The role of investor relations firms in financial restatements

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**NANYANG
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UNIVERSITY**

**THE ROLE OF INVESTOR RELATIONS FIRMS IN
FINANCIAL RESTATEMENTS**

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NANYANG BUSINESS SCHOOL

2016

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A thesis submitted to the Nanyang Technological University
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The Role of Investor Relations Firms in Financial Restatements

ABSTRACT

This study examines the role of investor relations (IR) firms in the setting of financial restatements. I find that firms hiring an outside IR firm experience higher restatement announcement returns and they do not realize lower post-announcement stock returns than propensity-score matched control firms. The positive impact of IR is greater for firms with low analyst coverage and low media coverage. My findings suggest that IR professionals increase value for their clients by helping them communicate effectively during periods of crises.

Keywords: Investor relations firms; Financial restatements; Market reactions.

JEL Classification: G14; G29; M41.

1. Introduction

Investor relations (IR) firms are important information intermediaries that help their clients to communicate, engage and build relationships with investors and other stakeholders. One important service IR firms offer is crisis communications. Sloane & Company, one of the largest IR firms, states on its website that “Sloane & Company are experts at assisting clients when unforeseen events threaten to impact their business or damage their reputation. We have become a go-to firm when these crises and special situations occur by listening to our clients, understanding the situation, determining the risks to their business and delivering candid advice to management teams, boards, executives and organizations when they need it most”.¹

The popular press offers plenty of evidence that communications play a vital role during corporate crises (e.g., Flandez, 2009), and insensitive or inappropriate comments are extremely costly (discussed in Section 2). My study examines the role played by IR firms in a type of crisis that is of special interest to accounting researchers: financial restatements.

Communication is very important in the event of financial restatements. Prior studies find that financial restatements have substantial impact on firms’ valuation and the management’s career prospects (e.g., Palmrose, Richardson, and Scholz, 2004; Desai, Hogan, and Wilkins, 2006; and Hennes, Leone, and Miller, 2008). Implementing the appropriate communication tactics can help restating firms to take control of the situation and to repair trust and reputation. On the contrary, inappropriate communications can exacerbate reputation damage, and hurt firms’ market value (Gertsen, van Riel, and Berens, 2006).

¹ Please refer to <http://www.sloanepr.com/what-we-do/crisis-communications-and-issue-management/>.

A real life example may be helpful to demonstrate my point. After Royal Dutch Shell's financial restatement, its management quickly admitted the company's wrongdoing and communicated effectively the extent of the restatement and the actions taken to prevent future occurrence. Their effective communications limited the damage from the financial restatement (Gertsen, van Riel, and Berens, 2006).²

If IR firms help their clients to communicate appropriately and effectively upon restatement announcements, I expect that restatement announcement returns are higher for firms hiring IR professionals. This is my main hypothesis.

Using a sample of restatements obtained from Audit Analytics in the period of 2001-2013, I find that the restatement announcement return is substantially higher for restating firms hiring an outside IR firm than for restating firms matched based on the propensity of being an IR firm's client.³ IR is related to an increase of 1% in the 3-day cumulative abnormal returns and an increase of 2.1% in the 15-day cumulative abnormal returns surrounding the restatement announcement after controlling for restatement severity, firm characteristics, year dummies and industry dummies.⁴ These results suggest the usefulness of IR firms in crisis communications.

Next, I hypothesize that the positive impact of IR on restatement announcement returns is more pronounced for firms with lower analyst coverage and lower media coverage. Firms with lower analyst coverage and media coverage tend to have higher

² Royal Dutch Shell had an outside IR firm at the time of the restatement announcement.

³ The results are similar if I focus on restatements that have negative effects on the financial statements. I use all the restatements in my main analyses for the following reasons. First, investors could have concerns on the firm's accounting quality and the valuation consequence could be negative even if the restatement has a positive impact on the financial statements. Second, this helps to have a general idea on the impact of IR firms in the setting of financial restatements and, in general, restatement announcement returns are negative.

⁴ The valuation consequence of hiring IR firms is about 20% of the mean value of the absolute value of announcement returns of all financial restatements.

information asymmetry and thus greater communication needs. As a result, IR firms are likely to play a greater role for those firms. The empirical results support my hypotheses. I find that the positive impact of IR on restatement announcement returns concentrates on firms with lower analyst coverage and lower media coverage.

Lastly, I track the return subsequent to the financial restatements. Solomon (2012) offers evidence that IR professionals tend to hype their clients' corporate news. He shows that when hard information, such as earnings, arrives, investors' rosy expectations are dashed, resulting in lower earnings announcement returns. In the restatement setting, it is possible that IR firms hype instead of addressing investors' communication needs in an unbiased manner. If the hyping story is true, I expect that investors will face larger disappointments and that clients of IR firms experience a lower post-restatement-announcement return. On the contrary, if IR firms help their clients to communicate in an unbiased manner, I do not expect to observe return reversals for IR firms' clients.

I find that the 60-day buy-and-hold market-adjusted returns and 120-day buy-and-hold market-adjusted returns after the restatement announcement window are statistically the same for clients of IR firms and for matched restating firms. This finding suggests that IR firms help their clients to devise effective communication strategies instead of hyping the news upon restatement announcements.

I then examine the possible mechanisms through which IR firms help increase value. To confirm that IR firms help to limit the damage by providing useful communications, I examine the media news sentiment and press release sentiment around the restatement announcements. I find that the media news around the restatement announcements is more positive for firms being an IR client than for other restating firms.

However, hiring an IR firm is not associated with press release sentiment. These results support the notion that IR firms positively affect their clients' valuation through media news. Moreover, I examine analyst forecast revision and analyst forecast dispersion after the restatement announcements, and the stock return volatility around the restatement announcements. The results show that hiring an IR firm is positively related to analyst forecast revision, but is not related to analyst forecast dispersion and return volatility, suggesting that IR firms increase their clients' value through the increase in future cash flows rather than the decrease in uncertainty.

To check the robustness of the main results, I conduct several additional checks. First, I use alternative measures of cumulative abnormal returns. The new measures of cumulative abnormal returns are calculated by estimating the Fama-French three-factor model and the four factor model. The results are robust to these alternative measures of cumulative abnormal returns. Second, given the criticism on propensity score matching (DeFond and Zhang 2016), I test the sensitivity of my conclusion to a different approach. Specifically, I repeat the analyses of the market reactions to restatement announcements using the whole sample instead of limiting to the sample of matched firms. The positive association between IR firm use and the restatement announcement returns continue to hold. Third, I use a different way to identify control firms. Following Bushee and Miller (2012), I match on industry, year, exchange listing, time listed, and size. My conclusions continue to hold. In sum, I find robust evidence that IR firms limit the valuation damage around restatement announcements.

The contribution of my study lies in the following aspects. First, this study extends the literature on investor relations. Bushee and Miller (2012) find that external IR

firms help to increase small firms' visibility. Kirk and Vincent (2014) show that IR activities increase visibility even for big and established firms. Both papers show that IR activities increase their clients' market value. Solomon (2012) however paints a somewhat different picture. He shows that IR firms spin positive news stories out of ambiguous news. When hard information arrives, investors are disappointed. His results imply a valuation loss due to IR firms' hyping. It is possible that the effect of IR firms on valuation is contextually specific. I focus on the financial restatement setting, which is likely to be of interest to accounting researchers and regulators. I show that IR firms limit their clients' valuation damage in the event of financial restatements by devising effective communication strategies rather than hyping the news. My results not only enrich our understanding of the IR's role in crisis management but also add to the debate on the impact of IR on market valuation.

Second, this study adds to the literature on financial restatements. Farber (2005) find that fraud firms take actions to improve their corporate governance after the restatements and consequently generate higher stock returns, suggesting that corporate governance improvements could be a way to restore trust after fraud. Moreover, Chakravarthy, deHaan, and Rajgopal (2014) show that restating firms take reputation-building actions and investors react positively to these actions. My findings suggest that hiring an outside IR firm could be a useful way to limit the negative valuation consequences of financial restatements.

Third, my study provides practical implications for managers and investors. To the extent that IR firms successfully help their clients to communicate appropriately during the crises, firms may consider hiring external IR firms to reduce the negative

consequences of the crises. Investors may also take into account the role played by IR firms when making investment decisions.

The rest of this paper is organized as follows. Section 2 develops hypotheses. Section 3 presents research designs. Section 4 covers sample formation and descriptive statistics. Section 5 report empirical results for the hypotheses. Section 6 covers the possible mechanisms and Section 7 covers robustness checks. Section 8 concludes.

2. Hypotheses Development

According to the National Investor Relations Institute, “investor relations is a strategic management responsibility that integrates finance, communication, marketing and securities law compliance to enable the most effective two-way communication between a company, the financial community, and other constituencies, which ultimately contributes to a company's securities achieving fair valuation”.⁵ Bushee and Miller (2012) suggest that hiring an IR firm increases small firms’ visibility, measured by analyst coverage, institutional ownership, and media coverage, and thus market valuation. Vlittis and Charitou (2012) examine the market reactions to firms’ announcements of appointing a new investor relations officer or hiring an external IR firm. They find positive abnormal returns around the announcements, suggesting that investments in investor relations increase market valuation. Both studies suggest that IR firms help their clients to communicate with investors and other stakeholders, thus increasing firms’ market valuation.

Ineffective communications are extremely detrimental to firms during corporate crises. The popular press provides plenty of evidence. For instance, after two Domino’s

⁵ Please refer to <https://www.niri.org/about-niri>.

employees posted an offending video on YouTube, the company did not issue a formal press release to handle the situation within the first 24 hours. The lack of response to the crisis caused detrimental consequences to Domino's brand and its customers' trust (Flandez, 2009).⁶

Gertsen, van Riel and Berens (2006) suggest that communication plays an important role in financial restatements. They claim that the perceived level of restatement severity rather than the "objective" level matters, and forthright communications can limit the damage from restatements by reducing the level of severity perceived by investors and other stakeholders. On the contrary, inappropriate communications may cause investors and other stakeholders to think that the firm's future financial prospects are poor and that the management is not credible. Those concerns may lead to a further decrease in the firm's market value.

