	N	%
Energy (10)	−6.43%	−4.67%	82	9%	−0.87%	−0.72%	6169	13%
	0.0000	0.0000			0.0000	0.0000		
Materials (15)	−4.99%	−3.56%	64	7%	−0.40%	−0.35%	1208	2%
	0.0000	0.0000			0.0013	0.0000		
Industrials (20)	−6.52%	−4.72%	102	11%	0.04%	−0.03%	3175	6%
	0.0000	0.0000			0.5479	0.5545		
Consumer discretionary (25)	−5.91%	−3.47%	137	15%	−0.21%	−0.29%	2773	6%
	0.0000	0.0000			0.0040	0.0000		
Consumer staples (30)	−7.43%	−5.07%	27	3%	0.28%	−0.08%	702	1%
	0.0000	0.0000			0.0429	0.7125		
Health care (35)	−4.96%	−2.82%	117	13%	−0.16%	−0.24%	7406	15%
	0.0000	0.0000			0.0146	0.0000		
Financial (40)	−6.17%	−3.28%	121	13%	0.07%	−0.02%	17,309	35%
	0.0000	0.0000			0.0147	0.8683		
Information technology (45)	−5.37%	−3.70%	196	22%	−0.30%	−0.35%	9557	19%
	0.0000	0.0000			0.0000	0.0000		
Telecommunication services (50)	−4.52%	−3.18%	38	4%	0.03%	0.03%	516	1%
	0.0000	0.0000			0.8674	0.9351		
Utilities (55)	−3.89%	−3.27%	15	2%	−0.60%	−0.65%	277	1%
	0.0002	0.0007			0.0001	0.0000		
Total			899	100%			49,092	100%

mergers and acquisitions, it is likely that investors might be more wary of these types of ICMW disclosures.

For the ICMW firms, we find significantly negative CAR for revenue-related ICMW (mean −5.81%, median −3.71%), expense-related ICMW (mean −6.12%, median −3.92%), acquisition related ICMW (mean −6.25%, median −3.50%) and general type (mean −6.22%, median −3.85%). Peer industry firms only experienced significant negative CAR for the revenue-related ICMW type (mean −0.11% and median −0.24%) and the general-type ICMW type (mean −0.13% mean and median −0.19%). Results for the revenue category are anticipated given the predominance of revenue-related issues in accounting scandals and the SEC and FASB's prevalent guidance related to revenue. Results for the general category are also expected given the pervasiveness of these types of ICMW.

Panel C of Table 4 reports the 3-day announcement period CAR for ICMW firms and peer industry firms by two-digit GICS code. While CAR is significantly negative for all ICMW industry firms, it is not for

peer firms in the industrial, consumer staples, and financial, and telecommunication industries. Thus it appears that some industries may be more prone to industry contagion for reports of ICMW. Alternatively, the industry effect could be more pronounced in industries with a greater number of firms reporting ICMW.

4.2. H2 descriptive statistics for industry-matched peer firms: accounting quality and capital market pressure

Table 5 presents descriptive statistics for the ICMW peer industry-matched sample with data available for the cross-sectional tests. Descriptive statistics are provided in Panel A for accounting quality (Models 1–3), Panel B for capital market pressure, Panel C for control variables, and Panel D for non-transformed size statistics. The industry-adjusted variables EARN and CFO accounting quality variables in panel A have positive medians indicating higher earnings and cash flow from operations as compared to their industry peers. The capital market



pressure variables in Panel B are not industry adjusted. Medians for these variables are similar to those reported in Gleason et al.'s (2008) study on restatement stock price contagion.

