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How Does the Distinction between Errors and Irregularities Impact Audit Risk? Evidence from Restatement

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This study examines auditors' perception of audit risk after the announcement of different financial restatements. We examine two classifications of restatement: Errors (unintentional mistakes) and irregularities (intentional mistakes). With a sample of restatement firms from 2001 to 2006, we find that generally the audit fees in the post-restatement periods are significantly higher than those in the pre-restatement periods. And the higher audit fees last for at least three years after restatement announcements. When considering the causes of restatements, the audit fees would increase significantly faster for the companies with irregularities than errors. In addition, the auditor turnover in the year following restatement is significantly higher than other years. And the turnover rate is significantly higher for the companies with restatements by irregularities than errors. Accordingly, the empirical results imply that auditors perceive a higher level of audit risk for restatement firms. And they treat restatements caused by errors and irregularities differently.

1. Introduction

In this study, we examine how auditors react when material misstatements are detected after the original audit work and restatements are announced. Especially, we focus on the distinction between errors (unintentional misstatements) and irregularities (intentional misstatements).

Restated financial statements have been an interesting accounting issue and have drawn wide attention for the past decade. The Government Accountability Office (GAO) estimates that market-related losses in market capitalization due to financial statement restatements between the beginning of 1997 and 30 September 2005, at approximately $143 billion (GAO 2003, 2006). In addition, the number of companies announcing financial restatements for the period ending June 2002 as compared to that ending in September 2005 rose from 3.7 percent to 6.8 percent (GAO 2003, 2006). Although the number of restatements declines in recent years due to the enactment of SOX and better internal controls, there is still a number of companies issuing restatements and the impact remains significant (CFO.com, 2010).

Previous research has shown that restatements impact auditors' perceptions of a company's inherent risk (Chen et al, 2011, Hennes et al, 2011). They find that auditors do perceive a higher audit risk in a company with restatements. Therefore, there was a post-restatement increase of the audit fees and auditor turnover in the

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companies which made restatements. However, previous research does not examine the impact of restatement causes on auditors' perceptions of audit risk.

In this paper, we re-examine the difference in audit risk of restatement firms assessed by auditors between pre-restatement periods and post-restatement periods. We focus on the distinction between errors and irregularities. Following prior literature, we use audit fees and auditor changes to proxy the audit risk assessed by auditors and compare the audit risk surrounding the restatement announcements.

Our sample is based on the restatement dataset provided by Hennes et al (2008). Their dataset was developed from the 2006 GAO list. They distinguish errors (unintentional misstatements) from irregularities (intentional misstatements) in their dataset, which makes this dataset a good match for our research purpose. We collect the financial and audit information for restatement firms from 2000 to 2009. We find that the audit fees in the post-restatement periods are significantly higher than those in the pre-restatement periods, especially for the companies with restatements from irregularities. The results show that auditors charge higher audit fees for restatement firms after financial restatement announcements caused by irregularities than errors. In addition, the auditor turnover in the year following restatement is significantly higher for the restated companies with irregularities than errors. The higher auditor turnover implies that auditors intend to drop higher audit risk firms. Accordingly, the empirical results imply that auditors perceive a higher level of audit risk for these restatement firms.

The paper makes two contributions to the restatement literature. First, this paper reexamines the audit risk surrounding restatement announcements. Second, this study focuses on the reactions from auditors to different causes of restatements. Taken collectively, the findings of this study are likely to be of interest to regulators, auditors and management for the influence of financial restatement.

The remainder of the paper is organized as follows: literature review and hypothesis development are described in Section II and Section III outlines the research design and sample description. Empirical results are presented in Section IV. Finally, the conclusions are given in Section V.

2. Literature and Hypothesis Development

Previous research examines the market reaction to restatements. Hribar and Jenkins (2004) show that restatement firms have a higher cost of capital. Palmrose et al. (2004) find that stock price declines after firms announce a restatement. Wilson (2008) finds that the information content of earnings following restatement declines but the decline is not long-lasting. However, there is rare evidence of auditors' behaviour after restatements. This paper examines the influence of restatement from the point of view of auditors. If an audit was performed and the audit report issued did not indicate any such misstatements, such restatements should be considered accounting and auditing failures.