IR firms could help their clients to increase future cash flows since effective communications can increase stakeholders' satisfaction, which help reduce potential financial losses and litigation costs. Moreover, IR firms could help decrease uncertainty as effective communications can reduce investors' uncertainty of the restating firms' future prospects and signal higher quality of management.

If IR firms help restating firms to engage in effective crisis communications upon restatement announcements, I expect that firms having IR firms realize higher stock returns around restatement announcements. My first hypothesis is stated as follows.

H1: The restatement announcement returns are higher for firms that hire an outside IR firm than for firms that do not.

⁶ Domino's did not hire an outside IR firm at the time of the crisis.

My later results show that IR firms help restating firms to realize higher restatement announcement returns. I further predict that the positive impact of having IR firms on restatement announcement returns depends on firms' information environment. Communications are especially important for firms that face poor information environment. As a result, the impact of IR firms is greater for clients with poor information environment.

Prior studies suggest that analysts perform both information discovery and information interpretation roles (e.g., Huang, Lehavay, Zang, and Zheng, 2015) and that the media broadcasts information as well as conducts original investigations (e.g., Miller, 2006). Since firms with lower analyst coverage and lower media coverage are subject to higher information asymmetry, I predict the positive impact of IR firms on restatement announcement returns to be stronger for firms with lower analyst coverage and lower media coverage. H2a and H2b are stated as follows.

H2a: The positive impact of hiring an IR firm on restatement announcement returns is more pronounced for firms with lower analyst coverage.

H2b: The positive impact of hiring an IR firm on restatement announcement returns is more pronounced for firms with lower media coverage.

I further investigate whether hiring IR firms is associated with stock returns after the restatement announcements. Solomon (2012) shows that IR firms “spin” their clients' news in a positive way to inflate short-term stock prices. When hard information, such as earnings, arrives, the stock market reacts more negatively. If IR firms hype instead of communicating in an unbiased manner, I expect the stock returns after the restatement announcements to be lower for restating firms hiring IR firms than for other restating

firms. If the hyping story is not true, I expect that IR client firms do not experience return reversals.

Since I do not have a clear prediction for the stock returns after restatement announcements, the third hypothesis is state in the null form.

H3: The stock returns after restatement announcements are the same for firms that hire an outside IR firm and for firms that do not.

3. Research Design

3.1. Propensity Score Matching

I investigate the effect of hiring an IR firm on market reactions to restatement announcements. However, the decision of hiring IR firms may be affected by many firm characteristics. To mitigate the concern that my results are driven by these firm characteristics rather than the presence of IR firms, I adopt the propensity score matching approach based on ex ante characteristics to identify control firms. The propensity score is estimated by using the following logistic model:

$$IR = \alpha_0 + \alpha_1 SIZE_2 + \alpha_2 LEVERAGE_2 + \alpha_3 BM_2 + \alpha_4 ROA_2 + \alpha_5 LOSS_2 + \alpha_6 LNAME_2 + \alpha_7 RET_2 + \alpha_8 TURNOVER_2 + \alpha_9 SPREAD_2 + \alpha_{10} STDRET_2 + \alpha_{11} INSTOWN_2 + \alpha_{12} LNAME_2 + \alpha_{13} LNMEDIA_2 + \alpha_{14} MAJORCHG_2 + \alpha_{15} ISSUANCE_2 + \alpha_{16} MERGER_2 + Year\ Dummies + Industry\ Dummies + \varepsilon \quad (1)$$

IR is a dummy variable which equals one if the firm hires an IR firm both in the year before and in the year of the restatement announcement, and zero otherwise. The data on whether firms hire an IR firm in a year are obtain from O'Dwyer's Directory of Public Relations Firms. This directory lists IR firms and their clients in each year. I require the treatment firms to hire IR firms both in the year before and in the year of the restatement announcement to increase my confidence that those firms hire IR firms

before the restatement announcements and continue to have the relationships with IR firms at the time of the restatement announcements. I exclude firms that only hire IR firms in the year before or in the year of the restatement announcements in order to get a clean control group. I use the closest propensity score to obtain optimal matches, with a caliper of 0.05 and without replacement.

Following prior studies on investor relations (e.g., Bushee and Miller, 2012; Solomon, 2012; and Kirk and Vincent, 2014), I include a set of independent variables that could be related to firms' decisions of hiring IR firms. All independent variables are measured in year t-2 since the dependent variable is measured in year t-1 and year t. I use the log of total assets (*SIZE_2*) to control for size effects. I include prior leverage (*LEVERAGE_2*), defined as book value of debts over total assets, and the book-to-market ratio (*BM_2*), measured as the book value of equity divided by market value of equity. Two proxies for the performance of the firm are included: income before extraordinary items divided by total assets (*ROA_2*) and a dummy variable which equals one if the income before extraordinary items is negative (*LOSS_2*). I also include the log of the number of years since first listed on CRSP (*LNAGE_2*). To capture recent changes in firm performance, I include the annual buy-and-hold market-adjusted returns (*RET_2*). *TURNOVER_2*, the average daily number of shares traded divided by shares outstanding, and *SPREAD_2*, the average daily quoted spread, are included to proxy for liquidity. I also include the standard deviation of daily returns (*STDRET_2*) to capture valuation uncertainty. To measure firms' prior visibility, I include the average percentage of institutional ownership (*INSTOWN_2*), the log of 1 plus the number of unique analysts issuing earnings forecasts (*LNANL_2*), and the log of 1 plus the number of Dow Jones

news articles (*LNMEDIA_2*). Finally, I include variables for recent major changes (*MAJORCHG_2*), equity issuance (*ISSUANCE_2*), and merger or acquisition activity (*MERGER_2*). *MAJORCHG_2* is the sum of three indicator variables for changes in exchange listing, changes in the CEO or CFO, and changes in auditors. *ISSUANCE_2* is a dummy variable which equals one if the firm issued equity and *MERGER_2* is a dummy variable which equals one if the firm was involved in a merger or acquisition.

Year fixed effects and industry fixed effects are also included in the model. Following Malmendier and Tate (2005) and Cai and Sevilir (2012), I define industries according to Fama-French 12 industries classification.

3.2. Research Design for H1

For the analyses of the impact of hiring IR firms on market reactions to restatement announcements, I use the following model:

$$\begin{aligned} CAR3/CAR15 = & \alpha_0 + \alpha_1 IR + \alpha_2 FRAUD + \alpha_3 COREEARN + \alpha_4 RESNI + \\ & \alpha_5 NOISSUES + \alpha_6 NOYEARS + \alpha_7 SIZE + \alpha_8 LEVERAGE + \alpha_9 BM + \alpha_{10} ROA + \alpha_{11} LOSS \\ & + \alpha_{12} LNAGE + \alpha_{13} RET + \alpha_{14} TURNOVER + \alpha_{15} SPREAD + \alpha_{16} STDRET + \\ & \alpha_{17} INSTOWN + \alpha_{18} LNANL + \alpha_{19} LNMEDIA + \alpha_{20} MAJORCHG + \alpha_{21} ISSUANCE + \\ & \alpha_{22} MERGER + Year\ Dummies + Industry\ Dummies + \varepsilon \end{aligned} \quad (2)$$

The dependent variable is *CAR3* or *CAR15*. *CAR3* and *CAR15* are cumulative abnormal returns surrounding the restatement announcement dates over the window (-1, 1) and (-7, 7), respectively. Abnormal returns are measured by estimating the market model over the window (-210, -11). *CAR3* and *CAR15* are calculated based on trading days. The main variable of interest is *IR*. If IR firms help their clients to reduce the negative market reactions to restatement announcements, I expect the coefficient on *IR* to be positive and significant.

Following Palmrose, Richardson, and Scholz (2004), I include a set of variables related to the severity of the restatements. *FRAUD* is dummy variable which equals one if the restatement was due to fraud. *COREEARN* is a dummy variable which equals one if the restatement involves revenue, cost of sales or operating expense accounts. *RESNI* is the restated net income less originally reported net income over restated period scaled by book value of assets reported at the fiscal year end prior to the restatement announcement. *NOISSUES* is the number of issues involved in the restatement and *NOYEARS* is the sum of periods restated, where a quarter is equal to 0.25.

In addition, I control for firm characteristics (*SIZE*, *LEVERAGE*, *BM*, *ROA*, *LOSS*, *LNAGE*, *RET*, *TURNOVER*, *SPREAD*, *STDRET*, *INSTOWN*, *LNANL*, *LNMEDIA*, *MAJORCHG*, *ISSUANCE*, and *MERGER*). *SIZE*, *LEVERAGE*, *BM*, *ROA*, and *LOSS* are measured at the fiscal year end prior the restatement announcement. *RET* is measured in the 12 months prior to the restatement announcement. *LNAGE*, *TURNOVER*, *SPREAD*, *STDRET*, *INSTOWN*, *LNANL*, *LNMEDIA*, *MAJORCHG*, *ISSUANCE*, and *MERGER* are measured in the year prior to the restatement announcement. Variable definitions and data sources are provided in Appendix 1. Year fixed effects and industry fixed effects are also included in the model.

3.3. Research Design for H2

To test whether the positive impact of hiring IR firms on market reactions to restatement announcements is more pronounced for firms with low analyst coverage and low media coverage, I estimate the following two regressions:

$$CAR3/CAR15 = \alpha_0 + \alpha_1 IR + \alpha_2 L_ANL + \alpha_3 IR*L_ANL + Controls + Year Dummies + Industry Dummies + \varepsilon \quad (3)$$

$$CAR3/CAR15 = \alpha_0 + \alpha_1 IR + \alpha_2 L_MEDIA + \alpha_3 IR * L_MEDIA + Controls + Year Dummies + Industry Dummies + \varepsilon \quad (4)$$

L_ANL is a dummy variable which equals one if the log of 1 plus the number of unique analysts issuing earnings forecasts in the year prior to the restatement announcement is not in the highest quartile, and zero otherwise. L_MEDIA is a dummy variable which equals one if the log of 1 plus the number of Dow Jones news articles in the year prior to the restatement announcement is not in the highest quartile, and zero otherwise. I am interested in the interaction between IR and L_ANL/L_MEDIA . If the positive impact of IR firms is more pronounced for firms with low analyst coverage and low media coverage, I expect that the coefficient on the interaction between IR and L_ANL/L_MEDIA is significantly positive.

