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Is the decline in the information content of earnings following restatements short-lived?*

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Abstract

Prior research finds that the decline in the information content of earnings after restatement announcements is short-lived and that the earnings response coefficient (ERC), the proxy for the information content of earnings, bounces back after three quarters. We re-examine the persistence of the drop in the ERC after restatement announcements using a more comprehensive and recent sample of restatements. We find that material restatement firms experience a significant decrease in the ERC over a prolonged period – close to three years after restatement announcements. In contrast, other restatement firms experience a decline in the ERC only for one quarter after restatement announcements. In cross-sectional analyses, we find that among material restatement firms, those that are subject to more credibility concerns and those that do not take prompt actions to improve reporting credibility are associated with a longer drop in the ERC than others. Lastly, we reconcile our findings with prior studies. Our analyses indicate that using a potentially more powerful proxy for material restatements and imposing less restrictive sampling requirement help increase the power of the tests to detect the long-run drop in the ERC.

Key words: accounting restatements, information content of earnings, accounting irregularities
JEL codes: G32, M40

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1. Introduction

There has been an unprecedented number of accounting restatements in the last decade. The United States General Accounting Office (GAO) reported that from January 1997 to June 2002, 919 firms restated their financial statements because of material accounting errors and/or frauds (GAO 2003). Spurred by the ever-growing list of accounting and corporate scandals, the U.S. Congress passed the Sarbanes and Oxley Act (SOX) in 2002. However, Hennes et al. (2008) and others find that the number of accounting restatements continues to be high in the post-SOX period. To understand the implications of accounting restatements for firms and investors, a growing number of studies examine various consequences of restatements, including the drop in market value, the increase in the cost of capital, and the impact on key corporate decisions (such as compensation, executive turnover, and external financing).[1]

Of particular interest to accounting researchers is the change in the information content of earnings after restatement announcements. Anderson and Yohn (2002) document a significant drop in the information content of earnings, measured by the earnings response coefficient (ERC), for the first annual earnings announcement after restatement announcements. Similarly, Wu (2002) documents a significant drop in the ERC for the first two quarters after restatement announcements. Since one of the concerns expressed by regulators and investors is that restatements reduce the credibility of accounting information in the long run, Wilson (2008) examines the change in the information content of earnings for a longer period, the six quarters after restatement announcements, using a sample of 215 restatements over the period 1997-2002. In contrast to what regulators and investors have feared, she finds that the drop in the ERC is short-lived: it only lasts for three quarters after restatement announcements. Wilson also finds

[1] For examples, see Palmrose et al. (2004), Hribar and Jenkins (2004), Desai et al. (2006), Graham et al. (2008), Cheng and Farber (2008), and Chen et al. (2012).

that even for more severe restatements, such as those related to revenue recognition and those with more negative stock market reactions, and for firms that did not take any action to improve investor confidence (e.g., replacing the CEO and the auditor), the decline in the ERC is still short-lived – for three quarters after restatement announcements.

Interestingly, the finding of a short-term drop in the ERC after restatement announcements is at odds with the findings of other restatement studies. First, prior research finds that restatements have a long-term impact on capital market access. For example, both Graham et al. (2008) and Chen et al. (2012) find that the adverse impact of accounting restatements on firms' external financing activities (including the cost, term, and structure of external financing) lasts for about three years. Since both the drop in the ERC and the changes in firms' external financing are influenced by investors' negative perception of accounting quality after restatement announcements, it is intriguing that while firms do not appear to regain investors' full trust in the capital markets for a long time, investors' confidence in the reported earnings numbers appears to bounce back to the pre-restatement level in less than one year.

Second, prior research finds that restatement firms undertake various actions to restore investors' trust and many such actions take time to implement. For example, Farber (2005) finds that accounting fraud firms improve corporate governance to enhance financial reporting credibility (e.g., by increasing the number of outside directors). He finds that it takes fraud firms up to three years to achieve the same quality of corporate governance as non-fraud firms. Srinivasan (2005) finds significant director turnovers in both the first and second year after restatement announcements. Cheng and Farber (2008) find that the change in restatement firms' compensation structure mainly occurs in the second and third year after restatement announcements. It is thus puzzling how restatement firms regain investors' trust of reported

earnings in less than one year when many of the remedies undertaken by restatement firms to restore investors' trust take longer to materialize.