4.3. H2 regression results for industry-matched peer firms: accounting quality and capital market pressure

We report cross-sectional regression results for the industry-matched peer firms in Table 6. We examine the industry peer firms on their own to further investigate what is driving their abnormal returns for the announcement period. We specifically look at measures of accounting quality and capital market pressure to see if these factors, which could also be influencing internal control quality, are associated with CAR\_PEER. Results in Model 1 indicate that profitability relative to industry peers (EARN) is not significantly associated with CAR\_PEER. In Model 2, where we replace EARN with CFO and TACC, we find that, as predicted, TACC is significantly negatively associated with CAR\_PEER. Thus, it appears that firms with higher accrual components of earnings relative to their industry peers experience a greater abnormal share decline as compared to firms with lower accrual components of earnings. In Model 3, we decompose the TACC variable into OPER\_ACC and

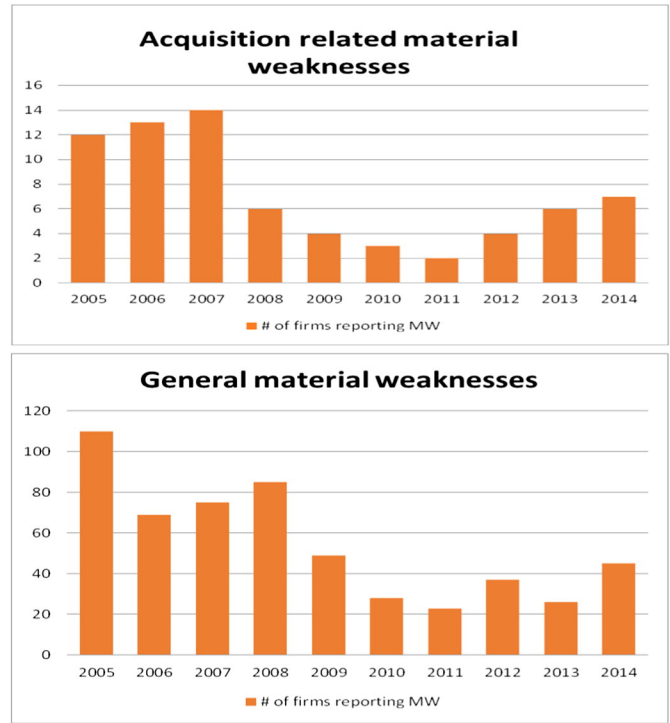


Fig. 1 (continued).

INV\_ACC. Both accrual measures, OPER\_ACC and INV\_ACC are significantly negatively associated with CAR\_PEER. Related to capital market pressures, we find, as predicted, both size and EPS\_Growth are negatively associated with CAR\_PEER in all models. For the control variables included in the model, there is a significant, negative relation between the size of the peer ICMW firm (MW\_SIZE) and CAR\_PEER as predicted. Also as predicted, there is a significant, positive relation between CAR\_PEER and both the MW\_RET and analyst Revision variables. Contrary to our predictions, BIG\_4 is negatively associated with CAR\_PEER. One possible explanation could be that there is a greater expectation that firms with Big 4 auditors to both have better controls to begin with and to get better internal control guidance from their Big 4 auditor. Also contrary to our predictions, ICMW\_# is positively associated with CAR\_PEER. It is possible that if a company reports multiple ICMWs, investors perceive the ICMWs not related to pervasive industry issues, but rather an indication of an isolated, poorly run company.

4.4. H2 regression results for industry-matched peer firms: accounting quality and capital market pressure by ICMW type

We report cross-sectional regression results by ICMW-type for the industry-matched peer firms in Table 7. Peer industry firms reporting both revenue-related and general-type ICMW do not have any significant associations between accounting quality variables and CAR\_PEER. Investors likely see these as more troublesome ICMW and react negatively regardless of the peer firm accounting quality. Peer industry firms to ICMW firms reporting expense-related ICMW have significant associations between accounting quality variables and CAR\_PEER. While earnings (EARN) are not associated with CAR\_PEER, TACC, OPER\_ACC and INV\_ACC are all significantly negatively associated with CAR\_PEER. Peer industry firms to ICMW firms reporting acquisition-related ICMW also have significant associations between accounting quality variables and CAR\_PEER. EARN, CFO and OPER\_ACC all have a significant negative associations with CAR\_PEER while INV\_ACC does not. Thus, it appears that investors differentially assess peer firms reporting expense-related and acquisition-related ICMWs.