I use the same set of control variables as in equation (2), except that I include L_ANL/L_MEDIA rather than $LNANL/LNMEDIA$ in the regression. Year fixed effects and industry fixed effects are also included in the model.

3.4. Research Design for H3

I use the following model to examine whether firms hiring an external IR firm experience lower stock returns after restatement announcements:

$$POSTRET_60D/POSTRET_120D = \alpha_0 + \alpha_1 IR + Controls + Year Dummies + Industry Dummies + \varepsilon \quad (5)$$

The dependent variables are buy-and-hold market-adjusted returns over the window (8, 67) and (8, 127) after the restatement announcement date, respectively. They are calculated based on trading days. If IR firms hype their clients' news upon restatement announcements, I expect the coefficient on IR to be negative and significant.

If the hyping story is not true, I expect the coefficient on *IR* to be insignificant. The control variables are the same as those in Equation (2). Year fixed effects and industry fixed effects are also included in the model.

4. Sample Formation and Descriptive Statistics

4.1. Sample Formation

I start with 13,398 observations of financial restatements from 2001 to 2013. The data on financial restatements are obtained from the Audit Analytics database. I delete firms that only hire IR firms in the year before or in the year of the restatement announcements. As a result, the treatment firms are firms that hire IR firms both in the year before and in the year of the restatement announcements and the control firms do not hire IR firms either in the year before or in the year of the restatement announcements. I then require the main dependent variables, i.e., *CAR3* and *CAR15*, to be non-missing. In addition, I require all control variables, i.e., *FRAUD*, *COREEARN*, *RESNI*, *NOISSUES*, *NOYEARS*, *SIZE*, *LEVERAGE*, *BM*, *ROA*, *LOSS*, *LNAGE*, *RET*, *TURNOVER*, *SPREAD*, *STDRET*, *INSTOWN*, *LNANL*, *LNMEDIA*, *MAJORCHG*, *ISSUANCE* and *MERGER*, to have non-missing values. The unmatched sample therefore consists of 4,272 observations. Variable definitions and data sources are provided in Appendix 1.

I obtain the client names of IR firms from O'Dwyer's Directory of Public Relations Firms. This directory lists IR firms and their long-term (six months or more) clients each year. In order to obtain client identifiers, I match client names with several possible CRSP names using the "spelling distance" function. I then manually check whether the matching is correct. A Google search is done if the matching is ambiguous.

Following Solomon (2012), I exclude clients identified as subsidiaries or regional branches of CRSP firms. From 2000 to 2013, the number of CRSP firms hiring IR firms is on average 1,051.

In order to obtain the propensity score matched sample, I require all variables in the propensity score matching model to be non-missing. These leave me with 3,718 observations, of which 455 belong to the treatment group. I then require the control firms to be in the same year as the treatment firms and have the closest propensity score. I do not allow replacement in the matching procedure and require a caliper of 0.05. The propensity score matched sample consists of 808 observations, including 404 observations in the treatment group and 404 observations in the control group.

4.2. Descriptive Statistics

Table 1 describes the descriptive statistics of the dependent variables and control variables in Equation (2) based on the unmatched sample. I report the characteristics of firms hiring IR firms both in the year before and in the year of the restatement announcements ($IR=1$) and other firms ($IR=0$) separately. There are 534 observations in the treatment group and 3,738 observations in the control group. Tests for differences in means and medians are reported in the last two columns. Tests for differences in means are based on t-statistics for continuous variables and z-statistics for binary variables, and tests for differences in medians are based on the Wilcoxon rank sum test. All the continuous variables are winsorized at the top and bottom one percentile.

The mean and median values of $CAR3/CAR15$ are negative both when IR is equal to one and when IR is equal to zero. However, the treatment group ($IR=1$) has higher

values of *CAR3* and *CAR15*, and the median values of *CAR3* and *CAR15* are statistically different between the treatment group and the control group. In terms of the severity of restatements, the treatment firms, on average, are more likely to have core accounts affected, a greater number of issues involved and a longer period restated. As for firm characteristics, in general, treatment firms have a larger log of total assets, a higher leverage, and a lower book-to-market ratio. Moreover, treatment firms have better performance (i.e., higher ROA, lower likelihood of having loss, higher stock returns), longer firm age and less return volatility. They are also more liquid (i.e., higher turnover and lower bid-ask spreads) and more visible (i.e., higher institutional ownership, greater analyst coverage, and greater media coverage). Finally, treatment firms tend to be involved in mergers and acquisitions. These findings are generally consistent with Solomon (2012).

Panel A of Table 2 presents results of the logistic regression regarding the determinants of hiring IR firms. I find that the likelihood of hiring IR firms is positively related to firm size, stock turnover and media coverage, and is negatively related to book-to-market ratio, ROA and institutional ownership.

Panel B of Table 2 reports comparison between treatment firms and the propensity score matched control firms. Both the treatment group and the control group have 404 observations. As for the dependent variables, the median value of *CAR3* and the mean and median values of *CAR15* are statistically higher for the treatment group than for the control group. I then check the quality of the propensity-score matching by comparing the mean/median values of the matching variables between treatment firms and propensity score matched control firms. I find that the differences between the two

groups of firms, except for the median value of *TURNOVER_2*, are insignificant. This finding indicates that treatment firms and propensity score matched control firms are similar in almost all the dimensions considered in the propensity score model, and adds to my confidence that the matching is valid.

5. Empirical Results

5.1. Empirical Results for H1

To test whether firms hiring an external IR firm realize higher restatement announcement returns, I estimate the regression specified in Equation (2). I use *CAR3* and *CAR15* as the dependent variable respectively. Inferences are based on standard errors adjusted by heteroskedasticity and clustered by firm to control for time-series dependence in residuals.

Table 3 reports results regarding restatement announcement returns. I control for restatement severity⁷, firm characteristics, year dummies and industry dummies in the regressions. When the dependent variable is *CAR3*, the coefficient on *IR* is 0.010 and significant at the 5% level. It suggests that IR firm use is related to an increase of 1% in the 3-day cumulative abnormal returns surrounding the restatement announcement. The cumulative abnormal returns are measured by estimating the market model. The second regression use *CAR15* as the dependent variable. The coefficient on *IR* indicates that having an IR firm is associated with an increase of 2.1% in the 15-day restatement announcement returns. Results from both regressions show that hiring an IR firm is

⁷ I also examine the impact of IR firms on restatement announcement returns by partitioning the sample on restatement severity. The results do not vary with restatement severity.

positively associated with restatement announcement returns, which suggests that IR firms help their clients to manage the crises and take control of the situation.⁸

5.2. Empirical Results for H2

The results of the subsample analyses regarding analyst coverage and media coverage are reported in Table 4 and Table 5, respectively. H2a predicts that the positive impact of having IR firms on restatement announcement returns is more pronounced for firms with lower analyst coverage. This prediction is supported by the empirical results. Specifically, when *CAR3* is the dependent variable, the coefficient on the interaction between the IR dummy (*IR*) and low analyst coverage (*L_ANL*) is 0.015, significant at 10% level. When *CAR15* is the dependent variable, the coefficient on the interaction term is 0.046 and significant at 1% level. These findings indicate that the effect of IR firms is more pronounced for firms with lower analyst coverage. H2b predicts that the positive impact of IR firms on restatement announcement returns is stronger for firms with lower media coverage. Table 5 shows that the coefficient on the interaction between *IR* and *L_MEDIA* is positive and significant in both regressions, supporting my prediction. In sum, the results suggest that the effect of IR firms on restatement announcement returns is more pronounced for firms with higher information asymmetry, i.e., lower analyst coverage and lower media coverage.

⁸ An alternative explanation for the finding is that IR firms prep the public with some hints of upcoming restatements and effectively leak the information prior to the restatement announcements. To examine this alternative explanation, I use the 60-day and 120-day buy-and-hold market-adjusted return before the restatement announcement window (*PRERET_60D* and *PRERET_120D*) as the dependent variables and repeat the analyses. If the less negative market response is due to the information leakage, I expect the stock returns prior to the restatement announcements to be more negative for firms being an IR client. If the information leakage story is untrue, I do not expect that hiring IR firms is associated with the stock return before the restatement announcement. The results show that *IR* is not associated with *PRERET_60D* and *PRERET_120D*, suggesting that the main results are not driven by information leakage before the restatement announcement.

5.3. Empirical Results for H3

To examine whether IR client firms experience return reversals after the restatement announcements, I estimate the model specified in Equation (5). I require the dependent variables, i.e., *POSTRET_60D* and *POSTRET_120D*, to be non-missing. The results are reported in Table 6. In the first regression, the dependent variable is the 60-day buy-and-hold market-adjusted returns after the restatement announcement window. In the second regression, the dependent variable is the 120-day buy-and-hold market-adjusted returns. The coefficients on *IR* are insignificant in both regressions. Therefore, there is no association between the presence of IR firms and the buy-and-hold market-adjusted returns after the restatement announcements, indicating that IR firms help their clients to communicate in an unbiased manner instead of hyping their clients' news upon restatement announcements.

6. Possible Mechanisms

6.1. Media News Sentiment and Press Release Sentiment

To confirm my story that IR firms help to limit the damage from financial restatements by providing useful communications, I examine the media news sentiment and the press release sentiment around the restatement announcements. The results are reported in Panel A of Table 7. *MEDIASENTIMENT3* and *MEDIASENTIMENT15* are the average news sentiment over the 3-day window and the 15-day window surrounding the restatement announcement date, respectively. *PRSENTI3* and *PRSENTI15* are the average press release sentiment over the 3-day window and the 15-day window surrounding the

restatement announcement date, respectively. A higher value of the sentiment variables means more positive news sentiment. The coefficients on *IR* are positive and significant when the dependent variables are *MEDIASENTIMENT3* and *MEDIASENTIMENT15*, indicating that the media news around the restatement announcements is more positive for firms having an IR firm after controlling for restatement severity, firm characteristics, year dummies and industry dummies. The coefficients on *IR* are insignificant when the dependent variables are *PRSENTI3* and *PRSENTI15*. The findings suggest that IR firms positively affect their clients' valuation through media news.

