The price contagion effect of auditor dismissal announcements after restatement announcements.

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Abstract

This paper examines the price contagion effects of audit firm that are dismissed by their clients because a financial restatement occurred. The question shows if investors price negative news of an auditor released by peer firms into their investment portfolio. The results suggest that auditor dismissals announcement following restatement announcements induce negative market reaction for non-dismissing clients of dismissed auditors. However, these negative market reactions are primarily found for non-dismissing firms that operate in the same industry as the dismissing firm. This thesis shows that investors of firms do not only care about the quality the auditor provides to their firm specifically but also the quality of the auditor provides at other firms and incorporate this information in making their investment. Where the quality of the auditor is defined by the level of credibility and reliability of the financial statement issued by client firms of the auditor. Taken together, these results serve as an extra incentive for auditors to provide credibility and reliable to the financial statements.

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1. Introduction

This study aims to investigate the contagion effect of an auditor dismissal announcements after restatement announcements. More specifically, if an auditor dismissal by a firm experiencing accounting restatement affects the share price of non-dismissing clients of the dismissed auditor. This question is important, because it can highlight if investors reduce their trust in the audited financial statements when there are signals of problems at other firms. Auditors play an important role in monitoring financial reporting, providing assurance for the efficient allocation of recourses in the capital market. Accounting scandals at Enron and WorldCom, showed that capital market investors lowered their trust in the credibility and content of the financial statements that Arthur Anderson had audited. Firms that were audited by Arthur Anderson, experienced a significant share price decline. For auditors, it is important to act in accordance with the ethical requirements of the audit profession such as professional competence and due care. These requirements are important to provide assurance over the financial report and maintain the credibility of the audit profession itself. As regulators impose stricter rules on the audit profession, such as when the Sarbanes-Oxley Act (SOX) led to the creation of the Public Company Accounting Oversight Board (PCAOB) and the introduction of mandatory partner rotations. Clearly, regulators value the level of professional competence and due care possessed by auditors to be important to investors. Elevated levels of competence can improve audit quality, subsequently reducing the numbers of restated financial statements and increasing the trust of investors in audited financial statements. Ultimately, it depends on the auditor's motives to provide high audit quality.

Accounting research provides two sources for auditor incentives to provide a high-quality audit. First, the litigation incentive in which the auditor is motivated to provide high quality audit to avoid cost of litigation. Second, the reputation incentive in which the auditor is motivated to provide a high-quality audit because audit quality is important to clients and therefore priced in the market by investors. Several scandals such as at ChuoAoyama's (Skinner & Srinivasan, 2012) and at Comeroad AG (Weber, Willenborg, & Zhang, 2008) show that the reputation of the auditor was negatively affected after highly publicized scandals revealed that the auditor was involved. The damage to the reputation of the auditor led several firms to dismiss their auditor, as these firms intended to restore their credibility by switching to an auditor with a more credible reputation. These studies were conducted in countries with low-level of litigation risk for auditor, which has a natural bias for the reputational incentive and show that capital market investors care about the reputation of their external auditor.

Hennes et al. (2013) find that when firms are required to make a restatement and consequently dismissed their auditor because of this restatement, investors react positively to the auditor dismissal. This is likely due to investors of some firms perceiving the benefits of an auditor switch, that will restore financial reporting credibility, to outweigh the cost of switching auditor (Skinner & Srinivasan, 2012).

When firms experience accounting restatement and try to restore the credibility of the financial statements by dismissing their auditors. Capital market investors of non-dismissing firms that use the same external auditor, could become more skeptical of the financial statements. This accounting contagion effect could then cause stock price declines in these peer firms.

Gleason et al. (2008) found a contagion effect exists on accounting restatements. They hypothesize that misstatements that are discovered at one firm may cause investors to revise the content and credibility of the financial statements issued by non-restating firms in the same industry. They found that accounting restatements that negatively influence shareholder wealth at the restating firm also induce share price declines among non-restating firms in the same industry. Moreover, they found that the contagion effect was larger when restating firm and peer firm with high earnings and high accrual use the same external auditor, indicating that investors impose a larger contagion fine in this situation. This indicates that investors seem to value the credibility of the financial statement that the auditor provides, as this is reflected in the share price. The news of an accounting restatement at one firm transfers information and subsequently affects the share price of other firms. Explicitly, information about one reporting entity can influence investors reaction to other reporting entities sharing similar characteristics (Gleason et al., 2008; Weber et al., 2008).

Instead of studying the contagion effect of auditor changes, this study aims to combine prior studies and look for a contagion effect of an auditor dismissal. Investigating the contagion effect of auditor dismissal without requiring this change to be followed by a restatement would have an ambiguous result, as the reasoning behind an auditor dismissal can have opposing reasons. On one hand, an auditor could be dismissed due to "opinion shopping'' of the firm, in which the firm does not agree with the opinion given by the auditor and therefore switches to another external auditor. On the other hand, the dismissal could be because the firm is not pleased with the audit quality provided by its current auditor. Auditor changes immediately following restatements are more likely to signal the firm is not satisfied with the provided audit quality.

Because capital market investors react positively to an auditor dismissal as they view the firms' action as correctly terminating a poorly performing auditor (Hennes et al., 2013).

Taken together, this study finds that investors perceive the reputation of the auditor to be damaged by a dismissal following a restatement. Second, I further investigate when the reputation of the auditor is more relevant to investors.

This study predicts that positive market reaction to an auditor dismissal following a restatement in one firm leads to a negative market reaction in other firms that share the same auditor. This effect is predicted to by stronger in firms that operate in the same industry as the dismissing firm. Furthermore, the contagion stock return is predicted to be negatively related to the proximity between audit office and firm office of non-dismissing peer firms.

This thesis should be relevant to auditors in determining if being dismissed by a client, impacts the perceived credibility and professional competence and due care of the whole audit profession or more specifically, the auditor itself. A negative reaction by investors or other firms to the auditor dismissal can be an early warning to ensure restatements do not occur as this can impact the perceived financial reporting credibility of the auditor for other clients as well. This thesis can also be of relevance to regulators in determining if the independence of an auditor is affected. The independence of the auditor could be influenced if investors react negatively, the auditor could try to avoid this dismissal to mitigate the reduction in perceived professional competence and credibility, thus resulting in a dependency on their client firm not to dismiss them.