Motivated by these puzzling findings, in this paper, we re-examine the persistence of the drop in the ERC after restatement announcements using a more comprehensive and recent sample of restatements. Our full sample includes 1,208 restatements in the GAO report over the period 1997-2006. This investigation is important because whether the drop in the information content of earnings is short-lived or long-lived has important implications for regulators, firms, investors, and researchers. A short-lived drop might send the message that firms do not need to worry too much about the adverse impact of restatements on the credibility of accounting information. In contrast, a long-lived drop implies that investors are concerned with accounting information quality over an extended period and that firms should take actions to restore investor trust, or better still, firms should prevent the occurrence of misstatement in the first place in order to avoid the long-lasting consequences of reduced reporting credibility.

Because severe restatements likely lead to a greater loss of credibility among investors and hence a longer drop in the ERC after restatement announcements, we separate the full sample of restatements into severe restatements and other restatements.[2] We use the accounting irregularities as classified by Hennes et al. (2008) to proxy for severe restatements.[3] Consistent with accounting irregularities capturing severe restatements, recent studies find that accounting

[2] Consistent with severe misstatements resulting in long-term damage to investors' trust, Dechow et al. (1996) examine Accounting and Auditing Enforcement Releases (AAERs) and report that accounting fraud firms experience an increase in the dispersion of analysts' forecasts in the three years following announcements of earnings manipulation. They suggest that such a long-lasting increase in investors' uncertainty results from tarnished reporting credibility.

[3] Hennes et al. classify restatements as "accounting irregularities" if restatement announcements or SEC filings use words like "irregularity" or "fraud," if the firm is charged by the SEC or the Department of Justice, or if the firm is subject to independent investigations. See Hennes et al. (2008, 1493-1494) for details and Andrew Leone's website for the list of accounting irregularities (http://sbaleone.bus.miami.edu/). While not all accounting irregularities are intentional or fraudulent in nature, the investigation or the lawsuit is evidence of the severity of the restatements and investors' suspicion of reported numbers.

irregularity and other restatement firms face significantly different consequences. For example, Hennes et al. (2008) find that the likelihood of CEO turnover is significantly higher for accounting irregularity firms than for other restatement firms. Chen et al. (2012) find that since equity financing is more sensitive to information asymmetry problems, firms rely more on debt financing than on equity financing after restatements, but this result only applies to accounting irregularity firms. Of the 1,208 restatements in our full sample, 343 are classified as accounting irregularities, referred to as material restatements hereafter, and 865 as other restatements.[4]

We find that the material restatement firms experience a significant decline in the ERC for 11 quarters after restatement announcements. This is a remarkably longer period compared to the 3-quarter period reported in prior research, suggesting that the decline in the credibility and information content of earnings after restatements is not short-lived. In contrast, other restatement firms experience a significant decline in the ERC only in the first quarter after restatement announcements. The results are not driven by contemporaneous changes in economic conditions; we find that the matching firms do not experience a drop in the ERC over the sample period. We find qualitatively similar results when we use alternative data sources of restatements (i.e., Audit Analytics), alternative classifications of material restatements (e.g., AAER cases), alternative measures of earnings surprises (e.g., seasonal random walk model), or when we separately analyze pre- and post-SOX restatements.

We conduct a series of cross-sectional analyses to provide additional insights into what affects the drop in the ERC after restatement announcements. Given that only material restatements are associated with a prolonged drop in the ERC, we focus on these restatements in our cross-sectional analyses. In the first set of cross-sectional analyses, we examine whether

[4] As discussed in detail later, our proxy for severe restatements differs from Wilson's (2008) and we also use different sampling restriction from Wilson. These research design differences contribute to the differences in inferences between our study and Wilson.

firms that are more susceptible to earnings credibility concerns experience a longer drop in the ERC. Prior studies suggest that good news is more sensitive to credibility issues than bad news (e.g., Skinner 1994, 1997) and earnings with high accruals are more likely to be questioned by investors than those with low accruals (e.g., Gleason et al. 2008). Thus, if the drop in the ERC is caused by the loss of financial reporting credibility, we expect to observe a more persistent drop in the ERC for good news firms than for bad news firms and for high accrual firms than for low accrual firms. The evidence is consistent with the our predictions and provides further support to our arguments; any alternative explanation must explain why the effect only shows up among material restatement firms and, particularly, those subject to greater credibility issues.