6.2. Analyst Forecast Revision, Analyst Forecast Dispersion, and Return Volatility

As I discussed earlier, IR firms could help their clients to increase future cash flows and decrease uncertainty. The findings on media news sentiment cannot provide direct evidence on whether IR firms increase their clients' value through the increase in future cash flows or the decrease in uncertainty or both. The reason is that both the increase in future cash flow and the decrease in uncertainty could be positively associated with media news sentiment. To have a better idea on the mechanisms through which IR firms increase their clients' value, I examine analyst forecast revision and analyst forecast dispersion after the restatement announcement window, and stock return volatility during the announcement window.

The results are reported in Panel B of Table 7. *REVISION* is the consensus annual analyst forecast after the restatement announcement window minus the consensus annual analyst forecast before the restatement window, expressed as a percentage of price. *DISPERSION* is the standard deviation of annual analyst forecasts measured after the

restatement announcement window, expressed as a percentage of price. *VOLATILITY* is the standard deviation of returns over the window $(-7, 7)$ surrounding the restatement announcement date. When the dependent variable is *REVISION*, the coefficient on *IR* is positive and significant, which suggests that analysts generate higher forecasts on the restating firm's future earnings when the restating firm hires an IR firm. This finding supports the notion that IR firms help increase their clients' future cash flows. When the dependent variables are *DISPERSION* and *VOLATILITY*, the coefficients on *IR* are insignificant. The findings do not provide evidence that IR firms help reduce uncertainty. To sum up, IR firms increase their clients' value through the increase in future cash flows.

7. Robustness Checks

7.1. Alternative Measures of Restatement Announcement Returns

To check the robustness of the main results, I use alternative measures of cumulative abnormal returns. *CAR3_FF* and *CAR15_FF* are cumulative abnormal returns over the window $(-1, 1)$ and $(-7, 7)$ surrounding the restatement announcement date respectively, measured by estimating the Fama-French three-factor model over the window $(-210, -11)$. *CAR3_FFM* and *CAR15_FFM* are calculated by estimating the Fama-French three factor plus the momentum factor model. Table 8 reports results using these alternative measures of restatement announcement returns. The coefficients on *IR* are positive and significant in all the regressions. Therefore, the results are robust to the alternative measures of cumulative abnormal returns.

7.2. Results based on the Unmatched Sample

I repeat the analyses of the market reactions to restatement announcements by using the unmatched sample. Table 9 reports the results. Consistent with prior literature, I find more negative market reactions when the restatements are due to fraud, involve revenue, cost of sales or operating expense accounts, have lower restated net income, and have a larger number of issues. The coefficients on *IR* are positive and significant at 5% level in both regressions. In sum, the positive association between having an IR firm and market reactions to restatement announcements continues to hold after using this sample.

7.3. Alternative Matching Approach

Following Bushee and Miller (2012), I construct a different matched sample by matching on industry, year, exchange listing, time listed and size. I delete restating firms that only hire IR firms in the year before or in the year of the restatement announcements from the unmatched sample, and require the matching variables to be non-missing. The control firms are required to be in the same Fama-French 48 industry, in the same year, and traded on the same exchange as the treatment firms in the year before the restatement announcement. I then search for the closest match in firm size within the set of firms whose time listed on the exchange was within four years of the treatment firm. The sample consists of 592 observations. Table 10 reports the results after using this alternative matched sample. The coefficients on *IR* are positive, significant at 5% level. Therefore, the positive association between IR firm use and stock returns around restatement announcements is robust to this alternative matched sample, suggesting that IR firms help their clients to manage the crises and communicate effectively.

8. Conclusions

IR firms are important information intermediaries that help their clients to communicate, engage and build relationships with investors and other stakeholders. On average, more than 1,000 CRSP firms hire an external IR firm each year. In this study, I examine whether hiring an IR firm increases shareholder value through crisis communications in a setting of financial restatements. I find that firms hiring an IR firm realize less negative market reactions to restatement announcements than propensity score matched control firms, consistent with the story that IR firms increase value for their clients by communicating with investors and stakeholders effectively during periods of crises.

I further show that the positive impact of hiring an IR firm on restatement announcement returns is more pronounced for firms with lower analyst coverage and lower media coverage. The results suggest that the role of IR firms in crisis communications depends on firms' information environment and IR firms' impact tends to be stronger for firms with greater information asymmetry.

Moreover, firms that hire an IR firm do not experience lower 60-day and 120-day buy-and-hold market-adjusted returns after the restatement announcement window. The findings are inconsistent with the story that IR firms hype their clients' news at the time of restatement announcements.

I then show that the media news around the restatement announcements is more positive for firms having an IR firm than for other restating firms, supporting the notion that the positive valuation impact of IR firms is indeed through media and communications. Furthermore, hiring an IR firm is positively related to analyst forecast

revision, but is not related to analyst forecast dispersion and return volatility, suggesting that IR firms increase their clients' value through the increase in future cash flows rather than the decrease in uncertainty.

Finally, I conduct several robustness checks. I find that the positive association between hiring IR firms and restatement announcement returns is robust to alternative measures of cumulative abnormal returns, to the unmatched sample, and to a different matched sample by matching on industry, year, exchange listing, time listed and size.

Overall, the results suggest that crisis communications is a mechanism through which IR firms increase shareholder value. Specifically, IR firms assist their clients in managing the crises and communicating appropriately at the time of restatement announcements, thus alleviating the negative valuation consequences of financial restatements. My study has practical implications for firms who are considering hiring an external IR firm and investors who are making investment decisions.

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Table 1 Descriptive Statistics based on the Unmatched Sample

This table reports the descriptive statistics for firms hiring IR firms both in the year before and in the year of the restatement announcements ($IR=1$) and for firms that do not hire IR firms either in the year before or in the year of the restatement announcements ($IR=0$) based on the unmatched sample. The sample period is from 2001 to 2013. I start with observations of financial restatements obtained from the Audit Analytics database and delete firms that only hire IR firms in the year before or in the year of the restatement announcements. I then require the dependent and independent variables to be non-missing. The sample consists of 4,272 observations. All the continuous variables are winsorized at the top and bottom one percentile. Tests for differences in means are based on t-statistics for continuous variables, and z-statistics for binary variables. Tests for differences in medians are based on the Wilcoxon rank sum test. *, **, and *** denote statistical significance at the 0.10, 0.05, and 0.01 level, respectively, using a two-sided test. Please refer to Appendix 1 for detailed variable definitions.

	<u>$IR=1$ (N=534)</u>		<u>$IR=0$ (N=3,738)</u>		<u>Test of difference</u>	
	Mean	Median	Mean	Median	Mean	Median
<i>CAR3</i>	-0.010	-0.005	-0.016	-0.008	0.006	0.004*
<i>CAR15</i>	-0.008	-0.004	-0.019	-0.014	0.011	0.010**
<i>FRAUD</i>	0.030	0.000	0.020	0.000	0.010	0.000
<i>COREEARN</i>	0.376	0.000	0.290	0.000	0.086***	0.000***
<i>RESNI</i>	-0.010	0.000	-0.013	0.000	0.003	-0.000
<i>NOISSUES</i>	2.712	2.000	2.383	2.000	0.329***	0.000***
<i>NOYEARS</i>	2.379	2.000	2.007	1.500	0.371***	0.500***
<i>SIZE</i>	7.206	7.212	6.077	6.053	1.129***	1.158***
<i>LEVERAGE</i>	0.251	0.220	0.237	0.183	0.013	0.037*
<i>BM</i>	0.546	0.456	0.712	0.573	-0.166***	-0.117***
<i>ROA</i>	-0.039	0.018	-0.054	0.009	0.015	0.009***
<i>LOSS</i>	0.352	0.000	0.404	0.000	-0.052**	-0.000**
<i>LNAGE</i>	2.468	2.485	2.285	2.398	0.182***	0.087***
<i>RET</i>	0.052	-0.029	0.013	-0.074	0.039	0.045**
<i>TURNOVER</i>	0.010	0.008	0.008	0.005	0.003***	0.003***
<i>SPREAD</i>	0.008	0.003	0.013	0.005	-0.005***	-0.002***
<i>STDRET</i>	0.034	0.029	0.036	0.031	-0.002**	-0.002**
<i>INSTOWN</i>	0.606	0.643	0.483	0.464	0.123***	0.179***
<i>LNANL</i>	2.142	2.303	1.440	1.609	0.701***	0.693***
<i>LNMEDIA</i>	3.890	4.431	3.377	3.932	0.513***	0.499***
<i>MAJORCHG</i>	0.064	0.000	0.058	0.000	0.007	0.000
<i>ISSUANCE</i>	0.208	0.000	0.186	0.000	0.022	0.000
<i>MERGER</i>	0.215	0.000	0.135	0.000	0.080***	0.000***

Table 2 Propensity Score Matching

Panel A reports results of the logistic regression. *IR* is a dummy variable which equals one if the firm hires an IR firm both in the year before and in the year of the restatement announcement, and zero otherwise. All the independent variables are measured in year *t*-2. The sample consists of 3,718 observations since I require the independent variables to be non-missing. Inferences are based on standard errors adjusted by heteroskedasticity and clustered by firm. *p*-values based on two-tailed tests are reported in parentheses. Panel B reports descriptive statistics of *CAR3* and *CAR15* based on the propensity score matched sample and examines the quality of the propensity score matching. The sample consists of 808 observations. Tests for differences in means are based on *t*-statistics for continuous variables, and *z*-statistics for binary variables. Tests for differences in medians are based on the Wilcoxon rank sum test. *, **, and *** stand for statistical significance at the 0.10, 0.05, and 0.01 level, respectively. Appendix 1 provides detailed variable definitions.