Prior research investigates the separate assessments derived for non-strategic audit risk (unintentional misstatements or errors) and strategic audit risk (intentional misstatements or irregularities) (Shibano, 1990). The author provides evidence that auditors are able to tell irregularities from errors. Restatements provide a good

opportunity for us to assess auditors' reactions to these two causes. The audit risk model is required to be used as a guide to the audit planning process (AICPA 1997). According to SAS No. 47, the model can be presented as

Acceptable Audit Risk = Inherent Risk × Control Risk × Detection Risk

In this model, inherent risk is the probability that an account balance or class of transactions contains a material misstatement before considering the effectiveness of the internal control system. Control risk is the probability that a material misstatement is not detected on a timely basis by the internal control system. Thus, when a restatement is announced, the inherent risk and control risk of a client increase. To avoid future audit failures and lower the audit risk, auditors can lower the tolerable level of detection risk. Detection risk is the tolerable level of risk that auditing procedures will not detect material misstatements. Investments in auditing decrease the detection risk. Companies with restatements due to irregularities intentionally manipulate their financial data and increase the level of difficulty to be detected. Therefore, more audit efforts are required. Auditors would use more personnel, make more detailed working papers and test a larger sample in a similar work to lower their audit risk.

Previous studies have well documented the effect of audit risk on audit fees. Bell et al (2001) find that high business risk increases the number of audit hours. Barron et al. (2001) in an experimental study document that an auditor's level of assessed litigation risk and planned audit investment are higher for clients where potential errors overstate financial performance. Bedard and Johnstone (2004) document that auditors increase their engagement efforts and billing rates for clients when corporate governance is weak and when earnings manipulation risk is relatively high.

For restatement firms, we propose that audit risk perceived by auditors will be significantly increased after the announcement of restatements. We also propose that audit risk of restated companies with irregularities will be higher than companies with errors. Based on previous research on audit risk, we use the audit fees to proxy the audit risk. Therefore, we hypothesise that a restatement announcement caused by irregularities has a greater impact on the audit fees assessed by auditors. The hypothesis is proposed as follows.

H1: There is a higher increase in the audit fees following earnings restatement for the companies with irregularities than with errors.

Prior literature also indicates that auditor change is greatly impacted by the factors of auditor effectiveness and client reputation. Considered as audit failures, restatements show the ineffectiveness of auditors to detect material misstatement in the clients' financial statements. It is very likely that clients would want to change the ineffective auditor. On the other hand, auditors would leave clients if there is too much audit risk. Restatements increase inherent risks and control risks of a client. In the audit risk model, the acceptable audit risk level cannot be reached if inherent risks and control risks are too high to be compressed by the low detection risk level. Thus, auditors would choose to leave clients if they feel it is too risky to work with them. For example, Bedard and Johnstone (2004) show that riskier clients are less likely to be accepted by auditors. Based on the analysis, we also hypothesis that a restatement announcement caused by irregularities has a greater impact on auditor turnover.

H2: There is a higher increase in auditor turnover following earnings restatement for the companies with irregularities than with errors.

3. Methodology

Hypothesis 1 predicts that restatement firms will have higher audit fees in the post-restatement periods than in the pre-restatement periods, especially for restatements caused by irregularities. We examine audit fees over a multiple-year period surrounding restatements. Consistent with previous research on audit fees (Carcello et al., 2002; Abbott et al., 2003), the model includes several firm-specific control variables that proxy for the effect of firm size, complexity and business risk. The following equation (1) is used to test the first hypothesis:

$$LNAFEE_{it} = \beta_0 + \beta_1 RE_{it} + \beta_2 IRREGULARITY_{it} + \beta_3 LNTA_{it} + \beta_4 REC_{it} + \beta_5 INV_{it} + \beta_6 FOR_{it} + \beta_7 CR_{it} + \beta_8 LEV_{it} + \beta_9 ROA_{it} + \beta_{10} FCF_{it} + \varepsilon_{it} \quad (1)$$

Where,

$LNAFEE_{it}$	Natural log of audit fees.
RE_{it}	Indicator variable that equals 1 after the firm *i* announcing financial restatement (including restatement year *t*) and 0 before that.
$IRREGULARITY_{it}$	Indicator variable that equals 1 if restatement was caused by irregularities and to 0 if restatement was caused by errors.