2. Theoretical background

2.1 Prior literature

The vast majority of earlier studies investigating the market reactions to auditor turnover announcement find either a significantly negative or insignificant market reaction (Dunn, Hillier, & Marshall, 1999; Johnson & Lys, 1990; Schwartz & Soo, 1995). Other studies found that the negative market reaction is most pronounced for auditor resignation (DeFond, Ettredge, & Smith, 1997; Griffin & Lont, 2010; Wells & Loudder, 1997). Knechel et al. (2007) provide scarce evidence of a significantly positive market reaction to auditor changes in the sample of firms that switched to a big-4 industry specialist. However, there is relatively limited research conducted on the market reaction to auditor turnover that separated the turnover in a dismissal- and resignation announcement sample. (Hennes et al., 2013) investigated the conditions under which financial restatements lead corporate boards to dismiss external auditors and how the market responds to those dismissal announcements. The authors found that auditors are more likely to be dismissed after more severe restatements but that this severity effect is primarily attributable to the dismissal of non-Big 4 auditors rather than Big 4 auditors. Their evidence shows that investors react positively to an auditor dismissal announcement that follow a restatement announcement, because investors view this auditor dismissal as the firm appropriately terminating an auditor that is poorly performing to improve the financial reporting credibility. However, ex ante it is unclear how this affects the perceived financial reporting credibility of non-restating firms that share a common auditor with the dismissing firm at the time of the dismissal announcement. The literature predicts that capital market investors value the quality of the external auditor, because the auditor provides assurance over the financial statements (Gul, Lim, Wang, & Xu, 2016; Hennes et al., 2013; Skinner & Srinivasan, 2012). However, prior research is silent about whether auditor dismissals in peer firm convey information useful to investors in making investment decisions.

This thesis aims to contribute on finding whether and how dismissal announcements that follow restatements affect the share prices of non-dismissing firms that share a common auditor with the dismissing firm, by providing empirical evidence on the market reaction to these auditor dismissal announcement.

2.2 Auditor reputation

Beyer & Sridhar. (2006) theoretically predicted that the value of a client firm depends on the publicly observable audit report for that client as well as the audit reports of all the other clients of the same auditor. That is, reporting errors on one client can increase the information risk of other clients with the same audit partner. Therefore, the market's perception of the auditor's level of integrity is influenced by all the audit reports. Knechel et al.(2015) provide evidence about the validity of this theoretical prediction. The authors find that find that the market penalizes firms audited by partners with a history of aggressive going concern opinions (decreased bias for giving a going concern opinion to a client that files for bankruptcy in the subsequent year) or accrual reporting, through higher implicit interest rates, lower credit ratings, and higher assessed insolvency risk. This suggest that investors value which audit firm or partner has previously audited the financial statement of other firms and that investors value the correctness of the auditor going concern opinion.

(Swanquist & Whited, 2015) find that firms avoid taking on new agreements with audit offices in which a restatement was revealed at a previous client firms of the audit offices. These findings indicate that firms discipline auditors for association with audit failures, thereby providing an incentive to maintain high quality audits and protect reputational capital. These finding also indicate that investors do not only care about the audit firm their firm hires, but also the audit office their firm hires. Taken one step further, (Gul et al., 2016) find that a price contagion effect occurs through a common audit partner instead of audit office or audit firm. They find that audit partners who are known by investors to conduct low quality audits, can suffer from reputational losses and a loss of client market share. (Skinner & Srinivasan, 2012) find that in japan, PwC lost a portion of their market share after it turned out that they were involved with an accounting scandal. The authors further find that firms with more growth options and firms that are larger were more likely to leave the auditor following the accounting fraud. This suggests that reputational cost was incurred by the auditor for being involved with an accounting fraud. Another study conducted in Germany find evidence suggesting that after the auditor was revealed to be involved in an accounting fraud, the share prices of other clients of the auditor dropped by 3% on the day that the fraud was revealed (Weber et al., 2008). The investors lost trust in the credibility of the financial reports that the auditor has provided, as this is seen in the drop-in share price for clients of the auditor.

Collectively, this evidence suggests that investors value the reputation of the auditor and incorporate this into the share price. Events that occur at one firm, can have share price reaction in a different firm that shares the same auditor.

2.3 Prior research on accounting information transfer

Previous research investigated the spillover effect of bankruptcy statements which revealed that distress or negative news in one firm, can conjure a stock price reaction in the other firm (Boone & Ivanov, 2012; Haensly, Theis, & Swanson, 2001; Helwege & Zhang, 2013; Hertzel, Li, Officer, & Rodgers, 2008; Lang & Stulz, 1992). These studies show that an information transfer between firms operating in the same industry exists, where news that is released by one firm affects the stock price of another firm in the industry. The information transfer studies proceed in three steps. Firstly, the stock return of the firm that announces the news is investigated to confine any share price movements that follow the news event that is being investigated. Secondly, stock returns corresponding to the event that is announced are calculated for a sample of peer firm that are non-announcing. Information transfer effects are then assumed to be present when the mean event-period stock return for peer firms that did not announce is accurately different from zero. Finally, corroborating information is sought that reveal cross-sectional differences in the stock return of peer firms that are non-announcing can be traced to event-related differences in firm characteristics. This last step is designed to distinguish favorable "competitive'' effects from unfavorable "contagion'' effect, thereby confirming that contagion stock returns are related with firm characteristics that predict the event of interest (Gleason et al., 2008). In an event, such as an auditor dismissal, it is conceptually unlikely, nor has any previous study found, that the dismissal of an auditor in one firm leads to favorable effects in non-dismissing that share a common dismissed auditor. Therefore, this thesis is guided by the thought that any even-period stock return found is driven by a contagion effect. However, in non-dismissing firms with a different auditor could experience a favorable effect because investors could prefer to invest in firms with an auditor that was not dismissed by a peer firm experiencing restatements.

3. Hypotheses development

Previous studies on information transfer theory investigates the share price contagion effect of information from one to another, commonly in the same industry. Gleason et al. (2008) find that firms that restated their accounting numbers, thereby negatively influencing stockholder wealth, cause share price decline at non-restating firms in the same industry. Specifically, they find that investors extend their concerns regarding accounting quality to other companies in the same industry. They also find that price contagion effect is more pronounced when the restating firm and peer firms share the same external audit firm. (Hennes et al., 2013) find positive market reaction for auditor dismissals following a restatement, as they argue investors view this dismissal as a firm's action to recover their credibility. However, this could negatively influence the credibility of the auditor itself. To investors, an auditor dismissal announcement made by a peer firm experiencing accounting restatement could indicate the auditor failed to prevent a restatement of the financial report. Investors' could then become more concerned about the quality of the financial statements, because of lowered trust in the assurance provided by the external auditor. The perceived loss in credibility can lead to a negative market reaction as capital market investors lower their trust in the provided assurance on the financial report by the auditor. I combine these earlier studies by studying the share price contagion effect of auditor dismissal announcements following restatement announcements. Research on information transfer claims that information from one announcing firm is useful for investors, in revising their expectations of comparable information, at other firms that share characteristics with the announcing firm. I hypothesize that an auditor being dismissed by a peer firm, can cause investors to perceive the quality of that particular audit firm to be damaged. Consequently, investors are likely to reassess their confidence of the audit quality provided by the dismissed auditor at other firms downwards, possibly resulting in a share price decline at these firms.

Collectively, this leads to the following hypothesis:

H1:Auditor dismissals announcements following restatement announcements induce negative market reaction for non-dismissing clients of dismissed auditors.