In the second set of cross-sectional analyses, we examine how the drop in the ERC varies with the remedies undertaken by restatement firms. Since material restatement firms have aggressive financial reporting practices in the past, those that increase accounting conservatism in the post-restatement period are expected to regain investors' trust faster than others. Indeed, we find that the significant drop in the ERC is much shorter for restatement firms that increase conservatism than for other restatement firms (6 versus 11 quarters). In addition, given that key executives (chief executive officers and chief financial officers), external auditors, and audit committee chair are the major players influencing financial reporting quality, we examine the impact of CEO/CFO turnover, auditor dismissal, and audit committee chair turnover on the drop in the ERC after restatement announcements. We find that material restatement firms with turnover of both CEO and CFO in the year of restatement announcement experience a drop in the ERC only in the first year after restatement announcements. In contrast, material restatement firms without CEO and CFO turnover in the year of restatement announcement experience a significant drop in the ERC for almost three years after restatement announcements. The results

on auditor dismissals or audit committee chair turnover are qualitatively similar. These analyses indicate that increasing accounting conservatism, replacing key executives, dismissing auditors, and replacing audit committee chair can help restore the credibility of financial reporting.

Given that we document a much longer drop in the ERC for material restatements than Wilson (2008), we conduct additional analyses to reconcile our results with Wilson's. We identify two research design choices that collectively contribute to the differences. First, we require that each restatement firm have at least one observation in the pre-restatement period and one observation in the post-restatement period to facilitate pre- to post-restatement comparison. In contrast, Wilson's sample is limited to observations with data available for the two quarters *immediately* surrounding restatement announcements. This sampling design cuts the sample size by half, reducing the power of tests. When we impose similar sample restrictions as Wilson, we find that the material restatement firms experience a significant drop in the ERC for eight quarters. The drop in the ERC for quarters 9 to 11 is of similar magnitude as in the full sample, but is only marginally significant. The weaker result for the restricted sample indicates that imposing the additional sample restriction reduces the power of tests.

Second, as noted above, we use the accounting irregularities as classified by Hennes et al. to proxy for severe restatements, whereas Wilson uses market reaction upon restatement announcements or revenue recognition. While the different approaches have overlaps, our tests indicate that the discrepancy between the irregularity proxy and Wilson's proxy is significant enough to lead to different results in this setting; using Wilson's proxy in our tests leads to a finding of a shorter drop in the ERC, 5 quarters instead of 11 quarters. To the extent that the irregularity classification better captures severe restatements, using market reaction or revenue recognition introduces noises into the tests and biases against finding a prolonged drop in the

ERC.[5]

This paper contributes to the literature in several important dimensions. We find that the adverse effect of restatements on the information content of earnings is not short-lived; rather, it lasts as long as three years for material restatement firms. This message is important for regulators, managers, as well as for researchers. It suggests that it is not easy to regain investors' trust after aggressive financial reporting. Hopefully the message will act to deter firms from engaging in aggressive financial reporting. This paper, together with prior studies, show that aggressive financial reporting has long-lasting adverse impact on both corporate financing and the perceived quality of financial reporting. Our analyses also indicate that the nature of restatements and the remedies undertaken by firms significantly influence financial reporting credibility after restatement announcements.

The remainder of the paper is organized as follows. Section 2 describes the research design, including the empirical model, variable measurement, and sample selection. Section 3 presents the main analyses. Section 4 reports additional analyses and Section 5 reports analyses that reconcile our findings with prior research. Section 6 concludes.

2. Research design and sample selection

2.1 Empirical model and variable measurement

To investigate the decline in the information content of earnings after restatement announcements, we examine the change in the earnings response coefficient (ERC) experienced by restatement firms from the pre- to the post-restatement period. We use the following regression model in our main tests, with the predicted signs of the impact on the ERC in

[5] When explaining CEO/CFO turnover after restatements, Hennes et al. (2008) also note that the proxy based on the market reaction has less explanatory power than the accounting irregularity proxy.