Firm-specific control variables:

$LNTA_{it}$	Natural log of total assets.
REC_{it}	Accounts receivable divided by total assets.
INV_{it}	Inventory divided by total assets.
FOR_{it}	Foreign income divided by net income.
CR_{it}	Current ratio (current assets divided by current liabilities).
LEV_{it}	Leverage ratio (long-term debts divided by total assets).
ROA_{it}	Return on assets computed as net income divided by total assets.
FCF_{it}	Free cash flow scaled by total assets. FCF=Operating cash flow – Capital expenditure – Dividend

The dependent variable is the natural log of audit fees for firm *i* in year t ($LAFEE_{it}$). The test variable of interest is the indicator variable RE_{it}. RE_{it} is an indicator variable that equals 1 after the firm i announces financial restatement (including restatement year t) and 0 before that. If the audit risk perceived by auditors is higher for post-restatement periods than pre-restatement periods, audit fees will be higher accordingly. Therefore, we expect β_1 to be significantly positive.

IRREGULARITY equals 1 when the restatement was caused by irregularities and 0 if restatement was caused by errors. The model includes several firm-specific control variables, which account for cross-sectional difference in audit fees. LNTA controls for the effect of firm size on audit fees. REC, INV and FOR are used to proxy firm complexity. CR and LEV capture liquidity and financial risk on audit fees. ROA shows the profitability and FCF captures the firm's available discretionary cash.

Equation (1) shows the relationship between different causes of restatements and audit fees. If there is a significant relationship between causes of restatements and audit fees, β_1 and β_2 are expected to be positive.

In addition, we also test the long-term impact from restatements on the audit fees. Equation (2) shows the test of long-term influence.

$$LNAFEE_{it} = \alpha + \sum_{\tau=0}^{3} \alpha_{\tau} RE_{\tau it} + \beta_2 IRREGULARITY_{it} + \beta_3 LNTA_{it} + \beta_4 REC_{it} + \beta_5 INV_{it} + \beta_6 FOR_{it} + \beta_7 CR_{it} + \beta_8 LEV_{it} + \beta_9 ROA_{it} + \beta_{10} FCF_{it+1} + \varepsilon_{it} \quad (2)$$

In this paper, we use auditor change as another indicator for audit risk. Hypothesis H2 examines whether the auditor turnover will increase in the post-restatement periods. The following equation (4) is used to test the third hypothesis:

$$ACH_{it} = \alpha + \sum_{\tau=0}^{3} \alpha_{\tau} RE_{\tau it} + \beta\ IRREGULARITY_{it} + \varepsilon_{it} \quad (3)$$

ACH_{it} is an indicator variable equal to 1 for firm i changes the auditor in year t, and 0 otherwise.

We expect auditor turnover will increase in the post-restatement periods. Therefore, β_1 is expected to be positive. If there will be a higher auditor turnover for companies with irregularities than errors, β is expected to be positive.

Prior studies on restatements show extensive evidence on market reactions and management reactions to financial restatements. However, the evidence on auditor reactions to restatement is limited. In this paper, we examine auditors' perceptions of audit risks after the announcement of restatements, especially how auditors react differently on the causes of restatements.

Table I
Restatement Sample

Restatement Sample	**# of Observations**
Restatement announcements from GAO report	2705
Firms not covered by Compustat or AuditAnlysis	(2081)
Final Sample (Firm-Restatement)	624
Errors	508
Irregularities	116

Notes:
The database of financial restatements from the GAO reports (2003, 2006) is the basis of the sample. The sample consists of restatements that were announced between January 1, 2001 and June 30, 2006.