Panel A: Determinants of Hiring IR Firms

	<i>IR</i>
<i>SIZE_2</i>	0.373*** (0.000)
<i>LEVERAGE_2</i>	-0.370 (0.205)
<i>BM_2</i>	-0.551*** (0.000)
<i>ROA_2</i>	-0.706* (0.052)
<i>LOSS_2</i>	-0.157 (0.302)
<i>LNAGE_2</i>	-0.061 (0.351)
<i>RET_2</i>	0.013 (0.891)
<i>TURNOVER_2</i>	26.873*** (0.000)
<i>SPREAD_2</i>	-4.950 (0.465)
<i>STDRET_2</i>	-5.640 (0.267)
<i>INSTOWN_2</i>	-0.501* (0.051)
<i>LNANL_2</i>	0.136 (0.122)

<i>LNMEDIA_2</i>	0.131*** (0.001)
<i>MAJORCHG_2</i>	0.544 (0.195)
<i>ISSUANCE_2</i>	-0.010 (0.945)
<i>MERGER_2</i>	-0.247 (0.110)
<i>Intercept</i>	-5.157*** (0.000)
Year fixed effects	Yes
Industry fixed effects	Yes
Sample size	3,718
R-squared	0.158

Panel B: Comparison between Treatment Firms and Propensity Score Matched Control Firms

	<u>IR=1 (N=404)</u>		<u>IR=0 (N=404)</u>		<u>Test of difference</u>	
	Mean	Median	Mean	Median	Mean	Median
<i>CAR3</i>	-0.010	-0.002	-0.017	-0.009	0.008	0.007**
<i>CAR15</i>	-0.010	-0.008	-0.028	-0.013	0.019**	0.005**
<i>SIZE_2</i>	6.969	7.002	6.972	6.878	-0.004	0.124
<i>LEVERAGE_2</i>	0.244	0.218	0.249	0.220	-0.004	-0.002
<i>BM_2</i>	0.545	0.465	0.552	0.475	-0.007	-0.010
<i>ROA_2</i>	-0.027	0.025	-0.027	0.020	0.000	0.005
<i>LOSS_2</i>	0.307	0.000	0.292	0.000	0.015	0.000
<i>LNAGE_2</i>	2.398	2.485	2.383	2.398	0.016	0.087
<i>RET_2</i>	0.105	0.002	0.095	0.008	0.010	-0.006
<i>TURNOVER_2</i>	0.010	0.008	0.009	0.006	0.000	0.001*
<i>SPREAD_2</i>	0.008	0.003	0.008	0.003	0.000	0.000
<i>STDRET_2</i>	0.034	0.029	0.034	0.029	0.001	-0.001
<i>INSTOWN_2</i>	0.601	0.643	0.603	0.650	-0.002	-0.007
<i>LNANL_2</i>	2.040	2.197	2.069	2.303	-0.029	-0.105
<i>LNMEDIA_2</i>	3.778	4.248	3.829	4.174	-0.051	0.074
<i>MAJORCHG_2</i>	0.058	0.000	0.056	0.000	0.002	0.000
<i>ISSUANCE_2</i>	0.203	0.000	0.171	0.000	0.032	0.000
<i>MERGER_2</i>	0.149	0.000	0.163	0.000	-0.015	0.000

Table 3 The Impact of Hiring IR firms on Market Reactions to Restatement Announcements

This table reports results of OLS regressions based on the propensity score matched sample. The dependent variables are cumulative abnormal returns surrounding the restatement announcement dates over the window (-1, 1) and (-7, 7), respectively. Abnormal returns are measured by estimating the market model over the window (-210, -11). *IR* is a dummy variable which equals one if the firm hires an IR firm both in the year before and in the year of the restatement announcement, and zero otherwise. Inferences are based on standard errors adjusted by heteroskedasticity and clustered by firm. p-values based on two-tailed tests are reported in parentheses. *, **, and *** stand for statistical significance at the 0.10, 0.05, and 0.01 level, respectively. Appendix 1 provides detailed variable definitions.

	<i>CAR3</i>	<i>CAR15</i>
<i>IR</i>	0.010** (0.042)	0.021** (0.013)
<i>FRAUD</i>	-0.012 (0.420)	-0.034 (0.333)
<i>COREEARN</i>	-0.017*** (0.008)	-0.006 (0.502)
<i>RESNI</i>	0.212** (0.027)	0.553** (0.015)
<i>NOISSUES</i>	-0.002 (0.147)	-0.005* (0.073)
<i>NOYEARS</i>	-0.000 (0.852)	0.003 (0.164)
<i>SIZE</i>	0.005*** (0.010)	0.005 (0.138)
<i>LEVERAGE</i>	-0.020 (0.129)	-0.014 (0.548)
<i>BM</i>	-0.003 (0.598)	-0.006 (0.621)
<i>ROA</i>	-0.020 (0.322)	-0.018 (0.651)
<i>LOSS</i>	-0.014** (0.027)	-0.029** (0.014)
<i>LNAGE</i>	0.000 (0.983)	-0.004 (0.500)
<i>RET</i>	-0.004 (0.487)	-0.032*** (0.001)
<i>TURNOVER</i>	-0.579 (0.103)	-1.054 (0.133)

<i>SPREAD</i>	0.263 (0.562)	0.736 (0.400)
<i>STDRET</i>	0.387 (0.184)	0.297 (0.572)
<i>INSTOWN</i>	0.017 (0.174)	0.049** (0.018)
<i>LNANL</i>	-0.007* (0.067)	-0.008 (0.323)
<i>LNMEDIA</i>	0.001 (0.400)	-0.004 (0.192)
<i>MAJORCHG</i>	-0.035* (0.081)	-0.005 (0.863)
<i>ISSUANCE</i>	-0.015* (0.066)	-0.017 (0.165)
<i>MERGER</i>	0.004 (0.588)	0.013 (0.218)
<i>Intercept</i>	0.016 (0.551)	0.025 (0.566)
Year fixed effects	Yes	Yes
Industry fixed effects	Yes	Yes
Sample size	808	808
R-squared	0.104	0.109

Table 4 Subsample Analyses: Low versus High Analyst Coverage

This table reports results of OLS regressions based on the propensity score matched sample. The dependent variables are cumulative abnormal returns surrounding the restatement announcement dates over the window (-1, 1) and (-7, 7), respectively. Abnormal returns are measured by estimating the market model over the window (-210, -11). *IR* is a dummy variable which equals one if the firm hires an IR firm both in the year before and in the year of the restatement announcement, and zero otherwise. *L_ANL* is a dummy variable which equals one if the log of 1 plus the number of unique analysts issuing earnings forecasts in the year prior to the restatement announcement is not in the highest quartile and zero otherwise. Inferences are based on standard errors adjusted by heteroskedasticity and clustered by firm. p-values based on two-tailed (one-tailed) tests are reported in parentheses for coefficients without predicted signs (for coefficients with predicted signs). *, **, and *** stand for statistical significance at the 0.10, 0.05, and 0.01 level, respectively. Appendix 1 provides detailed variable definitions.

	Predicted Sign	<i>CAR3</i>	<i>CAR15</i>
<i>IR</i>		-0.002 (0.868)	-0.014 (0.326)
<i>L_ANL</i>		-0.005 (0.565)	-0.024* (0.075)
<i>IR*L_ANL</i>	+	0.015* (0.083)	0.046*** (0.004)
<i>FRAUD</i>		-0.011 (0.484)	-0.032 (0.368)
<i>COREEARN</i>		-0.017*** (0.008)	-0.007 (0.483)
<i>RESNI</i>		0.210** (0.030)	0.551** (0.015)
<i>NOISSUES</i>		-0.002 (0.157)	-0.005* (0.072)
<i>NOYEARS</i>		-0.000 (0.781)	0.003 (0.185)
<i>SIZE</i>		0.004* (0.055)	0.003 (0.327)
<i>LEVERAGE</i>		-0.017 (0.185)	-0.010 (0.662)
<i>BM</i>		-0.003 (0.637)	-0.005 (0.673)
<i>ROA</i>		-0.021 (0.290)	-0.019 (0.628)
<i>LOSS</i>		-0.015**	-0.030**

	(0.024)	(0.013)
<i>LNAGE</i>	0.001	-0.003
	(0.846)	(0.620)
<i>RET</i>	-0.003	-0.031***
	(0.586)	(0.001)
<i>TURNOVER</i>	-0.676*	-1.221*
	(0.056)	(0.071)
<i>SPREAD</i>	0.393	0.856
	(0.375)	(0.317)
<i>STDRET</i>	0.350	0.260
	(0.229)	(0.620)
<i>INSTOWN</i>	0.013	0.045**
	(0.279)	(0.030)
<i>LNMEDIA</i>	0.001	-0.004
	(0.577)	(0.123)
<i>MAJORCHG</i>	-0.034*	-0.003
	(0.093)	(0.927)
<i>ISSUANCE</i>	-0.014*	-0.014
	(0.085)	(0.245)
<i>MERGER</i>	0.003	0.012
	(0.678)	(0.295)
<i>Intercept</i>	0.015	0.023
	(0.575)	(0.597)
Year fixed effects	Yes	Yes
Industry fixed effects	Yes	Yes
Sample size	808	808
R-squared	0.103	0.114

Table 5 Subsample Analyses: Low versus High Media Coverage

This table reports results of OLS regressions based on the propensity score matched sample. The dependent variables are cumulative abnormal returns surrounding the restatement announcement dates over the window (-1, 1) and (-7, 7), respectively. Abnormal returns are measured by estimating the market model over the window (-210, -11). *IR* is a dummy variable which equals one if the firm hires an IR firm both in the year before and in the year of the restatement announcement, and zero otherwise. *L_MEDIA* is a dummy variable which equals one if the log of 1 plus the number of Dow Jones news articles in the year prior to the restatement announcement is not in the highest quartile, and zero otherwise. Inferences are based on standard errors adjusted by heteroskedasticity and clustered by firm. p-values based on two-tailed (one-tailed) tests are reported in parentheses for coefficients without predicted signs (for coefficients with predicted signs). *, **, and *** stand for statistical significance at the 0.10, 0.05, and 0.01 level, respectively. Appendix 1 provides detailed variable definitions.