parentheses:

$$UR_{it} = \alpha_1 + \sum_{t=1}^{12} \alpha_{2,t} QTR_t + \underset{(+)}{\beta_1 UE_{it}} + \sum_{t=1}^{12} \underset{(-)}{\beta_{2,t}[UE_{it} \times QTR_t]} + \beta_3 NONLINEAR_{it}$$

$$+ \sum_{k=4}^{10} \beta_k CONTROLS_{it} + \sum_{k=11}^{17} \beta_k [UE_{it} \times CONTROLS_{it}] + \varepsilon_{it} \quad (1),$$

where:

$$CONTROLS_{it} = \{\underset{(+)}{MTB_{it}}, \underset{(-)}{BETA_{it}}, \underset{(+)}{SIZE_{it}}, \underset{(-)}{LOSS_{it}}, \underset{(-)}{Q4_{it}}, \underset{(-)}{PREDICT_{it}}, \underset{(+)}{PERSIST_{it}}\}.$$

The dependent variable, UR_{it}, is the cumulative abnormal returns in the three-day window around the earnings announcement for firm *i* in quarter *t*, where the abnormal return is calculated as the firm's return less the CRSP value-weighted market return. QTR_t is an indicator variable, equal to 1 if the earnings announcement pertains to the t^{th} quarter after the restatement announcement, and 0 otherwise. For instance, quarter 1 refers to the first fiscal quarter whose earnings announcement date is after the restatement announcement. UE_{it} is firm *i*'s unexpected quarterly earnings for quarter *t*, scaled by price at the end of the fiscal quarter, with expected earnings measured as the median of analysts' earnings forecasts issued within 60 days prior to quarter t's earnings announcement.[6]

In this regression, coefficient β_1 captures the association between unexpected returns and unexpected quarterly earnings, i.e., the ERC, in the pre-restatement period (the benchmark period). Following Wilson (2008), the benchmark period includes the five quarters prior to the restatement announcement, denoted as quarter -4 to quarter 0, where quarter 0 refers to the last

[6] For quarter 1, analyst forecasts falling within the 60-day window before the earnings announcement might include forecasts issued before the restatement announcement. We remove such forecasts so that only forecasts made after the restatement announcement are used in the calculation of expected earnings. This ensures that the expected earnings for quarter 1 only captures analysts' revised expectations in response to the restatement announcement. If after such exclusion there are no analyst forecasts issued after the restatement announcement that can be used to estimate expected earnings for quarter 1, we drop that particular quarter and reclassify the next quarter as quarter 1. This occurs to 6.2% of our sample firms.

fiscal quarter with an earnings announcement date before the restatement announcement.[7] We expect β_1 to be positive.

Our focus is on the change in the ERC after restatement announcements. We extend the post-restatement period from six quarters analyzed in Wilson (2008) to twelve quarters (i.e., $t \in \{1,2,\dots,11,12\}$) in order to capture the potential long-term decline in the ERC. We compare the ERC in each of these quarters with the benchmark period. The change in the ERC following the restatement announcement is captured by the coefficient on the interaction term $UE_{it} \times QTR_t$, i.e., $\beta_{2,t}$. We expect $\beta_{2,t}$ to be negative if there is a drop in the information content of earnings in quarter *t* relative to the benchmark period. If there is a long-term decline in the information content of earnings, we expect $\beta_{2,t}$ to be negative for more quarters subsequent to the restatement announcement.

We include a series of control variables and their interactions with UE_{it} to control for the impact of other factors on the ERC. The choice and measurement of control variables follow Wilson (2008). $NONLINEAR_{it}$, defined as $UE_{it} \times |UE_{it}|$, is included to control for the nonlinearity in the price-earnings relation. MTB_{it}, the market-to-book ratio, is included to control for the impact of growth opportunities. $SIZE_{it}$, the natural log of market value of equity, is included to control for the impact of firm size. Both MTB_{it} and $SIZE_{it}$ are measured at the end of the fiscal quarter for which the earnings announcement is made. $BETA_{it}$ is the market-model beta estimated over the previous year ending two days prior to the earnings announcement date. It is included to control for the impact of risk. $LOSS_{it}$ is an indicator variable and is equal to one if the reported earnings per share is below 0. $Q4_{it}$ is an indicator variable equal to 1 if the

[7] Basically, we designate quarters based on the restatement announcement date. The closest earnings announcement before the restatement announcement pertains to quarter 0, the closest earnings announcement after the restatement announcement pertains to quarter 1, and so forth. We choose this approach so that the information content of earnings in quarter 0 is not affected by restatements, but that in quarter 1 is.

earnings announcement is for the fourth quarter of the fiscal year. These two indicator variables are included to control for the lower information content of negative earnings and fourth-quarter earnings, respectively. Finally, there are two control variables related to earnings properties, earnings predictability ($PREDICT_{it}$) and earnings persistence ($PERSIST_{it}$). $PREDICT_{it}$ is measured as the variance of the absolute value of unexpected earnings over the two-year period prior to the earnings announcement, where unexpected earnings are based on a seasonal random walk. The higher the value of $PREDICT_{it}$, the less predictable earnings are, and the lower ERC is. $PERSIST_{it}$ is the autoregressive coefficient from Foster's (1977) model estimated over the two-year period prior to the earnings announcement. The higher the value of $PERSIST_{it}$, the more persistent earnings are, and the higher ERC is.