The GAO reports (2003, 2006) provide a comprehensive list of firms that issued financial restatements between January 1, 1997 and June 30, 2006. According to the GAO report, restatements were identified through a search of press releases and other media coverage using Lexis-Nexis. The restatements included in the database are those resulting from "aggressive" accounting practices, intentional and unintentional misuse of facts applied to financial statements, oversight or misuse of accounting rules and fraud (GAO 2003, page76). However, this list does not clearly provide the causes of restatements of the companies. Thus, we use the data set

provided by Hennes, Leone, and Miller (http://sbaleone.bus.miami.edu/). In this data set, they classified restatements from the 2006 GAO list as likely being caused by irregularities "if the firm explicitly uses variants of "fraud" or "irregularity" in discussion of the restatement, if there is a related SEC or DOJ investigation, or if there is an (non-SEC) independent investigation into the misstatement". A restatement not meeting any of these criteria is classified as involving only an error.

Table II Descriptive Statistics

Panel A: Audit Fees and Control Variables

	Pre-Restatement Period				
Variable	**Mean**	**Median**	**Standard Deviation**	**Q1**	**Q3**
LNAFEE	13.191	13.07	1.368	12.14	14.12
LNTA	6.285	6.18	1.968	4.99	7.58
REC	0.129	0.095	0.118	0.04	0.18
INV	0.119	0.07	0.140	0.01	0.18
FOR	0.110	0	3.313	0	0.05
CR	2.588	1.8	3.071	1.21	2.82
LEV	0.187	0.13	0.213	0.01	0.29
ROA	-0.027	0.03	0.481	-0.02	0.07
FCF	-0.003	0.02	0.227	-0.03	0.07

	Post-Restatement Period				
Variable	**Mean**	**Median**	**Standard Deviation**	**Q1**	**Q3**
LNAFEE	14.041	14.02	1.262	13.26	14.84
LNTA	6.677	6.63	1.998	5.31	8.07
REC	0.128	0.1	0.1067	0.05	0.19
INV	0.109	0.07	0.121	0.01	0.17
FOR	0.845	0	3.393	0	0.29
CR	2.378	1.82	2.276	1.25	2.71
LEV	0.199	0.14	0.249	0.01	0.3
ROA	-0.012	0.03	0.277	-0.02	0.07
FCF	0.0138	0.04	0.172	-0.02	0.08

Panel B: Auditor Turnover Surrounding Restatement

	# of Observations (a)	**# of firm-year (b)**	**a/b**
Pre-Restatement Period	217	1885	11.18%
Post-Restatement Period	361	3228	11.51%

Regression Variables:

$LNAFEE_{it}$	Natural log of audit fees.
$LNTA_{it}$	Natural log of total assets.
REC_{it}	Accounts receivable divided by total assets.
INV_{it}	Inventory divided by total assets.
FOR_{it}	Foreign income divided by net income.
CR_{it}	Current ratio (current assets divided by current liabilities).
LEV_{it}	Leverage ratio (long-term debts divided by total assets).
ROA_{it}	Return on assets computed as net income divided by total assets.
FCF_{it}	Free cash flow scaled by total assets. FCF=Operating cash flow – Capital expenditure – Dividend

In this paper we examine the audit risk for pre-restatement periods and post-restatement periods. We also distinguish the causes of restatements as irregularities and errors. Audit fees and auditor changes are used to proxy the audit risk. Audit fees and auditor changes information is collected from the AuditAnalytic database. Since the audit information starts from 2000 in the AnditAnalytic database, our sample includes firms that issued restatements between January 1, 2001 and June 30, 2006 from GAO reports. We collect the audit and financial information for these restatement firms from 2000 to 2009. Financial information is obtained from Compustat. The composition of the sample is presented in Table I. Panel A shows the restatement samples. 2705 firms issued restatement between January 1, 2001 and June 30, 2006 from GAO reports. 2081 firms are deleted because the firms are not covered by Compustat or AuditAnalytic. The final sample comprises 624 firms that issued earnings restatements. There are 508 firms labelled as errors and the rest 116 firms as irregularities. The total sample includes 5113 firm-year.