Nelson et al. (2008) examine the market reaction for client firms of Arthur Anderson. They investigate the share price reactions just after the public announcement, that Arthur Anderson destroyed documentation used in the audit of Enron. The authors find that the market

reaction was significantly more negative for clients firm of Arthurs Anderson that operated in the industry Enron was most active in. Investors seem to value the quality of the auditor to a greater extend, if negative news about the auditor is released by a peer firms operating in the same industry. Knechel at al. (2007) find that investors value if an auditor is regarded as an industry specialist. The find that investors react positively to a firm that hires an external auditor that is regarded as an industry specialist. This suggests that investors take the experience that an auditor has in a certain industry into consideration when making investment decisions. Alternatively, negative news announcements about auditors that are industry specialist could then cause greater contagion stock returns at peer firms.

These results combined indicate that investors value in what industry the auditor is active, thus resulting in a more negative market reaction for firms who operated in the same industry as the firm that dismissed their auditor.

I hypothesize that investors perceive an auditor dismissal at a peer firm to be more harmful to the credibility of the financial report due to the auditor making a mistake in the same financial reporting environment. This leads to the following hypothesis:

H2: Auditor dismissals announcements following restatement announcements induce more negative market reaction if non-dismissing clients operate in the same industry as the dismissing firm.

4. Research design

The size-adjusted daily common stock returns are used to determine the contagion effect of announced auditor dismissals following an accounting restatement. These stock returns are measures with the announcement buy-and-hold cumulative abnormal stock return (CAR) that are calculated over a five-day window (day -2 to day +2) that centers the day of the first press release describing the auditor dismissal. To compute the size-adjusted CAR I follow (Gleason et al., 2008) which leads to:

$$CAR_{(-2,+2)} = \sum_{t=-2}^{+2} MARt \quad (1)$$

Where:

$$MARt = \frac{1}{N_t}\sum_{i=2}^{N_t} AR_{it} \ and \ AR_{it} = R_{it} - E(R_{it})t = -2,-1,0,+1,+2 \quad (2)$$

where *Rit* is the return of the sample firm i on day t and *E(Rit)* is the corresponding value-value-weighted expected return inclusive of dividend for firm i on day t from CRSP. Size-adjusted CAR are also calculated form the pre-announcement period (days -10 to -3) and post announcement period (days +3 to +10) to control for the possibility of initial release of insider information or any post-announcement drift. The three-day CAR is included for corroborating evidence.

To determine if an auditor is dismissed because of the misstatement, I define any relevant auditor turnover as an auditor change that occurs within 12 months after the board of directors reasonably became aware of the misstatement. Since the internal information flow to the board of directors is unobservable it is difficult to exactly determine the moment the misstatement is first discovered. Initially I search for auditor changes that occur 12 months after a restatement is announced. To corroborate if the auditor was indeed dismissed, I look at the 8-k fillings that specifically state that the auditor was dismissed.

In testing hypothesis 1, I examine the market reaction of two separate groups of non-dismissing firms after the dismissal announcement. (1) firms audited by an auditor that was dismissed by a firm experiencing accounting restatements and (2) non-contagion firms audited by a different audit firm. For testing hypothesis 2, I start with the same sample as used in hypothesis 1. Then, I retain only those contagion and non-contagion firms that operate in the same industry as the dismissing firm.

I identify non-contagion firms as those in the same industry as the dismissing firm but do not share the same auditor as the dismissing firm. The firms in the first group are the treatment firms, while firms in the second group are the benchmark firm.

To test H1, I predict the following cross-sectional regression:

$$CAR = \alpha + \beta_1 CDA + \beta_2 SIZE + \beta_3 MTB + \beta_4 LEV + \beta_5 |DA| + \beta_6 ROA + \beta_7 Day_L + \beta_8 CAR_{dismissed} + \beta_9 SIZE_{dismissed} + \text{Year/Industry fixed-effects} + \varepsilon \quad (2)$$

Where *CAR* refers to the five-day cumulative abnormal returns of all peer firms of the dismissed auditor centering the announcement date of the dismissal. Common dismissed auditor CDA is an indicator variable that equals one if the firm is audited by the same dismissed auditors as the corresponding firm that dismissed their auditor after an accounting restatement during the fiscal year of the dismissal announcement and zero otherwise. If is significantly negative, H1 is supported. All control variables, except for $CAR_{dismissed}$ are measured at the fiscal year end one year prior to the dismissal announcement. I control for firm size (*SIZE)* since large firms are subject to closer scrutiny by investors. This greater capital market pressure will heighten the concerns of investors over the contagion firms' financial reporting quality and therefore possibly aggravate the share price contagion effect (Chen & Goh, 2010; Gleason et al., 2008). The size of firms is measured using CRSP decile rank at the beginning of the calendar year the dismissal is announced. Leverage is included (*LEV*) and measured as the debt-to-equity ratio to control for the influence of leverage on the observed stock price reactions to informational events (Lang & Stulz, 1992). Following Gul et al.(2016), I control for firm performance with return on assets (*ROA*) and potential firm growth with market to book ratio (*MTB*). Prior research shows that accounting quality predict the likelihood of restatements (Dechow, Sloan, & Sweeney, 1996; Gleason et al., 2008). To control for the possibility that restatement-induced contagion stock returns are correlated with accounting quality, I include the absolute discretionary accruals of contagion firms and non-contagion firms. I include the variable Day_L to collect information about the time-series proximity of auditor dismissals. Day_L denotes the number of cumulative trading days that have elapsed from the date that an auditor is dismissed to the next date this same auditor is dismissed. This variable is used to determine if contagion stock returns increases or decreases as an auditor is dismissed by more firms. If investors become more concerned about tainted financial statements as more time has passed since the last dismissal by a peer firm, the coefficient for Day_L should be negative. Following Gul et al. (2016), I control for the dismissing firms *CAR* around the dismissal date as the magnitude of

the information transferred by the event firm affects the degree of spillover (Weber et al., 2008). Hennes et al (2013) found that the market reacting is different for the dismissal of non-big4 auditors compared to big4 auditors. However, I do not need to control for lateral auditor changes because I examine the market reaction of peer firms and not the reaction of the dismissing firms. Finally, I control for the size of the dismissing firm since larger firms are likely to induce a greater share price contagion effect.

5. Sample selection

All variable definitions are summarized in the appendix. The dismissal sample is obtained from the Audit Analytics database. The original auditor dismissal sample comprises all events of firms dismissing the external auditor from 2000 to 2016. As shown in table 1 panel A, the sample starts with 27,309 dismissal events. Observations are deleted if the fillings indicate that the auditor resigned instead of being dismissed (7,871 observations); the fillings do not indicate that the auditor is dismissed because of a restatement (18,062 observations); if the auditor tenure is shorter than 12 months (870 observations) or if the auditor is Arthur Anderson (47 observations), because these dismissals are likely unrelated to any subsequent restatements event. Finally, to avoid firm-level effects across observations, only one dismissal per firms is retained. The final dismissal sample consists of 150 dismissal events, in which a firm dismisses the external auditor because a restatement occurred or will occur. This amount of dismissal seems consistent with prior evidence of Hennes et al. (2013) that find 122 dismissals.

Panel B provides sample selection procedures for contagion firms and non-contagion firms. First, all firms with an external auditor between 2000 and 2016 are obtained (233,317) from Audit Analytics. Next, the sample is merged with compustat to enable the construction of the control variables, resulting in 182,904 observations. After dropping observations with missing data for the control variables, 80,827 firm-year observations remain.