2.2 Sample selection and descriptive statistics

A common data source of restatements is the GAO (2003) report. The report initially covered restatements announced from January 1997 to June 2002 and was later updated to include restatements in more recent years, up to the first half of 2006. In order to achieve a balance between a comprehensive set of restatements and the power of the test, we include all restatements with available data in the sample and then separately investigate the restatements that are classified as accounting irregularities by Hennes et al. (2008), referred to as material restatements, and other restatements. We expect that material restatements are associated with a greater loss of investors' trust in financial reporting and hence a longer drop in the ERC, compared with other restatements.[8]

Table 1, Panel A presents the sample selection. Unless noted, the sample selection follows Wilson (2008) to facilitate comparison with prior research. Starting with 2,705 restatements in

[8] It is important to note that the GAO list may include some non-restatements. This data error can bias in favor of finding different results between material restatements and other restatements. At the same time, it highlights the importance of separately examining the drop in the ERC experienced by firms with material restatements.

the GAO report, we lose 341, 54, and 515 restatements due to the lack of coverage in Compustat, CRSP, and I/B/E/S, respectively. We lose an additional 153 restatements because they are announced by foreign firms. To facilitate the comparison of the ERC between the pre- and post-restatement periods, we require that firms have at least one quarter's data in both the pre- and the post-restatement period, and we lose 434 restatements as a result.[9] Our full sample includes 1,208 restatements. Of those, 343 are classified as material restatements based on Hennes et al.'s (2008) classification. As in prior research, we find that material restatements are associated with more negative market reaction in the three days around the restatement announcements than other restatements. The mean (median) three-day buy-and-hold market adjusted returns is -7.2% (-4.0%) for material restatements and -1.8% (-0.8%) for other restatements. The differences are significant at the 0.001 level.

Panel B shows that our sample firms operate in a broad spectrum of industries, although there is a significant concentration in the business services industry (15.65 percent of the full sample and 23.62 percent of material restatements).[10] Panel C presents the yearly distribution for both the full sample and the sample of material restatements. There are more observations in the second half of the sample period than in the first half. Lastly, Panel D shows that some firms have more than one restatement during the sample period. The number of distinct firms is 891 for the full sample and 246 for the material restatement sample.[11]

For each of the 1,208 restatements in the full sample, we obtain earnings announcement

[9] Note that this requirement is less restrictive than Wilson's (2008) requirement that firms need to have data for the two quarters immediately surrounding restatement announcements. For instance, if a firm has missing data in quarter 0, but has data in quarter -1, then we include it in the sample, but Wilson excludes it. In Section 5, we examine how the differences in sampling restrictions affect the results.

[10] To ensure that this industry concentration does not drive our findings, we repeat our analyses after removing all observations in the business services industry and the untabulated results are qualitatively similar to those reported. These results, as well as the other untabulated results in this paper, are available from the authors upon request.

[11] In an untabulated sensitivity test, we drop the subsequent restatements from the same firm and the results are quantitatively similar. We find a significant drop in the ERC for three quarters for the full sample, 11 quarters for the sample of material restatements, and one quarter for the sample of other restatements.

data and other information for the five quarters before the restatement announcement and the twelve quarters afterward. Panel A of Table 2 reports the number of earnings announcements with required data for the regression analyses in each of the 17 quarters. Depending on data availability, the number of earnings announcements ranges from 659 in quarter 12 to 908 in quarter 0 for the full sample. Altogether, there are 12,859 quarterly earnings announcements with required data. For the material restatement sample, the number of observations ranges from 165 in quarter 10 to 251 in quarter 0. In total, there are 3,413 firm-quarter observations.