Descriptive statistics are provided in Table II. Panel A of Table II provides a comparison of pre- and post- restatement values for audit fees and control variables. The average of the audit fees in the post-restatement periods is14.04, which is higher than that in the pre-restatement periods, 13.19. The mean total assets in post-restatement periods are 6.677, which is also higher than in the pre-restatement periods, 6.285.

Panel B of Table II shows the auditor turnover in post-restatement periods is slightly higher than in pre-restatement periods. 11.18% of restatement firms changed their auditors in pre-restatement periods. On the other hand, 11.51% of restatement firms changed their auditors in post-restatement periods.

4. Results

Table III
Audit Fees Surrounding a Restatement Resulting from Irregularity

$$LNAFEE_{it} = \beta_0 + \beta_1 RE_{it} + \beta_2 IRREGULARITY_{it} + \beta_3 LNTA_{it} + \beta_4 REC_{it} + \beta_5 INV_{it} + \beta_6 FOR_{it} + \beta_7 CR_{it} + \beta_8 LEV_{it} + \beta_9 ROA_{it} + \beta_{10} FCF_{it+1} + \varepsilon_{it}$$

Variables	Coefficient Value	p-value
RE	0.628***	<.0001
IRREGULARITY	0.189***	<0.001
LNTA	0.556***	<.0001
REC	1.885***	<.0001
INV	-0.072	0.3565
FOR	0.003	0.9710
CR	-0.015**	0.0003
LEV	-0.198***	<.0001
ROA	-0.201***	<.0001
FCF	-0.097	0.1703

Notes:
*** Indicates significance at 0.01 level. ** Indicates significance at 0.05 level.
Definition of Variables:

RE_{it}	Indicator variable that equals to 1 after the firm *i* announcing financial restatement (including restatement year *t*) and 0 before that.
IRREGULARITY	Indicator variable that equals to 1 if the restatement is classified as an irregularity by Hennes et al. (2008), and 0 otherwise.
Others	See Table II.

Table III summarizes the regression results of audit fees on the restatement indicator, irregularity indicator and control variables. RE is significantly and positively related to audit fees (coefficient: 0.628; p-value: <0.0001). The result indicates that audit fees post-restatement are significantly higher than pre-restatement. IRREGULARITY is significantly related with audit fees (coefficient: 0.189; p-value: <0.0001). The result indicates that the increases of audit fees in post-restatement for restated companies with irregularities are significantly higher than for companies with errors.

Table IV shows the regression results of equation (3). We examine the effect of restatement on the audit fees in the restatement year and three years following restatement. All of RE_0, RE_1, RE_2 and RE_3 are significantly related to LNAFEE. The results suggest that restatement affects audit fees in the restatement year and three years following restatement year. IRREGULARITY is significantly positively related with audit fees. It suggests that auditor fee is significantly higher for restatement causing by irregularities.

Table IV
Audit Fees in three years following a Restatement

$$LNAFEE_{it} = \alpha + \sum_{\tau=0}^{3} \alpha_{\tau} RE_{\tau it} + \beta_2 IRREGULARITY_{it} + \beta_3 LNTA_{it} + \beta_4 REC_{it} + \beta_5 INV_{it} + \beta_6 FOR_{it} + \beta_7 CR_{it} + \beta_8 LEV_{it} + \beta_9 ROA_{it} + \beta_{10} FCF_{it+1} + \varepsilon_{it}$$

Variables	Coefficient Value	p-value
re0	0.300***	<.0001
re1	0.377***	<.0001
re2	0.458***	<.0001
re3	0.483***	<.0001
IRREGULARITY	0.203***	<.0001
LNTA	0.568***	<.0001
REC	1.925***	<.0001
INV	-0.124	0.1305
FOR	0.000	0.9441
CR	-0.013**	0.0015
LEV	-0.202***	<.0001
ROA	-0.230***	<.0001
FCF	-0.010	0.8827

Notes:
*** Indicates significance at 0.01 level. ** Indicates significance at 0.05 level.
Definition of Variables:

RE_0	indicator variable equal to 1 for firm i announcing restatement in year t and 0 otherwise.
RE_1	indicator variable equal to 1 for firm i announcing restatement in year t-1 and 0 otherwise.