Panel C provides sample selection procedures for contagion firms and non-contagion firms. A contagion firms is defined through a common audit firm if the firm was audited by the same firm as the dismissing firm at the time of auditor dismissal. To identify the contagion firms, the peer firms are matched with the dismissal firms based on a common dismissed auditor. This results in a final sample of 72,427 observations of contagion firms with a common dismissed auditor. I identify non-contagion firms as those that are audited by a different external auditor. The non-contagion sample consists of 404,517 observations.

As shown in panel E, for testing hypothesis 2, the sample is reduced to only those firms that operate in the same industry. More specifically, observations are retained if the dismissing firm operates in the same industry as the contagion and non-contagion firms. Industry classification is based on 2-digits SIC codes... All continued variables are winsorized at the top and bottom one percentile to control for the undue influence of outliers.

Finally, panel E of table 1 represents the distribution of the contagion, non-contagion and dismissal firms in each year.

TABLE 1. Sample selection procedure

Panel A: Auditor Dismissals

Number of dismissals between 1989 and 2016 (Audit Analytics)	27,309
Less: number of dismissals	
-where the auditor resigned instead of being dismissed	7,871
-where fillings do not indicate auditor is dismissed because of a restatement that occurred or will occur	18,062
-where auditor tenure is shorter than 12 months	870
-that have Arthur Anderson as the external auditor	47
-that have missing data for the control variables	60
-dropped observations that are not listed on an U.S stock exchange	5
Number of observations in which a firm dismissed the external auditor because of a restatement that occurred or will occur.	145
Panel B: Peer firms	
Number firms-years and their corresponding auditor between 2000 and 2016 from Audit Analytics.	233,317
Observations left after merging with compustat	182,904
Dropped observations with missing data for control variables	102,077
Number of firm-year observation to match with auditor dismissals events	80,827
Panel C: Sample for price contagion model (H1)	
Number of peer firm observations that are matched based on the stock exchange of the dismissing firm (i.e., NYSE, NASDAQ and AMEX)	519,232
Dropped Observations with missing data for control variables	96,505
Number of observations in the price contagion model	422,727
Number of observations with a common dismissed auditor (contagion)	64,289
Number of observations without a common dismissed auditor (non-contagion)	358,438
Panel D: Sample for price contagion model within industry (H2)	
Number of observations matched based on the same industry	17,354
Number of observations with a common dismissed auditor (contagion)	2,594
Number of observations without a common dismissed auditor (non-contagion)_	14,760

Panel E: Sample Description

Year	All listed firms	Dismissal Firms	Contagion firms With CDA	Non-contagion firms without CDA
2000	12282	5	2.252	10.025
2001	10727	4	1.612	9.111
2002	35016	10	4.136	30.870
2003	43735	13	7.698	36.024
2004	32820	11	5.420	27.389
2005	74319	26	12.828	61.465
2006	75722	26	12.468	63.228
2007	42902	15	6.230	36.657
2008	24252	9	3.148	21.095
2009	14460	5	2.027	12.428
2010	19252	7	2.693	16.552
2011	8144	3	428	7.713
2012	10654	4	1.722	8.928
2013	13163	5	1.057	12.101
2014	5434	2	580	4.852
Total	422.872	145	64.289	358.438

This table provides information on the sample distribution by year, specifically the distribution of the sample of all listed firms, dismissal firms, contagion firms with a common dismissed auditor and non-contagion firms. The dismissal firms are the firms that dismissed their auditor because of a preceding restatement. Two distinct groups of firms are used in the analysis. (1) firm audited by the same auditor as the dismissing firm at the time of the auditor dismissal, which are denoted as contagion firms with CDA; (2) firms audited by a different auditor as the dismissing firm at the time of the auditor dismissal.

5.1. Testing the OLS assumptions

Before the results of the ordinary least squares regression can be interpreted, the assumptions of the regression used to test hypothesis 1 are tested. The Breusch–Pagan test is used to the test for heteroskedasticity. As shown in Table 2 panel A, the test revealed that heteroskedasticity is present in the data. To control for heteroskedasticity, robust standard errors are used in the regression model. Next, multicollinearity is tested by computing the variance inflation factor. Table 2 panel B shows that the variance inflation factors are below the value of 10, indicating that these numbers merit no further investigation as there exists little multicollinearity between the independent variables. Next, normality of the residuals is checked using the Shapiro-Wilk W test. The p-value of the Shapiro-Wilk W was 0 as shown in table 2 panel C, thereby concluding that the residuals are not normally distributed. However, this is not required to obtain unbiased estimates of the regression coefficients. Ordinary least squares regression merely requires that the residuals (errors) be identically and independently distributed. Finally, the normal distribution of the variables are checked and concluded that these variables were approximately normally distributed. The results (untabulated) used to test the OLS assumptions of the regression used for hypothesis 2 provide similar results.

Table 2 OLS assumptions

Panel A: Breusch-Pagan test for heteroskedasticity

Variables	Chi2	Prob>z
Fitted values of CAR[-2,+2]	3533.44	0.000

Breusch-Pagan test for heteroskedasticity, where the p-value -value indicates if the variance is contestant. H0: the variance is constant. The p-value of 0 indicates that H0 is rejected.

Panel B: Testing for variance inflation factors

Variable	VIF	1/VIF
SIZE	1.44	0.694941
ROA	1.33	0.749847
|*DA*|	1.23	0.812120
LEV	1.19	0.837823
CDA	1.07	0.938695
$SIZE_{dismissed}$	1.04	0.961497
MTB	1.02	0.981497
$CAR_{dismissed}$	1.01	0.990983
Day_L	1.01	0.994111
Mean VIF	1.15	

Variance inflation factor indicates if multicollinearity exists, where VIF mean below 10 indicates no multicollinearity.

Panel C: Shapiro-Wilk W test

Variable	Obs	W	V	z	Prob>z
Residual	476,944	0.94172	909.540	18.821	0.000

Shapiro-Wilk W test for normal distribution of the residuals of model 6 (see Appendix G), where the p-value - value indicates that the residuals are not normal distributed. H0: the residuals are normal distributed. The p-value indicates that H0 is rejected

6. Empirical results of the price contagion effect tests

6.1.1 Descriptive statistics and correlation for H1

Table 3 panel A shows that the mean is *CAR* is 0.00189, indicating that the average firm in sample has a cumulative abnormal return that is positive. This implies that the average contagion and non-contagion firm has a positive cumulative abnormal return. Because non-contagion firms share few characteristics with the dismissing firm, the positive CAR does not allow any meaningful interstation. The mean and median value of *CDA* is 0.152, indicating that 15,2% of firms are contagion firms and 84,8% are non-contagion firms. The mean value of *MTB* shows that the sample firms are have relatively high growth opportunities. The mean and median value of *ROA* are -0.0290, indicating that the average firm is unprofitable. Day_L has a mean and median value of 35.95, which shows that the average number of days between dismissal events is 36. Finally, the mean value of $CAR_{dismissed}$ is positive, providing preliminary evidence that the average return for the firm that dismissed the external auditor after a restatement is positive. This is consistent with prior literature (Hennes et al., 2013). The correlation matrix in table 3 panel B shows that nearly all variables are significantly correlated. However, the coefficients are not high enough to cause multicollinearity. This corroborates the evidence found in testing the variance inflation factors. As expected, the three-day *CAR* is highly correlated with the five-day CAR.