Panel B of Table 2 presents descriptive statistics on the regression variables for the full sample, separately for the pre- and post-restatement period.[12] On average firms are riskier (having higher beta) and larger and earnings become less predictable after restatement announcements. Other firm characteristics do not change significantly around restatement announcements. Panel C presents descriptive statistics for the material restatement sample; the material restatement firms have lower market-to-book ratio and less predictable earnings after restatement announcements than before. Panel B and C also report descriptive statistics on firm age. Naturally firm age is greater in the post-restatement period. Controlling for firm age and its interaction with UE_{it} in the regressions does not affect our results.

3. Empirical analyses of the change in the ERC after restatement announcements

3.1 Main analyses – Change in the ERC for the full sample

Table 3 presents the regression results for the change in the ERC after restatement announcements for the full sample. For ease of interpretation, we mean-adjust the control

[12] We also compare the pre-restatement characteristics between the restatement firms and the non-restatement firms in Compustat, in order to understand what type of firms tend to have restatements. We find that compared to the non-restatement firms in Compustat, the restatement firms on average are larger, have higher market-to-book ratio, are riskier, have higher stock returns and ROA, are less likely to report losses, have lower leverage, and are older. These findings are consistent with what is reported in prior research (e.g., Dechow et al. 2011).

variables so that the coefficient on *UE* (β_1) can be interpreted as the ERC for a firm with average firm characteristics.[13] To mitigate the impact of outliers, we delete observations with studentized residuals greater than 2.5 in absolute value.[14] The p-values are based on standard errors adjusted for firm-level clustering.

Column (1) of Table 3 reports the result for all restatements in the full sample. As expected, the ERC for the benchmark period (β_1) is significantly positive. The decline in the information content of earnings seems to be short-lived. The coefficients on *UE*×*QTR* are significantly negative for the first three quarters and the ninth quarter following the restatement announcement. With respect to the interactions of *UE* and the control variables, we find that the ERC is higher for large firms and lower for firms with a loss and for the fourth fiscal quarter.

As discussed earlier, the reduction in the information content of earnings is expected to last longer for material restatement firms than for other restatement firms due to the more serious credibility issues associated with material restatements. To investigate this possibility, we rerun the regression separately for material restatements and other restatements, and report the corresponding results in columns (2) and (3) of Table 3, respectively. As expected, we find that the decline in the ERC is much more prolonged for material restatement firms. The coefficient on *UE*×*QTR* is significantly negative for 11 quarters after restatement announcements. That is, material restatement firms experience a significant reduction in the ERC for almost three years after restatement announcements. The magnitude of the reduction in the ERC is also economically significant. The ERC for the benchmark period is 3.298 and the average decrease in the ERC for the 11 quarters after restatement announcements is 1.853, a 56% decrease. Also, the reduction in the ERC exhibits a decreasing trend, being the highest in the first year and the

[13] Specifically, we standardize each control variable by subtracting its sample mean and then scaling the difference by its standard deviation.
[14] Using different cut-off points for studentized residuals does not change our inferences.

lowest in the third year after restatement announcements, consistent with material restatement firms gradually regaining investors' trust over time.

In contrast, for the other restatements, we find that the drop in the ERC is significantly negative only for the first quarter after restatement announcements. This indicates that the drop in the information content of earnings after restatement announcements is short-lived for the other restatement firms.[15]

In summary, our analyses indicate that material restatement firms experience a prolonged drop in the information content of earnings after restatement announcements.[16] The significant drop in the ERC lasts for almost three years. In contrast, other restatement firms only experience a significant drop in the ERC for the first quarter after restatement announcements. Therefore, the finding that the full sample of restatement firms experiences a short-lived drop in the ERC after restatement announcements is driven by the inclusion of other restatements.

3.2 Using alternative data sources of restatements – Audit Analytics (AA)

In the above analyses, we use the GAO restatements to be consistent with prior research. As a robustness check, we replicate the analyses using the restatements obtained from the Audit Analytics database, which covers the restatements announced since 2000. Since we need three years' data to gauge the post-restatement change in the ERC, our full sample includes 2,033 restatements over the period 2000-2008. We classify a restatement as a material restatement if it is indicated as a fraud in the AA database, or if it is associated with an AAER (Accounting and

[15] As discussed earlier, we control for the market-to-book ratio and whether the firm reports a loss. Thus, the difference in the results between material restatements and other restatements is unlikely to be driven by the difference in the extent of financial distress.