	Predicted Sign	<i>CAR3</i>	<i>CAR15</i>
<i>IR</i>		-0.003 (0.729)	-0.010 (0.430)
<i>L_MEDIA</i>		-0.015* (0.090)	-0.021 (0.143)
<i>IR*L_MEDIA</i>	+	0.017** (0.046)	0.042*** (0.005)
<i>FRAUD</i>		-0.012 (0.414)	-0.033 (0.336)
<i>COREEARN</i>		-0.017*** (0.007)	-0.007 (0.451)
<i>RESNI</i>		0.213** (0.025)	0.543** (0.017)
<i>NOISSUES</i>		-0.002 (0.128)	-0.005* (0.070)
<i>NOYEARS</i>		-0.000 (0.875)	0.003 (0.149)
<i>SIZE</i>		0.004** (0.032)	0.006 (0.136)
<i>LEVERAGE</i>		-0.019 (0.148)	-0.013 (0.573)
<i>BM</i>		-0.003 (0.654)	-0.005 (0.655)
<i>ROA</i>		-0.019 (0.347)	-0.015 (0.701)
<i>LOSS</i>		-0.015**	-0.028**

	(0.025)	(0.019)
<i>LNAGE</i>	0.000	-0.005
	(0.942)	(0.323)
<i>RET</i>	-0.004	-0.033***
	(0.490)	(0.001)
<i>TURNOVER</i>	-0.612*	-0.952
	(0.085)	(0.164)
<i>SPREAD</i>	0.213	0.841
	(0.642)	(0.341)
<i>STDRET</i>	0.376	0.240
	(0.198)	(0.650)
<i>INSTOWN</i>	0.017	0.043**
	(0.161)	(0.038)
<i>LNANL</i>	-0.007*	-0.009
	(0.078)	(0.232)
<i>MAJORCHG</i>	-0.035*	-0.007
	(0.080)	(0.810)
<i>ISSUANCE</i>	-0.014*	-0.018
	(0.078)	(0.125)
<i>MERGER</i>	0.004	0.013
	(0.587)	(0.251)
<i>Intercept</i>	0.022	0.016
	(0.406)	(0.726)
Year fixed effects	Yes	Yes
Industry fixed effects	Yes	Yes
Sample size	808	808
R-squared	0.107	0.113

Table 6 The Impact of Hiring IR firms on Stock Returns after Restatement Announcements

This table reports results of OLS regressions based on the propensity score matched sample. The dependent variables are buy-and-hold market-adjusted returns over the window (8, 67) and (8, 127) after the restatement announcement date, respectively. *IR* is a dummy variable which equals one if the firm hires an IR firm both in the year before and in the year of the restatement announcement, and zero otherwise. Inferences are based on standard errors adjusted by heteroskedasticity and clustered by firm. p-values based on two-tailed tests are reported in parentheses. *, **, and *** stand for statistical significance at the 0.10, 0.05, and 0.01 level, respectively. Appendix 1 provides detailed variable definitions.

	<i>POSTRET_60D</i>	<i>POSTRET_120D</i>
<i>IR</i>	0.008 (0.641)	0.014 (0.589)
<i>FRAUD</i>	-0.019 (0.765)	-0.020 (0.858)
<i>COREEARN</i>	0.012 (0.554)	0.068** (0.036)
<i>RESNI</i>	0.058 (0.862)	0.328 (0.487)
<i>NOISSUES</i>	0.001 (0.789)	-0.001 (0.861)
<i>NOYEARS</i>	-0.003 (0.480)	-0.002 (0.816)
<i>SIZE</i>	0.003 (0.703)	0.002 (0.841)
<i>LEVERAGE</i>	-0.016 (0.769)	0.054 (0.517)
<i>BM</i>	0.004 (0.879)	0.052 (0.206)
<i>ROA</i>	-0.158* (0.072)	-0.124 (0.295)
<i>LOSS</i>	-0.037 (0.189)	-0.043 (0.287)
<i>LNAGE</i>	0.003 (0.788)	0.020 (0.310)
<i>RET</i>	0.002 (0.921)	0.022 (0.405)
<i>TURNOVER</i>	-0.593 (0.641)	-1.141 (0.564)
<i>SPREAD</i>	2.233	3.235

	(0.187)	(0.233)
<i>STDRET</i>	-0.295	0.076
	(0.812)	(0.966)
<i>INSTOWN</i>	0.047	0.052
	(0.248)	(0.378)
<i>LNANL</i>	0.001	0.029
	(0.959)	(0.235)
<i>LNMEDIA</i>	-0.001	-0.013
	(0.883)	(0.193)
<i>MAJORCHG</i>	-0.077	-0.171**
	(0.194)	(0.045)
<i>ISSUANCE</i>	-0.010	0.044
	(0.692)	(0.273)
<i>MERGER</i>	-0.033	-0.028
	(0.103)	(0.369)
<i>Intercept</i>	-0.101	-0.263*
	(0.280)	(0.065)
Year fixed effects	Yes	Yes
Industry fixed effects	Yes	Yes
Sample size	798	798
R-squared	0.065	0.106

Table 7 Possible Mechanisms

This table reports results of OLS regressions. Panel A reports results of media news sentiment and press release sentiment. *MEDIASENTI3* and *MEDIASENTI15* are the average news sentiment over the 3-day window and the 15-day window surrounding the restatement announcement date, respectively. *PRSENTI3* and *PRSENTI15* are the average press release sentiment over the 3-day window and the 15-day window surrounding the restatement announcement date, respectively. Panel B reports results of analyst forecast revision, analyst forecast dispersion and return volatility. *REVISION* is the consensus annual analyst forecast after the restatement announcement window minus the consensus annual analyst forecast before the restatement window, expressed as a percentage of price. *DISPERSION* is the standard deviation of annual analyst forecasts measured after the restatement announcement window, expressed as a percentage of price. *VOLATILITY* is the standard deviation of returns over the window (-7, 7) surrounding the restatement announcement date. *IR* is a dummy variable which equals one if the firm hires an IR firm both in the year before and in the year of the restatement announcement, and zero otherwise. Inferences are based on standard errors adjusted by heteroskedasticity and clustered by firm. p-values based on two-tailed tests are reported in parentheses. *, **, and *** stand for statistical significance at the 0.10, 0.05, and 0.01 level, respectively. Appendix 1 provides detailed variable definitions.

Panel A: Media News Sentiment and Press Release Sentiment

	<i>MEDIASENTI3</i>	<i>MEDIASENTI15</i>	<i>PRSENTI3</i>	<i>PRSENTI15</i>
<i>IR</i>	0.023** (0.039)	0.018** (0.029)	-0.006 (0.688)	-0.007 (0.571)
<i>FRAUD</i>	-0.006 (0.827)	0.000 (0.990)	-0.053 (0.302)	-0.057 (0.311)
<i>COREEARN</i>	0.005 (0.673)	-0.000 (0.965)	0.012 (0.489)	-0.004 (0.782)
<i>RESNI</i>	0.132 (0.504)	0.215 (0.117)	-0.012 (0.967)	0.094 (0.733)
<i>NOISSUES</i>	-0.003 (0.339)	-0.005** (0.048)	-0.003 (0.558)	-0.003 (0.546)
<i>NOYEARS</i>	-0.001 (0.675)	-0.001 (0.781)	-0.000 (0.933)	0.002 (0.500)
<i>SIZE</i>	-0.006 (0.409)	-0.002 (0.715)	-0.002 (0.844)	-0.004 (0.579)
<i>LEVERAGE</i>	0.032 (0.259)	0.032 (0.177)	-0.001 (0.974)	0.002 (0.964)
<i>BM</i>	0.007 (0.636)	-0.004 (0.709)	0.023 (0.207)	0.009 (0.599)

<i>ROA</i>	-0.017 (0.691)	-0.025 (0.465)	0.098 (0.136)	0.063 (0.291)
<i>LOSS</i>	-0.034** (0.032)	-0.022* (0.079)	0.009 (0.627)	0.005 (0.770)
<i>LNAGE</i>	-0.007 (0.354)	-0.008 (0.175)	0.006 (0.512)	0.010 (0.216)
<i>RET</i>	0.032** (0.019)	0.025*** (0.009)	0.011 (0.402)	0.008 (0.503)
<i>TURNOVER</i>	-1.304* (0.057)	-0.983* (0.058)	-0.545 (0.668)	-1.012 (0.374)
<i>SPREAD</i>	-0.200 (0.850)	-0.112 (0.894)	1.182 (0.605)	0.643 (0.744)
<i>STDRET</i>	-0.301 (0.628)	0.032 (0.948)	0.175 (0.843)	0.324 (0.677)
<i>INSTOWN</i>	0.034 (0.178)	0.044** (0.025)	-0.015 (0.654)	-0.010 (0.752)
<i>LNANL</i>	0.004 (0.756)	0.004 (0.628)	0.019 (0.242)	0.010 (0.437)
<i>LNMEDIA</i>	0.013 (0.378)	0.005 (0.620)	-0.000 (0.984)	0.014 (0.297)
<i>MAJORCHG</i>	0.008 (0.824)	0.026 (0.359)	0.075* (0.087)	0.037 (0.422)
<i>ISSUANCE</i>	-0.017 (0.214)	-0.018* (0.074)	-0.020 (0.271)	-0.021 (0.160)
<i>MERGER</i>	0.011 (0.376)	0.020** (0.036)	0.001 (0.958)	-0.007 (0.583)
<i>Intercept</i>	0.448*** (0.000)	0.459*** (0.000)	0.425*** (0.000)	0.408*** (0.000)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Sample size	474	474	234	234
R-squared	0.150	0.183	0.165	0.166

Panel B: Analyst Forecast Revision, Analyst Forecast Dispersion and Return Volatility

	<i>REVISION</i>	<i>DISPERSION</i>	<i>VOLATILITY</i>
<i>IR</i>	0.003** (0.040)	-0.001 (0.312)	0.001 (0.655)
<i>FRAUD</i>	0.005 (0.242)	-0.004 (0.212)	0.005 (0.294)
<i>COREEARN</i>	-0.000 (0.970)	-0.000 (0.746)	0.004*** (0.008)
<i>RESNI</i>	-0.051 (0.107)	0.027 (0.112)	-0.059* (0.061)
<i>NOISSUES</i>	-0.001 (0.106)	0.000 (0.993)	0.000 (0.568)
<i>NOYEARS</i>	0.000 (0.600)	0.000 (0.428)	0.000 (0.330)
<i>SIZE</i>	-0.001* (0.087)	0.001* (0.064)	-0.001 (0.317)
<i>LEVERAGE</i>	-0.002 (0.647)	0.007** (0.012)	0.008** (0.017)
<i>BM</i>	-0.003 (0.324)	0.001 (0.442)	0.003 (0.138)
<i>ROA</i>	-0.019** (0.024)	-0.009 (0.170)	-0.000 (0.943)
<i>LOSS</i>	-0.007** (0.038)	0.003** (0.029)	0.002 (0.288)
<i>LNAGE</i>	0.001 (0.492)	-0.001 (0.206)	0.000 (0.999)
<i>RET</i>	0.008*** (0.000)	-0.006*** (0.000)	-0.007*** (0.000)
<i>TURNOVER</i>	0.043 (0.735)	0.145* (0.081)	-0.120 (0.200)
<i>SPREAD</i>	0.193 (0.480)	0.034 (0.897)	-0.066 (0.642)
<i>STDRET</i>	-0.352* (0.080)	0.264*** (0.001)	0.569*** (0.000)
<i>INSTOWN</i>	0.001 (0.772)	-0.004 (0.124)	-0.004 (0.162)
<i>LNANL</i>	0.002 (0.176)	-0.003** (0.024)	-0.000 (0.780)
<i>LNMEDIA</i>	-0.001 (0.301)	-0.001** (0.020)	-0.000 (0.701)
<i>MAJORCHG</i>	-0.011	0.002	0.006