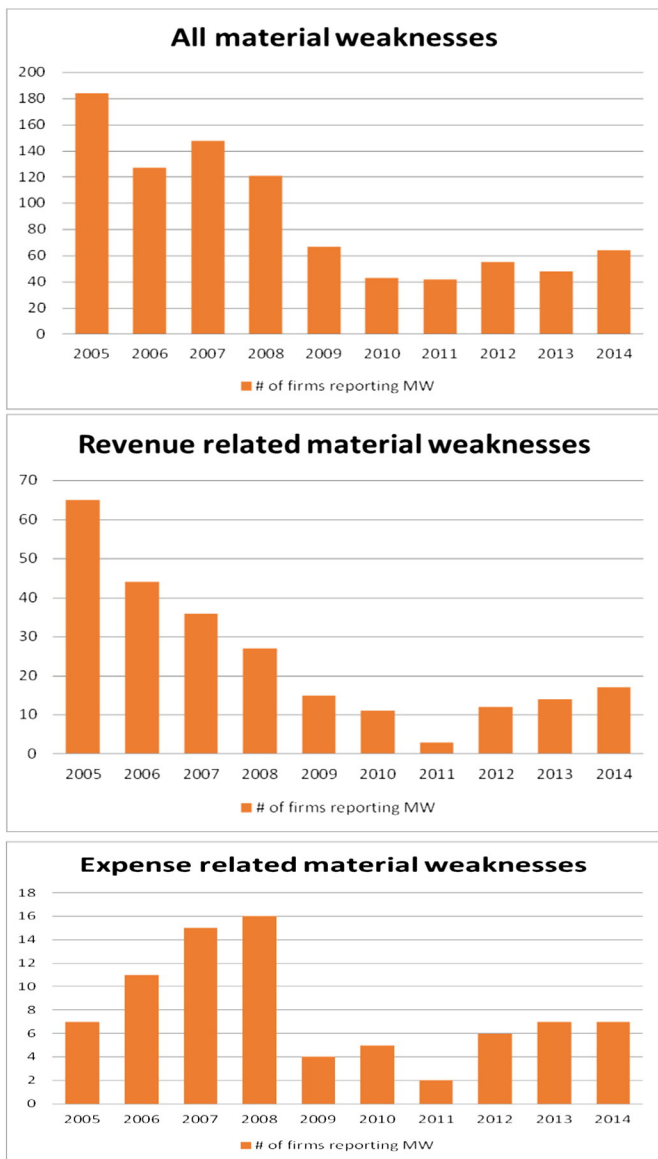


Fig. 1. Frequency of ICMW reporting by year and type.

**Table 5**  
Descriptive statistics for industry-matched peer firms. Following presents descriptive statistics for measures of Accounting quality (Panel A), Capital market pressure (Panel B), and Other control variables (Panel C) for industry-matched peer firms.

Variable	N	Mean	Median	Standard Deviation	25th Percentile	75 Percentile
<i>Panel A: accounting quality</i>						
EARN	49,092	0.143	0.006	3.745	-0.003	0.076
CFO	48,542	0.037	0.008	0.168	-0.004	0.084
TACC	48,542	0.043	0.016	0.256	-0.040	0.099
OPER_ACC	48,542	-0.001	0.002	0.195	-0.013	0.027
INV_ACC	48,542	0.045	0.011	0.181	-0.033	0.085
<i>Panel B: capital market pressure</i>						
EP	48,287	0.435	0.045	27.210	0.013	0.066
BM	48,283	2.702	0.486	136.084	0.290	0.754
SIZE	48,287	6.291	6.162	1.825	4.972	7.441
EPS_Growth	49,092	0.127	0.000	0.333	0.000	0.000
<i>Panel C: control variables</i>						
MW_RET	49,092	-0.055	-0.032	0.065	-0.060	-0.018
MW_SIZE	48,976	5.790	6.000	2.080	4.000	7.000
LEV	49,092	0.403	0.000	9.713	0.000	0.343
BIG_4	47,296	0.704	1.000	0.456	0.000	1.000
ICMW_#	49,092	1.909	1.000	1.827	1.000	2.000
STRING	18,902	0.022	0.000	0.147	0.000	0.000
REVISION	19,118	0.000	0.000	0.061	-0.001	0.001
<i>Panel D: Peer Sample descriptive information (in millions)</i>						
Market value	48,287	3436	474	13,017	144	1705
Sales	49,092	1864	187	8128	52	829
Total assets	49,092	5241	765	24,610	240	2629
Net income	49,092	157	13	894	2	68