[16] It is possible that the uncertainty created by the investigation adversely affects the level of ERC in the post-restatement period. However, this possibility is also consistent with the adverse consequences of material restatements. At the same time, our additional analyses in Section 4.1 provide direct evidence that investors' concerns with credibility of financial reporting contribute to the long-term drop in ERC after restatement announcements.

Auditing Enforcement Releases from the SEC).[17] As a result, 211 restatements are classified as material restatements.[18] Table 4 reports the results. Similar to Table 3, material restatement firms experience a significant drop in the ERC for a prolonged period, 10 quarters after the restatement announcement, and other restatements only experience a significant drop in the ERC for two quarters after restatement announcements.[19]

Overall, the analyses indicate that our results are robust to the use of alternative sources of restatements and alternative ways of classifying material restatements. These findings confirm the generalizability of our findings.

3.3 Additional analyses and sensitivity checks

In this section, we discuss the additional analyses and sensitivity checks to provide additional insights and ensure that our results are robust. We do not tabulate the results to save space.

Change in the ERC for the matching non-restatement firms

Since we examine the change in the ERC over time for restatement firms, the change in macroeconomic conditions can potentially affect the results. This concern is alleviated given that we find different results for material restatement and other restatement firms, which experience similar changes in macroeconomic conditions over the same sample period. Nevertheless, to further address this concern, we examine the change in the ERC for a group of firms matched on

[17] We obtain AAER cases from the Center for Financing Reporting and Management (CFRM) at the University of California, Berkeley. CFRM compiles the list from the original AAERs of the SEC, using the same data collection procedures as in Dechow et al. (2011) but covering a longer time period (1982-2010). See Dechow et al. (2011) for a detailed description of the data collection.

[18] We use a combination of the fraud indicator in AA and AAERs to reduce the likelihood of misclassifying material restatements and to increase the power of tests. Using the fraud indicator alone can lead to low power of tests because the percentage of restatements classified as frauds in AA is quite low. Among the 2,033 restatements in our AA restatement sample, only 61 are indicated as frauds in the AA database. Therefore we supplement the fraud indicator with AAERs, which have been widely used in the literature to capture accounting-related frauds.

[19] According to Audit Analytics, a small proportion of the restatements (about 5%) might not be due to accounting rule application failures. In a sensitivity test, we exclude these restatements and find quantitatively similar results.

industry membership (2-digit SIC codes), reporting period, and earnings predictability. Specifically, we use all Compustat firms without restatements during the sample period as the matching pool. For each restatement firm in quarter 0, we pick a matching firm in the same quarter and industry that has the closest earnings predictability. We then estimate regression (1) for the matching firms. We find that the matching firms do not experience a significant decrease in the ERC in the "post-restatement period," suggesting that our results are not driven by changes in macroeconomic conditions during the sample period.

Restatements announced before and after the SOX

As indicated in Panel C of Table 1, our sample includes restatements announced both before and after the Sarbanes and Oxley Act (SOX). In a sensitivity analysis, we separate restatements announced before the SOX from those announced after. We find that the results are generally weaker in the post-SOX period; material restatements announced in the post-SOX period are associated with a decrease in the ERC for eight quarters, while those announced in the pre-SOX period are associated with a decrease in the ERC for 11 quarters. This can be due to the change in the nature of restatements (e.g., Plumlee and Yohn 2010), the lack of investor attention because of an unusually large number of restatement announcements in the post-SOX period (e.g., Burks 2011), and/or the general increase in reporting quality and corporate governance in the post-SOX period (e.g., Cohen et al. 2008). Nonetheless, our main inference holds for both before and after the SOX – material restatement firms experience a long-term decline in the information content of earnings after restatement announcements.

The pre-SOX period (1997-2002) coincides with the sample period in Wilson (2008). The finding that the results for the period 1997-2002 are quantitatively similar to those for the full sample indicates that our inferences are not attributed to the expansion of the sample period.

Using AAER cases to classify material restatements

To investigate the generalizability of our findings, we use an alternative way to classify material restatements. Specifically, we classify a restatement as a material restatement if it is associated with an AAER. AAERs have been widely used in the literature to capture accounting-related frauds (e.g., Dechow et al. 1995; Dechow et al. 2011). Based on this approach, 197 of the 1,208 restatements in the full sample are classified as material restatements. The list of accounting irregularities based on Hennes et al. (2008), consisting of 343 restatements in the full sample, is likely more comprehensive, since Hennes et al. identify not only cases subject to SEC investigations but also those subject to the investigation by the Department of Justice or investors. The AAER cases, on the other hand, are based on publicly available information. We replicate our analyses using this alternative classification of material restatements. The results remain qualitatively similar. Obtaining similar results using the AAER cases indicates that our results are robust to alternative ways of classifying material restatements and helps enhance the generalizability of our findings.