RE_2	indicator variable equal to 1 for firm i announcing restatement in year t-2 and 0 otherwise.
RE_3	indicator variable equal to 1 for firm i announcing restatement in year t-3 and 0 otherwise.
Others	See Table II.

Evidence presented in Tables III and IV reflects that the audit fees for post-restatement periods are significantly larger than for pre-restatement periods. Auditing firms would increase the audit fees significantly higher for the restated companies caused by irregularities than errors. Moreover, the higher audit fees last for at least three years after restatements.

Table V shows the regression results of audit turnover on the restatement indicator. Panel A indicates that the restatement is insignificantly related to audit turnover. The result implies that the audit turnover in pre-restatement periods and post-restatement periods are not significantly different. However, when we add the variable of irregularities, the results show that auditor turnover would be significantly related to the restatements caused by irregularities. Panel B of Table V shows the regression results of equation (3). RE_0 and RE_1 are significantly and positively related to auditor turnover (Coefficients: 0.071, 0.058; p-value: <.0001, <.0001, respectively). IRREGULARITY is significantly related with auditor turnover(coefficient: 0.034; p-value: 0.0018). Therefore, the results in Table V imply that audit turnovers in restatement year and the year following restatement are significantly higher than other years, although auditor turnovers are not affected by restatement in long term. And audit turnover would be significantly higher in the restated companies caused by irregularities than errors.

Table V
Auditor Turnover Following a Restatement

Panel A: Auditor Turnover Following a Restatement

$$ACH_{it} = \beta_0 + \beta_1 RE_{it} + \varepsilon_{it}$$

Variable	Coefficient	p-value
RE	-0.003	0.721

Panel B: Auditor Turnover in three years following a restatement

$$ACH_{it} = \alpha + \sum_{\tau=0}^{3} \alpha_\tau RE_{\tau it} + \beta\ IRREGULARITY_{it} + \varepsilon_{it}$$

Variable	Coefficient	p-value
RE_0	0.071***	<0.0001
RE_1	0.058***	<0.0001
RE_2	0.008	0.6334
RE_3	0.004	0.7817
IRREGULARITY	0.034**	0.0018

Notes:
*** Indicates significance at 0.01 level. ** Indicates significance at 0.05 level.
ACH_{it} Indicator variable that equals to 1 if firm i changes auditor in year t and 0 otherwise.

5. Conclusions

In this paper, we examine the audit risk surrounding financial restatements. Our sample is based on the restatement firms of the data set provided by Hennes, Leone, and Miller which is developed from the 2006 GAO list. We collect the financial and audit information for restatement firms from 2000 to 2009. We find that the audit fees in the post-restatement periods are significantly higher than in the pre-restatement periods. Moreover, the increase of audit fees for the restated companies with irregularities is significantly higher than the for companies with errors. We also find that the higher audit fees last for at least three years after the restatement announcements. The results shows auditors charge higher audit fees for restatement firms after financial restatement announcements. In addition, the auditor turnover in the year following restatement is significantly higher than in other years, especially for the companies with restatements caused by irregularities. The higher auditor turnover implies that auditors intend to drop higher audit risk firms. Accordingly, the empirical results imply that auditors perceive a higher level of audit risk for restatement firms and that auditors are able to distinguish irregularities from errors and treat them differently.

Our findings show that auditors' perceptions of audit risk can be greatly affected by the causes of financial restatement. In this paper, restatements samples are classified as either intentional (irregularities) or unintentional (errors) violations of GAAP. In future, researchers may examine the impact of specific reasons of restatement on auditors' perceptions of audit risks.

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