Note: See Table 3 for variable definitions.

Related to capital market pressures, the only significant variable is *EPS\_Growth* which is significantly negatively associated with *CAR\_PEER* in the acquisition-related and general-type models. For the control variables included in the model, the following are significant associations. There is a positive association between *MW\_RET* and *CAR\_PEER* in the general-type models. A negative relation exists between the size of the peer ICMW firm (*MW\_SIZE*) and *CAR\_PEER* in both the expense-related and acquisition-related models. In the expense-related models, *LEV* is positively and *ICMW\_#* is negatively related to *CAR\_PEER*. Lastly, there is a positive association between *Revision* and *CAR\_PEER* in the expense-related, acquisition-related and general type models.

4.5. Robustness tests

We perform two robustness tests to better understand the economic implications of these findings and to determine what happens to industry firms over time. As 2005 was the first full year where ICMW reporting was required, it is not surprising that we see 311 (35%) of the 899 ICMW cases in the first two years of 2005–2006 and 588 (65%) in the following eight years. To determine if financial market participants' reactions to peer industry firm ICMW reports, we test the peer industry firm contagion effect in different time periods. Table 8 presents the CARs for ICMW firms and their industry peers for the announcement date (Days -1, 0), pre-announcement date (Days -10, -2), short term post announcement date (Days +2, +10), and long term post-announcement date (Days +2, +60) for these two sample periods: 2005–2006 and 2007–2014. In general, we observe similar effects for each of the two sub-samples as we do for the full sample period. For the 2005–2006 period, the peer firms exhibit negative market reaction around the announcement with mean (-0.28%) and median (-0.30%) CAR; the negative market reactions decrease for the 2007–2014 period to mean (-0.13%) and median (-0.15%). In all cases, these negative market reactions are significantly different from zero. Thus, while the absolute size of the CAR does decrease in the later years, the effect still persists and is significant.

**Table 6**  
Full peer sample *CAR\_PEER*: Impact of accounting quality & capital market pressures.

		(1)	(2)	(3)
<i>Accounting quality</i>				
Earn	?	-0.524 (0.176)		
CFO	?		-0.186 (0.595)	-0.275 (0.473)
TACC	-		-0.573*** (0.007)	
OPER_ACC	-			-1.028* (0.083)
INV_ACC	-			-0.472** (0.024)
<i>Capital market pressure</i>				
EP	+	-0.275 (0.241)	-0.287 (0.206)	-0.210 (0.390)
BM	+	-0.374 (0.001)	-0.39 (0.001)	-0.383 (0.001)
Size	-	-0.072*** (0.001)	-0.083*** (0.000)	-0.080*** (0.000)
EPS_growth	-	-0.181** (0.026)	-0.175** (0.031)	-0.173** (0.033)
<i>Control variables</i>				
MW_RET	+	0.016*** (0.004)	0.016*** (0.004)	0.016*** (0.004)
MW_Size	-	-0.037*** (0.016)	-0.036** (0.019)	-0.036** (0.000)
LEV	?	0.008 (0.323)	0.008 (0.273)	0.008 (0.291)
BIG_4	+	-0.21 (0.034)	-0.215 (0.030)	-0.211 (0.032)
ICMW_#	-	0.029 (0.049)	0.03 (0.041)	0.03 (0.041)
String	-	0.223 (0.224)	0.222 (0.227)	0.225 (0.220)
Revision	+	2.015* (0.081)	2.043* (0.079)	2.010* (0.080)
Constant		0.708*** (0.001)	0.802*** (0.000)	0.782*** (0.000)
Year effect		Included	Included	Included
Observations		17,406	17,403	17,403
Adjusted R-squared		0.013	0.014	0.014
F-statistics		8.296***	8.104***	7.793***