Table 3: Univariate analyses for H1

Panel A: Descriptive Statistics

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	MEAN	STD	MIN	MAX	P25	P75
CAR[-2,+2]	0.00189	0.00189	-0.194	0.243	-0.0294	0.0296
CAR[-1,+1]	0.00131	0.00131	-0.151	0.191	-0.0228	0.0224
CDA	0.152	0.152	0	1	0	0
SIZE	5.802	5.802	1.742	10.66	4.330	7.173
MTB	3.051	3.051	-13.12	30.00	1.271	3.612
LEV	0.471	0.471	0.0428	1.346	0.268	0.634
|DA|	0.114	0.114	0.00105	0.803	0.0285	0.142
Day_L	35.95	35.95	0	300	6	45
ROA	-0.0442	-0.0442	-1.398	0.295	-0.0498	0.0738
$CAR_{dismissed}$	0.00554	0.00554	-0.149	0.289	-0.0295	0.0321
$SIZE_{dismissed}$	19.65	19.65	14.94	24.16	18.04	21.17

This table provides the descriptive statistics for variables in the main analyses. All variables are defined in the Appendix.

Panel B: Pearson correlation matrix

This table presents the Pearson correlations between each two variables used in testing hypothesis 1. All

	1	2	3	3	4	5	6	7	8	9	10
CAR[-2,+2]											
CAR[-1,+1]	***0.71***										
CDA	***-0.01***	***-0.04***									
SIZE	***-0.00***	***-0.00***	***0.09***								
MTB	***-0.04***	***-0.00***	***-.0.01***	***-0.07***							
LEV	0.00	0.00	***0.02***	***0.31***	***-0.06***						
|DA|	***0.00***	***0.00***	***-0.03***	***-0.28***	***0.08***	***0.01***					
Day_L	***0.01***	***0.02***	***0.02***	***-0.00***	***0.01***	***-0.02***	***-0.00***				
ROA	***-0.00***	***-0.00***	***0.03***	***0.36***	***-0.08***	***-0.06***	***-0.41***	***0.01***			
$CAR_{dismissed}$	***0.02***	***0.00***	***0.04***	***0.01***	***0.01***	0.00	-0.00	***-0.04***	0.00		
$SIZE_{dismissed}$	***-0.00***	***-0.00***	***0.04***	***0.01***	***0.01***	0.00	-0.00	***0.21***	***0.02***	***-0.02***	

variables are defined in the appendix. The coefficients in bold an italic are significant at the 0.05 level.

6.1.2 Descriptive statistics and correlation for H2

Table 4 shows that the mean is *CAR* is 0.003, indicating that the average firm in the sample of firms for testing hypothesis 2 has a cumulative abnormal return that is positive. This implies that the average contagion and non-contagion firm has a positive cumulative abnormal return. Moreover, it provides preliminary evidence that the average CAR is higher for peer firms operating in the same industry. The mean and median value of *CDA* is 0.147, indicating that 14,7% of firms are contagion firms and 85,3% are non-contagion firms. The mean value of *MTB* shows that the sample firms have relatively high growth opportunities. The mean and median value of *ROA* are -0.0765, indicating that the average firm in the sample is unprofitable. Day_Lhas a mean and median value of 38.13, which shows that the average number of days

between dismissal events is 38. Finally, the mean value of $CAR_{dismissed}$ is positive, indicating that the average return for the firm that dismissed the external auditor is positive. This is consistent with prior literature (Hennes et al., 2013). As expected, the three-day *CAR* is highly correlated with the five-day CAR. The correlation table (untabulated) for the sample used in H2 provide similar results. More specifically, nearly all variables are significantly correlated. However, the coefficients are not high enough to cause multicollinearity.

Table 4: Univariate analyses for H2

Descriptive Statistics

VARIABLES	(1) MEAN	(2) STD	(3) MIN	(4) MAX	(5) P25	(6) P75
CAR[-2,+2]	0.00300	0.00300	-0.194	0.243	-0.0307	0.0323
CAR[-1,+1]	0.00114	0.00114	-0.151	0.191	-0.0243	0.0235
CDA	0.149	0.149	0	1	0	0
SIZE	5.429	5.429	1.742	10.66	4.004	6.684
MTB	3.257	3.257	-13.12	30.00	1.340	3.913
LEV	0.426	0.426	0.0428	1.346	0.224	0.581
|DA|	0.124	0.124	0.00105	0.803	0.0345	0.157
Day_L	38.13	38.13	0	300	5	49
ROA	-0.0765	-0.0765	-1.398	0.295	-0.104	0.0732
$CAR_{dismissed}$	0.0133	0.0133	-0.149	0.289	-0.0309	0.0620
$SIZE_{dismissed}$	19.00	19.00	14.94	24.16	17.61	20.13

This table provides the descriptive statistics for variables in the main analyses. All variables are defined in the Appendix.

6.2.1 Univariate analysis for testing H1.

Table 5 reports the mean of the CARs for a range of window periods for contagion and non-contagion firms, independently based on the sample used to test hypothesis 1. The five- and three-day CARs provide consistent results. The mean five-day CAR is significantly positive for both the contagion 0.10% and non-contagion firms 0.19%. This preliminary results indicates that no negative market reactions exist for firms that have the same external auditor as the dismissing firm. Contrary to the predictions, the news of a peer firms dismissing their auditor is perceived positively by investors of contagion firms and non-contagion firms. Table 5 indicates that the positive market reactions for non-contagion firm is significantly more positive than for contagion firms. However if the average CAR of all firms is positive, table 5 suggests contagion firms with a common dismissed auditor have a lower abnormal stock return compared to non-contagion firms with different auditors. This could imply that news of an auditor dismissal made by a peer firm experiencing restatement, causes investors to become more concerned about tainted financial statements but not concerned bough to induce a negative market reaction. The three-day CAR provides similar results as the five-day CAR. The post-announcement period provides contradicting results. For contagion firms the CAR is significantly higher 0.44% than those of non-contagion firms 0.28%. These results suggest that contagion firms experience positive stock return in the post-announcement period. Moreover, the stock returns of contagion firm are higher than those of non-contagion firms. Investors of contagion firms seem to react positively to an auditor dismissal made by a peer firm in the period following the dismissal announcement. However, ex ante it is unclear if these results represent a post announcement drift these dismissal announcements. Therefore, no meaningful economic interpretation can be deducted from these results. The coefficients in the post-announcement period are insignificant. Possibly because the dismissal announcement does not represent enough information for investors, to alter investment decisions more than two days after the announcement. Another possibility is that no post-announcement drift exists for these dismissal announcement. The statistically positive stock return of dismissing firms is consistent with evidence provided by Hennes et al. (2013), except for the negative CAR found in the post-announcement period. The negative CAR found in the post-announcement period does not necessarily relate to mistakes made in the data analysis, since Hennes et al.(2013) do not provide evidence for alternative windows of CARs of dismissing firms. Moreover, I did not collect data on the auditor preceding the dismissed auditor. The post-announcement return could be negative because a dismissing firms' lateral auditor switch, from a big-4 auditor to a non-big4 auditor, is not controlled for.