	(0.294)	(0.613)	(0.285)
<i>ISSUANCE</i>	-0.000	-0.001	0.004**
	(0.866)	(0.606)	(0.048)
<i>MERGER</i>	-0.001	-0.000	0.003
	(0.730)	(0.914)	(0.108)
<i>Intercept</i>	0.011	-0.004	0.002
	(0.288)	(0.443)	(0.717)
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
Sample size	632	554	808
R-squared	0.165	0.430	0.434

Table 8 Robustness Checks: Alternative Measures of Restatement Announcement Returns

This table reports results of OLS regressions. *CAR3_FF* and *CAR15_FF* are cumulative abnormal returns measured by estimating the Fama-French three-factor model. *CAR3_FFM* and *CAR15_FFM* are cumulative abnormal returns measured by estimating the four factor model. *IR* is a dummy variable which equals one if the firm hires an IR firm both in the year before and in the year of the restatement announcement, and zero otherwise. Appendix 1 provides detailed variable definitions. Inferences are based on standard errors adjusted by heteroskedasticity and clustered by firm. p-values based on two-tailed tests are reported in parentheses. *, **, and *** stand for statistical significance at the 0.10, 0.05, and 0.01 level, respectively.

	<i>CAR3_FF</i>	<i>CAR15_FF</i>	<i>CAR3_FFM</i>	<i>CAR15_FFM</i>
<i>IR</i>	0.009* (0.068)	0.020** (0.014)	0.009* (0.068)	0.020** (0.016)
<i>FRAUD</i>	-0.011 (0.476)	-0.027 (0.414)	-0.010 (0.498)	-0.026 (0.416)
<i>COREEARN</i>	-0.018*** (0.004)	-0.006 (0.502)	-0.018*** (0.003)	-0.005 (0.576)
<i>RESNI</i>	0.213** (0.030)	0.618*** (0.005)	0.220** (0.025)	0.596*** (0.008)
<i>NOISSUES</i>	-0.002 (0.154)	-0.004* (0.077)	-0.002 (0.218)	-0.005* (0.058)
<i>NOYEARS</i>	0.000 (0.958)	0.003 (0.210)	0.000 (0.943)	0.003 (0.247)
<i>SIZE</i>	0.005** (0.015)	0.005 (0.166)	0.004** (0.020)	0.005 (0.174)
<i>LEVERAGE</i>	-0.019 (0.146)	-0.017 (0.452)	-0.019 (0.146)	-0.020 (0.366)
<i>BM</i>	-0.004 (0.564)	-0.010 (0.394)	-0.004 (0.523)	-0.009 (0.442)
<i>ROA</i>	-0.018 (0.385)	-0.026 (0.522)	-0.020 (0.352)	-0.025 (0.544)
<i>LOSS</i>	-0.015** (0.021)	-0.028** (0.016)	-0.015** (0.025)	-0.026** (0.029)
<i>LNAGE</i>	0.001 (0.732)	-0.003 (0.541)	0.000 (0.881)	-0.004 (0.429)
<i>RET</i>	-0.003 (0.652)	-0.031*** (0.001)	-0.002 (0.694)	-0.028*** (0.003)
<i>TURNOVER</i>	-0.606* (0.086)	-1.116 (0.102)	-0.616* (0.084)	-1.016 (0.138)
<i>SPREAD</i>	0.313	0.751	0.292	0.522

	(0.506)	(0.402)	(0.530)	(0.556)
<i>STDRET</i>	0.367	0.126	0.287	-0.025
	(0.203)	(0.805)	(0.332)	(0.963)
<i>INSTOWN</i>	0.018	0.056***	0.018	0.056***
	(0.157)	(0.007)	(0.158)	(0.007)
<i>LNANL</i>	-0.007*	-0.006	-0.006	-0.007
	(0.078)	(0.407)	(0.138)	(0.352)
<i>LNMEDIA</i>	0.001	-0.005	0.001	-0.004
	(0.546)	(0.106)	(0.572)	(0.134)
<i>MAJORCHG</i>	-0.043**	-0.023	-0.038*	-0.018
	(0.033)	(0.433)	(0.059)	(0.545)
<i>ISSUANCE</i>	-0.015*	-0.018	-0.016*	-0.021*
	(0.054)	(0.114)	(0.051)	(0.070)
<i>MERGER</i>	0.003	0.012	0.003	0.011
	(0.606)	(0.240)	(0.614)	(0.302)
<i>Intercept</i>	0.018	0.032	0.023	0.047
	(0.501)	(0.436)	(0.386)	(0.271)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Sample size	808	808	808	808
R-squared	0.107	0.116	0.105	0.113

Table 9 Robustness Checks: Results based on the Unmatched Sample

This table reports results of OLS regressions based on the unmatched sample. The dependent variables are cumulative abnormal returns surrounding the restatement announcement dates over the window (-1, 1) and (-7, 7), respectively. Abnormal returns are measured by estimating the market model over the window (-210, -11). *IR* is a dummy variable which equals one if the firm hires an IR firm both in the year before and in the year of the restatement announcement, and zero otherwise. Inferences are based on standard errors adjusted by heteroskedasticity and clustered by firm. p-values based on two-tailed tests are reported in parentheses. *, **, and *** stand for statistical significance at the 0.10, 0.05, and 0.01 level, respectively. Appendix 1 provides detailed variable definitions.

	<i>CAR3</i>	<i>CAR15</i>
<i>IR</i>	0.009** (0.027)	0.019*** (0.004)
<i>FRAUD</i>	-0.040*** (0.000)	-0.051*** (0.003)
<i>COREEARN</i>	-0.013*** (0.000)	-0.010* (0.054)
<i>RESNI</i>	0.120*** (0.000)	0.199*** (0.000)
<i>NOISSUES</i>	-0.002** (0.029)	-0.004** (0.016)
<i>NOYEARS</i>	-0.000 (0.604)	-0.000 (0.958)
<i>SIZE</i>	-0.000 (0.960)	-0.001 (0.627)
<i>LEVERAGE</i>	0.002 (0.689)	0.016 (0.150)
<i>BM</i>	-0.003 (0.294)	0.008 (0.128)
<i>ROA</i>	-0.003 (0.753)	0.007 (0.692)
<i>LOSS</i>	-0.006* (0.091)	-0.013** (0.036)
<i>LNAGE</i>	0.003** (0.037)	0.003 (0.185)
<i>RET</i>	-0.006** (0.041)	-0.039*** (0.000)
<i>TURNOVER</i>	-0.049 (0.827)	-0.261 (0.536)
<i>SPREAD</i>	0.085	0.293

	(0.517)	(0.216)
<i>STDRET</i>	-0.149	-0.251
	(0.257)	(0.282)
<i>INSTOWN</i>	0.005	0.009
	(0.352)	(0.369)
<i>LNANL</i>	-0.002	0.001
	(0.359)	(0.745)
<i>LNMEDIA</i>	-0.001	-0.003*
	(0.300)	(0.053)
<i>MAJORCHG</i>	0.000	0.008
	(0.976)	(0.644)
<i>ISSUANCE</i>	-0.005	-0.004
	(0.176)	(0.488)
<i>MERGER</i>	-0.007*	-0.007
	(0.079)	(0.271)
<i>Intercept</i>	0.004	-0.037
	(0.785)	(0.113)
Year fixed effects	Yes	Yes
Industry fixed effects	Yes	Yes
Sample size	4,272	4,272
R-squared	0.034	0.053

Table 10 Robustness Checks: Alternative Matching Approach

This table reports results of OLS regressions based on a different matching approach. I delete firms that only hire IR firms in the year before or in the year of the restatement announcements from the unmatched sample, and require the matching variables to be non-missing. Control firms are required to be in the same Fama-French 48 industry, in the same year, and traded on the same exchange as the treatment firms ($IR=1$) in the year before the restatement announcement. I then search for the closest match in firm size within the set of firms whose time listed on the exchange was within four years of the treatment firm. The dependent variables are cumulative abnormal returns surrounding the restatement announcement dates over the window $(-1, 1)$ and $(-7, 7)$, respectively. Abnormal returns are measured by estimating the market model over the window $(-210, -11)$. IR is a dummy variable which equals one if the firm hires an IR firm both in the year before and in the year of the restatement announcement, and zero otherwise. Appendix 1 provides detailed variable definitions. Inferences are based on standard errors adjusted by heteroskedasticity and clustered by firm. p-values based on two-tailed tests are reported in parentheses. *, **, and *** stand for statistical significance at the 0.10, 0.05, and 0.01 level, respectively.