Note: This table reports the results of OLS regressions with the dependent variable, *CAR\_PEER*, equal to the ICMW peer firms' three-day (-1, +1) CARs. p-Value of t-statistics are reported in parentheses. t-Statistics are calculated using the robust standard errors. See Table 3 for variable definitions. The following symbols indicate significant effects: \*\*\* significant at the 0.01 level; \*\* significant at the 0.05 level; and \* significant at the 0.10 level (one-tailed for directional expectations, and two-tailed otherwise).

Interestingly, the effects for the two post-announcement periods increase (becomes more negative) in the 2007–2014 period. In the short term post announcement period (+2, +10), the mean peer industry firm CAR is -0.08% for the 2007–2014 period, whereas it was 0.01% in the 2005–2006 period. In the long term post announcement period (+2, +60), the peer effect is even more pronounced: the mean long term peer industry firm CAR is -0.59% for the 2007–2014 period, whereas it was 0.39% in the 2005–2006 period. This suggests that, over time, market participants' reactions to an industry peer firm reporting an ICMW does not go away in the immediate period following the ICMW announcement.

The economic effects of this reaction can be substantial as it may impose significant costs on the peer firms. The negative market response may raise the firm's cost of capital, making it more difficult to fund investments with new equity or debt capital. The negative market response may impose other indirect costs, such as increased scrutiny by auditors or regulators and more negative analysts' reports. Further, given that many of the sample firms are smaller firms that may rely on equity capital as a form of employee compensation, such losses may make it more difficult or costly to hire and retain talented employees. Thus, the short term market reaction can lead to real long