Taken together, these results do not provide preliminary support for H1 that a stock price decline exists for contagion firms that have a common dismissed auditor with the dismissing firm, nor that this share price decline is greater for firm audited by a different auditor. However, the results show that contagion firms' CAR is lower compared to firms audited by a different auditor in the five-day and three-day period surrounding the dismissal announcement. This suggest that investors incorporate the news of an auditor dismissal made by a peer firm experiencing accounting restatements into their investor portfolio.

6.2.2 Univariate analysis for testing H2

Table 5 panel B reports the mean of CARs for a range of window periods for contagion and non-contagion firms, independently based on the sample used to test hypothesis 2. The mean five-day CAR is significantly negative contagion firms in both the five-day window -0.08% and the three-day window -0.06%. These results provide preliminary evidence that investors firms react negatively to an auditor dismissal announcement made by a peer firm experiencing restatement.. For firms in this subsample, that are limited to firms operating in the same industry, non-contagion firms seems to experience positive contagion stock returns of a greater magnitude. This implies that investors of non-contagion firms in the same industry reacts positively to the news of the dismissal announcement. Earlier I stated that this thesis is guided by the thought that any even-period stock return found is driven by a contagion effect. One possible however, could be that the stocks of non-contagion firms become more popular because of competitive motives (Lang & Stulz, 1992). Investors could become more concerned about the financial statements of firms that share a common auditor with the dismissing firm. Investors could then prefer shares of firm that operate in the same industry but with a different external auditor. Moreover, it is unlikely that an auditor dismissal announcement conveys negative news for non-contagion firms in the same industry. If the dismissal announcement is positive news for other firms in the industry, this results is consistent with the intra-industry information transfer documented by Gleason et al. (2008). The pre- on post-announcement period CARs of contagion and non-contagion firms are all insignificant. One possibility is that the dismissal announcement does not represent enough information for investors, to alter investment decisions more than two days before and after the dismissal announcement.

Taken together, these results provide preliminary evidence that H2 is supported. The results show a share price decline for contagion firm operating in the same industry as the dismissing firm.

Table 5: Univariate analysis in market reactions

Panel A: H1

	(1)	(2)	(3)	(4)
	Contagion firms with CDA	Non-contagions firms without CDA	Contagion firms vs non-contagion	Dismissing firms
	N=64.289	N=358.438	N=422.727	N=145
Variable	Mean	Mean	Diffirence in mean	Mean
CAR(-2,+2)	0.10%***	0.19%***	0.09%***	0.73%***
CAR(-1,+1)	0.07%***	0.14%***	0.07%***	0.29%***
CAR(-10,+3)	0.25%	0.21%	-0.04%	0.54%
CAR(+3,+10)	0.44%***	0.28%***	-0.14%***	-1.03%***

This table reports the descriptive statistics for the samples used in the price contagion test.. The cumulative abnormal returns (CARs) are measured at different intervals. CAR is calculated as a firm's raw return minus the weighted adjusted market return on the corresponding day. Day 0 is the day of the dismissal announcement. The third column reports the statistical difference in the CARs between firms with contagion firm with a common dismissed auditor and non-contagion firms . ***,**,and*denote significance at the 1% ,5%,and 10% levels, respectively, based on two-tailed t test.

Panel B: H2

	(1)	(2)	(3)
	Contagion firms with CDA	Non-contagions firms without CDA	Contagion firms vs non-contagion
	N=3,014	N=17,500	N=20,514
Variable	Mean	Mean	Diffirence in mean
CAR(-2,+2)	-0.08%***	0.26%***	0.34%***
CAR(-1,+1)	-0.06%**	0.11%**	0.17%**
CAR(-10,+3)	0.24%	0.05%	-0.29%
CAR(+3,+10)	0.42%	0.44%	0.20%

This table reports the descriptive statistics for the samples used in the price contagion test, where all peer firms operate in the same industry as the dismissing firm. The cumulative abnormal returns (CARs) are measured at different intervals. CAR is calculated as a firm's raw return minus the weighted adjusted market return on the corresponding day. Day 0 is the day of the dismissal announcement. The third column reports the statistical difference in the CARs between firms with contagion firm with a common dismissed auditor and non-contagion firms . ***, **, and*denote significance at the 1%, 5%, and 10% levels, respectively, based on two-tailed t tests.

6.3 Multivariate regression analyses for testing H1

Table 6 presents the results from testing H1. I report CAR [-2.+2] and CAR [-1 +1] in the main analysis and provide alternative CARs in the robustness section. The coefficient of *CDA* in model (1) is significant and negative (at the 0.01 level using two-side tests). This result provides weak evidence that a price contagion effects exists for announcement of auditor dismissals at peer firms experiencing restatements. The five-day CAR is 0.1% lower for contagion firms that share common audit firms with the dismissing firms. The magnitude is economically significant, given that the mean value of the five-day CAR around the corresponding dismissal announcement date for all contagion and non-contagion firms is 0.18% . The coefficient of *CDA* in model (2) is significant and negative (at the 0.05 level using two-sides tests), corroborating the evidence found in testing hypothesis 1 using the five-day CAR. Although, the magnitude of *CDA* in model (2) is marginal in size, this is expected because the window of the CAR is smaller.

The control variables *LEV* and *ROA* are significant in both models, suggesting firms more leveraged firms and firms that are more profitable, experience greater abnormal stock returns. The coefficient on Day_L is significant and positive in both models, suggesting that abnormal stock returns are higher if the numbers of days between dismissals announcement increases. Alternatively, dismissal events that occur frequently in a relative short period cause lower abnormal stock returns. The significant and positive coefficient on $CAR_{dismissed}$ in model (1) indicates that contagion stock returns are highly correlated with stock returns of dismissal companies. More specifically, more positive news released in the auditor dismissals leads to a more severe information spillover to other firms. In model (2) *SIZE* is significant and negative and *MTB* is significant and positive, indicating that abnormal stock returns are greater for firms that are smaller and firm that have more growth opportunities. Although this effect is marginal because the value of the coefficients are close to zero. Finally, in model (2) the size of the dismissing firm is significant and negative, indicating that larger dismissing firms induce greater contagion stock returns.
All other control variables are not statically significant at the conventional level. In both models the adjusted R-squared is 2.02% and industry- and year fixed effects are included.

Collectively, this provides evidence that H1 is supported. However, these results should be interpreted differently given the results shown in table 5. Since the average CAR of both contagion and non-contagion firms is positive, the announcement of the dismissal reduces the CAR of contagion firms with a common dismissed auditor compared to non-contagion firm

with a different auditor. Therefore, investors do incorporate news of auditor dismissals announcements at peer firms experiencing accounting restatements into the share price.