	<i>CAR3</i>	<i>CAR15</i>
<i>IR</i>	0.014** (0.029)	0.022** (0.039)
<i>FRAUD</i>	-0.021 (0.314)	-0.047 (0.203)
<i>COREEARN</i>	-0.018** (0.014)	-0.004 (0.767)
<i>RESNI</i>	0.234** (0.026)	0.405* (0.096)
<i>NOISSUES</i>	-0.002 (0.304)	-0.008** (0.015)
<i>NOYEARS</i>	-0.001 (0.741)	0.005 (0.139)
<i>SIZE</i>	0.002 (0.462)	0.001 (0.837)
<i>LEVERAGE</i>	-0.007 (0.679)	0.024 (0.406)
<i>BM</i>	-0.005 (0.543)	0.006 (0.687)
<i>ROA</i>	-0.033 (0.207)	-0.009 (0.844)
<i>LOSS</i>	-0.005 (0.587)	-0.026* (0.099)

<i>LNAGE</i>	-0.004 (0.434)	-0.021** (0.017)
<i>RET</i>	-0.006 (0.449)	-0.041*** (0.002)
<i>TURNOVER</i>	-0.520 (0.206)	-1.534* (0.054)
<i>SPREAD</i>	0.736 (0.194)	-0.124 (0.892)
<i>STDRET</i>	-0.435 (0.282)	0.071 (0.913)
<i>INSTOWN</i>	0.015 (0.261)	0.011 (0.632)
<i>LNANL</i>	-0.001 (0.809)	0.010 (0.318)
<i>LNMEDIA</i>	-0.005** (0.021)	-0.011*** (0.005)
<i>MAJORCHG</i>	-0.009 (0.758)	-0.025 (0.574)
<i>ISSUANCE</i>	-0.000 (0.982)	0.014 (0.328)
<i>MERGER</i>	-0.004 (0.646)	-0.013 (0.321)
<i>Intercept</i>	-0.014 (0.766)	0.029 (0.542)
Year fixed effects	Yes	Yes
Industry fixed effects	Yes	Yes
Sample size	592	592
R-squared	0.123	0.172

Appendix 1 Variable Definitions

Variable Name	Definition	Data Source
<i>CAR3</i>	Cumulative abnormal return over the window (-1, 1) surrounding the restatement announcement date. Abnormal returns are measured by estimating the market model over the window (-210, -11). It is calculated based on trading days	CRSP
<i>CAR15</i>	Cumulative abnormal return over the window (-7, 7) surrounding the restatement announcement date. Abnormal returns are measured by estimating the market model over the window (-210, -11). It is calculated based on trading days	CRSP
<i>IR</i>	Dummy variable: 1 if the firm hires an IR firm both in the year before and in the year of the restatement announcement, and 0 otherwise	O'Dwyer's Directory of Public Relations Firms
<i>FRAUD</i>	Dummy variable: 1 if the restatement was due to fraud, and 0 otherwise	Audit Analytics
<i>COREEARN</i>	Dummy variable: 1 if the restatement involved revenue, cost of sales or operating expense accounts, 0 otherwise	Audit Analytics
<i>RESNI</i>	Restated net income less originally reported net income over restated period scaled by book value of assets reported at the fiscal year end prior to the restatement announcement	Audit Analytics
<i>NOISSUES</i>	Number of issues involved in the restatement	Audit Analytics
<i>NOYEARS</i>	Sum of periods restated, where a quarter=0.25	Audit Analytics
<i>SIZE</i>	The log of total assets (AT) at the fiscal year end prior to the restatement announcement	Compustat
<i>LEVERAGE</i>	Book value of debts (DLC + DLTT) over total assets (AT) at the fiscal year end prior to the restatement announcement	Compustat
<i>BM</i>	Book value of equity (CEQ) divided by market value of equity (CSHO*PRCC_F) at the fiscal year end prior to the restatement announcement	Compustat
<i>ROA</i>	Income before extraordinary items (IB) divided by total assets (AT) at the fiscal year end prior to the restatement announcement	Compustat
<i>LOSS</i>	Dummy variable: 1 if the income before extraordinary items (IB) at the fiscal year end prior to the restatement announcement is negative, and 0 otherwise	Compustat
<i>LNAGE</i>	The log of the number of years since first listed on CRSP measured in the year prior to the restatement announcement	CRSP
<i>RET</i>	The buy-and-hold market-adjusted return in the 12 months prior to the restatement announcement	CRSP
<i>TURNOVER</i>	The average daily number of shares traded divided by shares outstanding in the year prior to the restatement announcement	CRSP

<i>SPREAD</i>	The average daily quoted spread, (Ask-Bid)/Midpoint, in the year prior to the restatement announcement	CRSP
<i>STDRET</i>	The standard deviation of daily returns in the year prior to the restatement announcement	CRSP
<i>INSTOWN</i>	The average percentage of institutional ownership in the year prior to the restatement announcement	Thomson Reuters
<i>LNANL</i>	The log of 1 plus the number of unique analysts issuing earnings forecasts in the year prior to the restatement announcement	I/B/E/S
<i>LNMEDIA</i>	The log of 1 plus the number of Dow Jones news articles in the year prior to the restatement announcement	Raven Pack
<i>MAJORCHG</i>	Sum of <i>EXCCHG</i> , <i>MGMTCHG</i> , and <i>AUDCHG</i> divided by 3. <i>EXCCHG</i> is equal to 1 if the firm changed exchanges during the year prior to the restatement announcement, and 0 otherwise. <i>MGMTCHG</i> is equal to 1 if the firm changed its CEO or CFO during the year prior to the restatement announcement, and 0 otherwise. <i>AUDCHG</i> is equal to 1 if the firm changed auditors during the year prior to the restatement announcement, and 0 otherwise	CRSP; Execucomp; Audit Analytics
<i>ISSUANCE</i>	Dummy variable: 1 if the firm issued equity during the year prior to the restatement announcement, and 0 otherwise	SDC
<i>MERGER</i>	Dummy variable: 1 if the firm was involved in a merger/acquisition during the year prior to the restatement announcement, and 0 otherwise	SDC
<i>L_ANL</i>	Dummy variable: 1 if the log of 1 plus the number of unique analysts issuing earnings forecasts in the year prior to the restatement announcement is not in the highest quartile, and 0 otherwise	I/B/E/S
<i>L_MEDIA</i>	Dummy variable: 1 if the log of 1 plus the number of Dow Jones news articles in the year prior to the restatement announcement is not in the highest quartile, and 0 otherwise	Raven Pack
<i>POSTRET_60D</i>	Buy-and-hold market-adjusted return over the window (8, 67) after the restatement announcement date. It is calculated based on trading days	CRSP
<i>POSTRET_120D</i>	Buy-and-hold market-adjusted return over the window (8, 127) after the restatement announcement date. It is calculated based on trading days	CRSP
<i>SIZE_2</i>	The log of total assets (AT) in year t-2	Compustat
<i>LEVERAGE_2</i>	Book value of debts (DLC + DLTT) over total assets (AT) in year t-2	Compustat
<i>BM_2</i>	Book value of equity (CEQ) divided by market value of equity (CSHO*PRCC_F) in year t-2	Compustat
<i>ROA_2</i>	Income before extraordinary items (IB) divided by total assets (AT) in year t-2	Compustat
<i>LOSS_2</i>	Dummy variable: 1 if the income before extraordinary items (IB) in year t-2 is negative, and 0 otherwise	Compustat

<i>LNAGE_2</i>	The log of the number of years since first listed on CRSP measured in year t-2	CRSP
<i>RET_2</i>	The buy-and-hold market-adjusted return in year t-2	CRSP
<i>TURNOVER_2</i>	The average daily number of shares traded divided by shares outstanding in year t-2	CRSP
<i>SPREAD_2</i>	The average daily quoted spread, (Ask-Bid)/Midpoint, in year t-2	CRSP
<i>STDRET_2</i>	The standard deviation of daily returns in year t-2	CRSP
<i>INSTOWN_2</i>	The average percentage of institutional ownership in year t-2	Thomson Reuters
<i>LNANL_2</i>	The log of 1 plus the number of unique analysts issuing earnings forecasts in year t-2	I/B/E/S
<i>LNMEDIA_2</i>	The log of 1 plus the number of Dow Jones news articles in year t-2	Raven Pack
<i>MAJORCHG_2</i>	Sum of EXCCHG, MGMTCHG, and AUDCHG divided by 3. EXCCHG is equal to 1 if the firm changed exchanges in year t-2, and 0 otherwise. MGMTCHG is equal to 1 if the firm changed its CEO or CFO in year t-2, and 0 otherwise. AUDCHG is equal to 1 if the firm changed auditors in year t-2, and 0 otherwise	CRSP; Execucomp; Audit Analytics
<i>ISSUANCE_2</i>	Dummy variable: 1 if the firm issued equity in year t-2, and 0 otherwise	SDC
<i>MERGER_2</i>	Dummy variable: 1 if the firm was involved in a merger/acquisition in year t-2, and 0 otherwise	SDC
<i>MEDIASENTI3</i>	The average media news sentiment over the 3-day window surrounding the restatement announcement date. The news sentiment score is between 0 and 1	Raven Pack
<i>MEDIASENTI15</i>	The average media news sentiment over the 15-day window surrounding the restatement announcement date. The news sentiment score is between 0 and 1	Raven Pack
<i>PRSENTI3</i>	The average press release sentiment over the 3-day window surrounding the restatement announcement date. The news sentiment score is between 0 and 1	Raven Pack
<i>PRSENTI15</i>	The average press release sentiment over the 15-day window surrounding the restatement announcement date. The news sentiment score is between 0 and 1	Raven Pack
<i>REVISION</i>	The consensus annual analyst forecast after the restatement announcement window minus the consensus annual analyst forecast before the restatement window, expressed as a percentage of price	I/B/E/S
<i>DISPERSION</i>	The standard deviation of annual analyst forecasts measured after the restatement announcement window, expressed as a percentage of price	I/B/E/S
<i>VOLATILITY</i>	The standard deviation of returns over the window (-7, 7) surrounding the restatement announcement date. It is calculated based on trading days	CRSP

<i>CAR3_FF</i>	Cumulative abnormal return over the window (-1, 1) surrounding the restatement announcement date. Abnormal returns are measured by estimating the Fama-French three-factor model over the window (-210, -11). It is calculated based on trading days	CRSP
<i>CAR15_FF</i>	Cumulative abnormal return over the window (-7, 7) surrounding the restatement announcement date. Abnormal returns are measured by estimating the Fama-French three-factor model over the window (-210, -11). It is calculated based on trading days	CRSP
<i>CAR3_FFM</i>	Cumulative abnormal return over the window (-1, 1) surrounding the restatement announcement date. Abnormal returns are measured by estimating the Fama-French three-factor plus the momentum factor model over the window (-210, -11). It is calculated based on trading days	CRSP
<i>CAR15_FFM</i>	Cumulative abnormal return over the window (-7, 7) surrounding the restatement announcement date. Abnormal returns are measured by estimating the Fama-French three-factor plus the momentum factor model over the window (-210, -11). It is calculated based on trading days	CRSP