**Table 7**  
ICMW Focus Regressions on CAR\_Peer: Impact of accounting quality and capital market.

By ICMW type							
		Revenue related			Expense-related		
		(1)	(2)	(3)	(1)	(2)	(3)
<i>Accounting quality</i>							
Earn	?	0.009 (0.988)			−1.375 (0.110)		
CFO	?		0.084 (0.888)	0.080 (0.901)		−0.370 (0.725)	−0.262 (0.731)
TACC	−		−0.330 (0.384)			−2.028*** (0.008)	
OPER_ACC	−			−0.369 (0.725)			−4.225*** (0.003)
INV_ACC	−			−0.369 (0.342)			−1.329* (0.090)
<i>Capital market pressure</i>							
EP	+	0.288 (0.782)	0.371 (0.698)	0.389 (0.732)	−2.306 (0.443)	−2.358 (0.418)	−1.569 (0.605)
BM	+	−0.007 (0.978)	−0.026 (0.917)	−0.029 (0.907)	−2.011 (0.000)	−2.054 (0.000)	−1.952 (0.000)
Size	−	−0.043 (0.255)	−0.049 (0.200)	−0.049 (0.196)	−0.027 (0.685)	−0.060 (0.385)	−0.051 (0.446)
EPS_growth	−	−0.231* (0.100)	−0.228 (0.106)	−0.228 (0.106)	0.026 (0.928)	0.089 (0.756)	0.092 (0.747)
<i>Control variables</i>							
MW_RET	+	−0.021 (0.050)	−0.022 (0.044)	−0.022 (0.044)	−0.028 (0.187)	−0.029 (0.160)	−0.032 (0.123)
MW_Size	−	−0.032 (0.319)	−0.032 (0.320)	−0.032 (0.321)	−0.190*** (0.010)	−0.196*** (0.008)	−0.196*** (0.008)
LEV	?	−0.001 (0.937)	−0.001 (0.953)	−0.001 (0.955)	0.013* (0.095)	0.013* (0.098)	0.011 (0.141)
BIG_4	+	−0.042 (0.834)	−0.050 (0.803)	−0.051 (0.798)	−0.723 (0.109)	−0.744 (0.098)	−0.709 (0.115)
ICMW_#	−	0.063 (0.001)	0.063 (0.001)	0.063 (0.001)	−0.091** (0.014)	−0.091** (0.012)	−0.091** (0.012)
String	−	0.326 (0.360)	0.320 (0.366)	0.320 (0.367)	0.226 (0.784)	0.224 (0.786)	0.233 (0.774)
Revision	+	0.612 (0.855)	0.555 (0.869)	0.541 (0.872)	0.944*** (0.001)	0.991*** (0.001)	0.914*** (0.002)
Constant		−0.257 (0.565)	−0.191 (0.668)	−0.184 (0.679)	3.587*** (0.000)	3.906*** (0.000)	3.725*** (0.000)
Year effect		Included	Included	Included	Included	Included	Included
Observations		4038	4037	4037	1386	1384	1384
Adjusted R-squared		0.016	0.016	0.016	0.020	0.060	0.063
F-statistics		3.901***	3.739***	3.584***	4.571***	3.468***	3.536***
<i>Acquisition-related</i>							
		(1)	(2)	(3)	(1)	(2)	(3)
<i>Accounting quality</i>							
Earn		−2.886*** (0.000)			−0.440 (0.219)		
CFO			−3.349*** (0.000)	−3.049*** (0.002)		−0.322 (0.373)	−0.379 (0.324)
TACC			−0.876 (0.332)			−0.212 (0.408)	
OPER_ACC				−2.711* (0.073)			−0.463 (0.435)
INV_ACC				−0.071 (0.946)			−0.182 (0.512)
<i>Capital market pressure</i>							
EP		−1.070 (0.606)	−1.563 (0.459)	−1.007 (0.627)	−0.362 (0.191)	−0.396 (0.146)	−0.360 (0.209)
BM		−1.379 (0.012)	−1.477 (0.007)	−1.370 (0.014)	−0.335 (0.026)	−0.342 (0.024)	−0.342 (0.024)
Size		0.014 (0.871)	0.020 (0.816)	0.018 (0.835)	−0.042 (0.132)	−0.045 (0.101)	−0.044 (0.113)
EPS_growth		−0.721** (0.043)	−0.705** (0.044)	−0.713** (0.041)	−0.193* (0.080)	−0.194* (0.079)	−0.192* (0.081)
<i>Control variables</i>							
MW_RET		0.024 (0.292)	0.023 (0.298)	0.024 (0.290)	0.011* (0.070)	0.010* (0.072)	0.010* (0.073)

(continued on next page)

Table 7 (continued)

	Acquisition-related			General-type		
	(1)	(2)	(3)	(1)	(2)	(3)
<i>Control variables</i>						
MW_Size	-0.146* (0.063)	-0.131* (0.093)	-0.138* (0.079)	0.042 (0.055)	0.042 (0.055)	0.042 (0.057)
LEV	-0.004 (0.901)	-0.001 (0.973)	-0.004 (0.904)	0.007 (0.324)	0.007 (0.303)	0.007 (0.309)
BIG_4	-1.207 (0.129)	-1.241 (0.117)	-1.206 (0.129)	-0.255 (0.059)	-0.256 (0.057)	-0.256 (0.057)
ICMW_#	-0.037 (0.526)	-0.039 (0.511)	-0.037 (0.526)	0.002 (0.919)	0.002 (0.885)	0.002 (0.892)
String	0.145 (0.798)	0.172 (0.764)	0.170 (0.765)	0.078 (0.741)	0.079 (0.738)	0.079 (0.739)
Revision	0.658** (0.012)	0.720*** (0.005)	0.664** (0.011)	4.451*** (0.003)	4.498*** (0.003)	4.460*** (0.003)
Constant	3.070*** (0.005)	3.145*** (0.005)	3.069*** (0.006)	0.063 (0.820)	0.097 (0.728)	0.095 (0.736)
Year effect	Included	Included	Included	Included	Included	Included
Observations	1010	1010	1010	9809	9807	9807
Adjusted R-squared	0.073	0.070	0.072	0.010	0.010	0.010
F-statistics	7.373***	5.918***	6.936***	4.206***	3.997***	3.839***