Table 6: Multivariate regression analysis for testing H1.

VARIABLES	Dependent Variable	
	(1) CAR[-2,+2]	(2) CAR[-1,+1]
CDA	-0.001***	-0.000**
	(0.007)	(0.048)
SIZE	-0.000	-0.000***
	(0.000)	(0.000)
MTB	0.000	0.000**
	(0.417)	(0.045)
LEV	0.001**	0.001***
	(0.022)	(0.006)
|DA|	0.001	0.000
	(0.342)	(0.329)
ROA	0.001***	0.001**
	(0.008)	(0.024)
Day_L	0.001***	0.000***
	(0.000)	(0.007)
$CAR_{dismissed}$	0.024***	0.000
	(0.000)	(0.697)
$SIZE_{dismissed}$	-0.000	-0.000**
	(0.151)	(0.011)
Constant	-0.005**	-0.002
	(0.018)	(0.244)
Observations	422,727	422,727
Adjusted R-squared	2.%	2%
Industry Fixed Effects	YES	YES
Year Fixed Effects	YES	YES

This table represents the results of testing Hypothesis 1 and represents the results of the following regression: $CAR = \alpha + \beta_1 CDA + \beta_2 SIZE + \beta_3 MTB + \beta_4 LEV + \beta_5 |DA| + \beta_6 ROA + \beta_7 Day_L + \beta_8 CAR_{dismissed} + \beta_9 SIZE_{dismissed} + \text{Year/Industry fixed-effects} + \varepsilon$

The dependent variable in model (1) is the firms' five-day cumulative abnormal returns around the corresponding sanction announcement date (-2,+2) where date 0 represents the day of the dismissal announcement. The dependent variable in model (2) is the firms' three-day cumulative abnormal return around the corresponding sanction announcement date (-1,+1), where date 0 represents the day of the dismissal announcement. The daily abnormal return is calculated as a firm's raw return minus the value-weighted adjusted market return on the corresponding day. All variable are defined in the Appendix; *** p<0.01, ** p<0.05, * p<0.10 (two-sided test) using Robust standard errors in parentheses

6.3 Multivariate regression analyses for testing H2.

Table 7 presents results from testing H1. I report CAR [-2.+2] and CAR [-1,+1] in the main analysis and provide alternative CARs in the robustness section. The coefficient of *CDA* for the five-day CAR is significant and negative (at the 0.01 level using two-side tests).The coefficient for the five-day CAR is greater than in the regression used to test hypothesis 1. This indicates that contagion firms operating in the same industry as the dismissing firm experience more severe contagion stock returns. The coefficient *CDA* is significant and negative in model (2) and is greater than the coefficient of *CDA* in model (2) of table 6. This corroborates the evidence found in testing hypothesis 2 using the five-day CAR.

In the first model *SIZE* is significant and negative, suggesting that larger firms experience a more sever contagion stock returns. Model (1) shows that *ROA* is both significant and positive, suggesting that contagion stock returns are higher for firms that are more profitable. Day_L is significant and positive in both models, indicating that contagion stock return are more severe if dismissal announcement occur within a relatively shorter period. The significant and negative coefficient on $CAR_{dismissed}$ in model (1) indicates that contagion stock are highly correlated with the stock returns of dismissal firms. More specifically, more positive news released by the dismissing firm leads to a more severe information spillover. All other variables are insignificant.

Overall, these results are consistent with hypothesis 2 that auditor dismissal announcements after restatement announcements induce larger stock price declines if the peer firm has a common dismissed auditor and operates in the same industry. Investors seem to incorporate news of auditor dismissals by peer firms experiencing accounting restatements into the share price to a greater effects, if the firm operates in the same industry. If news of an auditor dismissal announcement at a peer firms conveys negative news for contagion firms. Investors of contagion firms could me more willing to change their investment into non-contagion firm that operated in the same industry as the dismissing firm compared to non-contagion firms in different industries. Hence, resulting in a larger share price decline.

Table 7: Multivariate regression analysis for testing H2.

VARIABLES	Dependent Variable	
	(1) CAR[-2,+2]	(2) CAR[-1,+1]
CDA	-0.004***	-0.002**
	(0.002)	(0.048)
SIZE	-0.000**	0.000
	(0.031)	(0.206)
MTB	0.000	0.000
	(0.861)	(0.226)
LEV	0.014	0.000
	(0.918)	(0.958)
|DA|	-0.000	-0.001
	(0.896)	(0.603)
ROA	0.007**	0.000
	(0.012)	(0.120)
Day_L	0.000***	0.000***
	(0.000)	(0.000)
$CAR_{dismissed}$	0.015**	-0.014
	(0.029)	(0.590)
$SIZE_{dismissed}$	-0.008	-0.000
	(0.434)	(0.008)
Constant	-0.017	0.006
	(0.312)	(0.482)
Observations	17,354	17,354
Adjusted R-squared	2.02%	2.02%
Industry Fixed Effects	YES	YES
Year Fixed Effects	YES	YES

This table represents the results of testing Hypothesis 2 and represents the results of the following regression: $CAR = \alpha + \beta_1 CDA + \beta_2 SIZE + \beta_3 MTB + \beta_4 LEV + \beta_5 |DA| + \beta_6 ROA + \beta_7 Day_L + \beta_8 CAR_{dismissed} + \beta_9 SIZE_{dismissed} +$ Year/Industry fixed-effects $+ \varepsilon$

The dependent variable in model (1) is the firms' five-day cumulative abnormal returns around the corresponding sanction announcement date (-2,+2) where date 0 represents the day of the dismissal announcement. The dependent variable in model (2) is the firms' three-day cumulative abnormal return around the corresponding sanction announcement date (-1,+1), where date 0 represents the day of the dismissal announcement. The daily abnormal return is calculated as a firm's raw return minus the value-weighted adjusted market return on the corresponding day. All variable are defined in the Appendix; *** p<0.01, ** p<0.05, * p<0.10 (two-sided test) using Robust standard errors in parentheses

7 Sensitivity analysis

In the main analysis, I use CAR[-2,+2] and CAR[-1,+1] adjusted by value-weighted market portfolios (i.e., NYSE, NASDAQ and AMEX). This section provides a robustness check using an alternative way to calculate abnormal returns. More specifically, I use CAR[-2,+2] and CAR[-1,+1] adjusted by equally-weighted market portfolios. Table 8 represents the results of the regressions used as robustness tests. Column (1) of table 8 represents the results of the sensitive analysis for hypothesis 1, while column (2) of table 8 represents the results of the sensitivity analysis for hypothesis 2. In both columns, the variable of interest (*CDA*) is insignificant. This implies that the sensitivity analysis does not corroborate the evidence found in the main regression analysis. One possibility, is that on an equally-weighted portfolio, size is not controlled for. As can be seen in column (1) table 8 *SIZE* is now highly significant, suggesting that larger firms experience a lower abnormal stock return. Also *ROA* are now highly significant, compared to column (1) of table 7 where this variable is not significant. This implies that more profitable firms experience higher abnormal return that are calculated on an equally-weighted market portfolio.