Note: This table reports the results of OLS regressions with the dependent variable, *CAR\_PEER*, equal to the peer firms' three-day (-1, +1) CARs. P-value of t-statistics are reported in parentheses. t-Statistics are calculated using the robust standard errors. See Table 3 for variable definitions. The following symbols indicate significant effects: \*\*\* significant at the 0.01 level; \*\* significant at the 0.05 level; and \* significant at the 0.10 level. (one-tailed for directional expectations, and two-tailed otherwise).

term economic consequences for the industry peer firms. See Coates (2007) and Iliev (2010) for detail on these consequences.

In order to study the ultimate effects of these negative market reactions to peer industry firms reporting an ICMW, we study the probability of there actually being a longer term industry contagion effect. Specifically, we examine the probability of an industry firm reporting an ICMW within three years after experiencing this negative market response to a peer industry firm reporting an ICMW. This analysis is presented in Table 9. There is a negative relationship between the probability of a firm reporting an ICMW within three years and the size of the CAR when another industry firm reported an ICMW; the greater the negative contagion effect, the higher the likelihood of another industry firm reporting an ICMW. This suggests that there is industry learning that takes place during the period following a firm reporting an ICMW. This learning may be on the part of the individual

firms better understanding how to implement internal control processes or it may be on the part of the audit firms better understanding how to evaluate internal control systems (or both). Whatever the source of the learning, the initial market reaction seems to send a clear – and effective – message that concern about future internal control weaknesses has significant costs.

5. Conclusion and limitations

The overall objective of this study is to provide academics and regulators with a better understanding of the impacts of ICMW disclosures on peer industry firms. We empirically examine whether peer industry firms experience share price declines and whether peer industry firm CARs are associated with cross-sectional differences. Results indicate that when firms report ICMWs and experience share price declines,

Table 8

CAR for firms reporting ICMW and their industry peer firms, by time period.

This table presents the CARs for firms that report ICMW and their industry peer firms. We require that the firms that report ICMW have the announcement return CAR (-1, 1) less than -1%. Industry peer firms are firms with same eight-digit GICS code as the corresponding ICMW firms. Abnormal returns are calculated as the daily return on a firm minus the concurrent equally-weighted market return for firms in the same market capitalization decile. The CAR for firms over (t<sub>1</sub>, t<sub>2</sub>) around the reporting date (date 0) is measured as  $CAR_{-t_1+t_2}^i = \sum_{t=-t_1}^{+t_2} AR_{it}$ .

The market capitalization decile is based on all NYSE, AMEX, and NASDAQ listed firms from CRSP. p-Values are for testing whether CARs are different from zero. Panel A reports CARs for all firms that report ICMW and their peer firms for 2005–2006 and Panel B reports CARs for all firms that report ICMW and their peer firms for 2007–2014.

	ICMW firms			Peer firms		
	Mean	Median	N	Mean	Median	N
<i>Panel A: 2005–2006 CAR</i>						
Pre-announcement period (Days -10, -2)	0.33%	0.03%	311	0.04%	-0.01%	17,238
p-Value	0.4719	0.4974		0.4266	0.4744	
Announcement (Days -1, +1)	-4.12%	-2.71%	311	-0.28%	-0.30%	17,238
p-Value	0.0000	0.0000		0.0000	0.0000	
Post-announcement (Days +2, +10)	-0.41%	-0.16%	311	0.01%	-0.13%	17,238
p-Value	0.3723	0.1962		0.8445	0.0702	
Post-announcement (Days +2, +60)	0.29%	0.48%	311	0.39%	0.05%	17,238
p-value	0.8077	0.5151		0.0017	0.0114	
<i>Panel B: 2007–2014 CAR</i>						
Pre-announcement period (Days -10, -2)	-0.54%	-0.78%	588	0.41%	0.01%	31,854
p-Value	0.2945	0.0856		0.0000	0.0001	
Announcement (Days -1, +1)	-6.55%	-4.04%	588	-0.13%	-0.15%	31,854
p-Value	0.0000	0.0000		0.0000	0.0000	
Post-announcement (Days +2, +10)	0.08%	-0.66%	588	-0.08%	-0.31%	31,854
p-Value	0.8826	0.1785		0.0702	0.0000	
Post-announcement (Days +2, +60)	-1.33%	-2.38%	588	-0.59%	-0.24%	31,854
p-Value	0.3469	0.0443		0.0000	0.0000	