Taken together, these results do not corroborate the evidence found in the regression analysis that calculate the CARs based on a value-weighted market portfolio. Apparently, the method for calculating the normal returns affects the results of the regression. This could be the result of mistakes made in the data analysis or that larger contagion and non-contagion firms only cause contagion stock returns.

Table 8: Robustness test for H1 and H2

	Dependent Variable	
	(1)	(2)
VARIABLES	CAR[-2,+2]	CAR[-2,+2]
CDA	-0.0002	-0.0005
	(0.282)	(0.597)
SIZE	-0.0001***	0.0002
	(0.000)	(0.194)
MTB	0.0000	0.0004*
	(0.204)	(0.058)
LEV	0.0007**	-0.0002
	(0.035)	(0.880)
|DA|	0.000999	-0.0005
	(0.000732)	(0.885)
ROA	0.0009**	--0.0002
	(0.035)	(0.903)
Day_L	-0.0000*	-0.0000
	(0.091)	(0.018)
$CAR_{dismissed}$	-0.0073	-0.0009
	(0.000)	(0.312)
$SIZE_{dismissed}$	-0.0000	-0.0009
	(0.307)	(0.137)
Constant	0.0019	0.0043
	(0.211)	(0.762)
Observations	422,727	17,354
Adjusted R-squared	2.01%	2.01%
Industry Fixed effects	YES	YES
Year Fixed Effects	YES	YES

This table represents the results of testing Hypothesis 1 and 2 and represents the results of the following regression: $CAR = \alpha + \beta_1 CDA + \beta_2 SIZE + \beta_3 MTB + \beta_4 LEV + \beta_5 |DA| + \beta_6 ROA + \beta_7 Day_L + \beta_8 CAR_{dismissed} + \beta_9 SIZE_{dismissed} +$ Year/Industry fixed-effects $+ \varepsilon$

The dependent variable in model (1) and model (2) is the firms' five-day cumulative abnormal returns around the corresponding sanction announcement date (-2,+2) where date 0 represents the day of the dismissal announcement.. The sample used in model (1) includes all contagion and non-contagion firms. The sample used in model (2) contains only those contagion and non-contagion firms, that operate in the same industry as the dismissing firm. The daily abnormal return is calculated as a firm's raw return minus the equally-weighted adjusted market return on the corresponding day. All variable are defined in the Appendix; *** p<0.01, ** p<0.05, * p<0.10 (two-sided test) using Robust standard errors in parentheses

8. Conclusion

This paper examines whether stock price contagion effects exist for audit firms that are dismissed because an accounting restatement occurred or will occur. Specifically, I predict but do not find that auditor dismissals announcements following restatement announcements induce negative market reaction for non-dismissing clients of dismissed auditors. Where non-dismissing clients of the dismissed auditor are identified as contagion firms and firms that are audited by a different auditor are identified as non-contagion firms. However, I do find that the share price increase for contagion firms is significantly lower compared to non-contagion firms. This could imply that news of an auditor dismissal made by a peer firm experiencing a restatement causes investors to become more concerned about tainted financial statements, but not concerned enough to induce a negative market reaction

Next, I predict that the share price decline is more severe for contagion firms that operate in the same industry as the firm announcing the auditor dismissal. I find that the share price declines for contagion and non-contagion firms operating in the same industry as the dismissing firm. Moreover, I find that for contagion and non-contagion firms the share price decline is significantly more negative. This evidence is important as it suggests that while the dismissing firm reaps benefits by dismissing their auditor, non-dismissing clients of the auditor operating in the same industry as the dismissing firm suffer from losses. More specifically, non-dismissing clients of the dismissed auditor operating in the same industry as the dismissing firm experience a share price decline.

Auditors could learn from these results that the provided assurance quality extends beyond the audit clients itself. As firms know that investors prefer to have an external auditor that is credible and reliable, they might refrain from hiring an audit that was recently dismissed because a restatement occurred or will occur.

Overall, this evidence suggests that investors value the quality of the credibility and reliability of provided assurance by the auditor over the firms' financial statement. Investors price this information into their investment decisions.

9.Limitations

Several caveats pertain to the interpretation of these results. Firstly, I am not able to access data on what audit office or what audit partner have audited a certain firm. Gul et al. (2016) find that a price contagion effects of a negative news announcement only exists on the audit partner and office level. The missing data does not allow me to conclude if a price contagion effect exists on the audit firm level. A second caveat is that the explanatory power in the model is quite modest. This may reflect noise in the measure of contagion returns, limitation in the control variables, and on the reliance on a broad sample of peer firms. For example, I did not control for the possibility that peer firms dismissed their own auditor after the dismissal announcement. A third caveat is that I cannot rule out nor did I control for the possibility that the contagion stock returns documented here only reflect restatement-induced changes in the expectation about the future economic performance of peer firms.

A final caveat is that I did not investigate the nature and severity of the restatement. For example, Hennes et al.(2008) find that auditor dismissal announcement after a more severe restatement announcement leads to higher stock return at the dismissing firm. Hence, investors could react more negatively to an auditor dismissal announcement at peer firms experiencing restatements. Moreover, the nature of the restatement could affect the severity of the contagion stock return. Specifically, Gleason et al.(2008) find that contagion stock returns are more severe for revenue restatements compared to expense restatements.

A suggestion for further research could be to look at the severity of the restatement, as a more severe restatement could indicate to investors that the auditor made a significant mistake. Possibly resulting in a more severe contagion stock return. Moreover, taking the nature of the restatement into account could lead to different results. Finally, controlling for the possibility that contagion stock returns just reflect restatement-induced changes in the expectation about the future economic performance of peer firms might lead to different results.

Appendix. Variable definition format

Dependent var.	**Definition**
CAR	The five-day Cumulative abnormal return around dismissal announcements that follow a restatement for contagion firms and non-contagion firms. Daily abnormal return is calculated as the firms raw return minus the weighted adjusted market return in the exchange of the contagion and non-contagion firms (i.e., NYSE, NASDAQ and AMEX) on the corresponding day
CAR3	The three-day Cumulative abnormal return around dismissal announcements that follow a restatement for contagion firms and non-contagion firms. Daily abnormal return is calculated as the firms raw return minus the weighted adjusted market return in the exchange of the contagion and non-contagion firms (i.e., NYSE, NASDAQ and AMEX) on the corresponding day
Independent var.	**Definition**
CDA	An indicator variable that equals one if a firm is a contagion firm audited by the same audit firm as the dismissing firm and zero otherwise.
Control var.	**Definition**
SIZE	The natural log of a client firm's total assets.
LEV	The clients 'total liabilities, scaled by total assets
MTB	The clients market value of equity, scaled by book value of equity
|DA|	Absolute value of the residual from the regression models in Kothari Leone and Wasley (2005)
ROA	The clients net income before extraordinary items, scaled by total assets.
Day_L	The number of days that have elapsed since the last dismissal event
$SIZE_{dismissed}$	The natural log of dismissing firms' total assets
$CAR_{dismissed}$	The CAR of dismissing firms over a five day window (-2,+2) that is centered on the day of the dismissal announcement.

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