Table 9

Relationship between peer industry CAR and probability of future ICMW reporting.

Variables	(1)	(2)	(3)
Contagion return	– 0.014*** (0.001)	– 0.013*** (0.002)	– 0.020*** (0.004)
Size	–	– 0.045*** (0.001)	– 0.298*** (0.000)
Firm age	–	– 0.058** (0.018)	– 0.002 (0.965)
Aggregate loss	+	0.239*** (0.000)	0.151* (0.074)
Segments	+	0.128*** (0.000)	0.057 (0.309)
Foreign transactions	+	– 0.020 (0.649)	– 0.430 (0.000)
Extreme sales growth	+	0.353*** (0.000)	0.368*** (0.000)
Restructuring charge	+	– 0.285 (0.000)	– 0.539 (0.175)
BM	–	– 0.259*** (0.000)	– 0.258** (0.011)
BIG_4	–	0.176 (0.002)	0.172 (0.057)
String			0.771*** (0.000)
Revision			– 1.174*** (0.029)
Constant	– 1.884*** (0.000)	– 1.778*** (0.000)	0.573 (0.465)
Industry effect	Included	Included	Included
MW observations	2993	2929	1222
Observations	40,369	38,372	15,395
Pseudo R-squared	0.0144	0.0222	0.0490

Note: This table presents a logit analysis on the relationship between the peer industry CAR association with the probability of an industry peer reporting their own ICMW within the subsequent three years. The dependent variable is a binary variable equal to 1 if an industry peer firm reports an ICMW in the three years following another peer firm reporting an ICMW and 0 otherwise. The primary explanatory variable is the CAR associated with an industry peer firm reporting their own ICMW ("Contagion return"). All other control variables are as defined in Table 3. p-Value of t-statistics are reported in parentheses. t-Statistics are calculated using the robust standard errors. The following symbols indicate significant effects: \*\*\* significant at the 0.01 level; \*\* significant at the 0.05 level; and \* significant at the 0.10 level (one-tailed for directional expectations, and two-tailed otherwise).

peer industry companies also experience share price declines. While the short term contagion effect is strongest in the early years of our study, the effect persists throughout the duration of the study and the long term effect becomes even stronger in the later years. Further analysis indicates that the declines in peer share prices are associated with accounting quality in that peer industry firms with higher accrual components of earnings have larger negative market reaction compared to firms with lower accrual components of earnings. Finally, there does appear to be a learning effect, in that industry peer firms that experience the greatest contagion effect are more likely to actually report an ICMW following a peer industry firm reporting an ICMW.

The primary contribution of this study is that it provides insights as to how information transfer of ICMW information impacts peer industry firm share prices. Policy makers (e.g. Congress, the PCAOB) and industry regulators) who consider such issues as what constitutes an ICMW or what information needs to be disclosed related to an ICMW have new empirical evidence documenting potential consequences of ICMW disclosure. The economic costs associated with this information transfer can be quite substantial, from the short term costs associated with increased auditor scrutiny to the longer term costs associated with costs of capital.

Limitations of this study include the inherent noise in 10-K disclosures. While we control for the earnings reported in the 10-K, there are many other 10-K disclosures that could contribute to abnormal earnings. We attempt to control for such items, but there may be idiosyncratic contributors to abnormal returns that have not been controlled for in our study.

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