The change in analyst coverage after restatement announcements

A potential explanation for our results that material restatement firms experience a long-lived drop in the ERC is that these firms are covered by fewer financial analysts after restatement announcements and as a result, consensus analyst forecast is a less accurate proxy for expected earnings. To investigate whether this is the case, we examine the change in analyst coverage from the pre- to the post-restatement period for material restatement firms. We find that the level of analyst coverage is relatively stable. For material restatement firms, the average number of analysts following drops only slightly from 14 in the pre-restatement period to 12 in the post-restatement period. This suggests that the decline in the ERC for material restatement firms is not due to substantially lower analyst coverage in the post-restatement period.

Using the random walk model to estimate expected earnings

In the above analyses, we use analysts' forecasts issued in the 60-day window prior to earnings announcement to proxy for expected earnings. While analysts' forecasts are generally more accurate than the estimates from the random walk model, the drawback is that the sample size is smaller. In a sensitivity test, we use the seasonal random walk model to estimate the expected earnings. The sample size increases to 1,759 restatements and 24,667 firm-quarters. The results are qualitatively similar. We find that the drop in the ERC after the restatement announcement is significant for five out of 12 quarters for the full sample of restatements, 12 quarters for material restatement firms, and only one quarter for other restatement firms. The results are also similar if we restrict the sample period to 1997-2002. These results indicate that the documented results are robust to alternative measures of earnings surprises.

4. Cross-sectional analyses

In this section, we explore what factors affect the variation in the drop in the ERC. Since, as reported above, only material restatement firms experience a prolonged drop in the ERC, we focus on these restatement firms in the cross-sectional analyses.

4.1 Financial reporting credibility and the drop in ERC

In this section, we examine whether the restatement firms that are more susceptible to investors' concerns with financial reporting credibility experience a drop in the ERC for a longer period. The key argument underlying the drop in the ERC after restatement announcements is that the credibility of financial reporting is lower. If this is the case, we expect to observe a more persistent drop in the ERC for earnings news that is more subject to credibility concerns. We use two proxies to identify such firms. First, prior studies suggest that investors are more suspicious of good news than of bad news disclosed by the firm (e.g., Skinner 1994, 1997). Thus, we expect

the drop in the ERC to persist for a longer period for good news than for bad news earnings announcements. Second, prior research suggests that high accrual firms have lower earnings quality (e.g., Dechow et al. 1996; Sloan 1996; Gleason et al. 2008). As a result, we expect the drop in the ERC to persist for a longer period for firms with high accruals than for those with low accruals.

To test the first prediction, we separate the firm-quarters based on the sign of unexpected earnings. The good (bad) news group includes the firm-quarters with positive (negative) unexpected earnings. We then rerun regression (1) separately for the good news and bad news groups and report the results in Panel A of Table 5. As reported in the table, the good news group experiences a significant drop in the ERC for 11 quarters after restatement announcements. In contrast, the bad news group experiences a significant drop in the ERC only for three quarters in the post-restatement period (the second, sixth, and ninth quarters).

To test the second prediction, we separate the firm-quarters based on the level of total accruals. Following Gleason et al. (2008), we calculate total accruals as income before extraordinary items minus the sum of operating cash flows and investing cash flows, scaled by total assets. The high (low) accrual group refers to firm-quarters with total accruals higher (lower) than industry means based on all non-restating firms in Compustat in that quarter. We define industries based on the Fama and French classification. (The results are similar if we define industries based on 3-digit SICs.) We then rerun regression (1) separately for high and low accrual firms and report the results in Panel B of Table 5. Consistent with our prediction, we find that the high accrual firms experience a significant drop in the ERC for 11 quarters after restatement announcements, while the low accrual firms have a significant drop in the ERC only for three quarters.

Overall, the above findings are consistent with firms with greater credibility issues experiencing a more persistent drop in the ERC after restatement announcements, providing corroborative evidence to our main analyses.

4.2 What can firms do to improve financial reporting credibility

In this section, we examine whether the drop in the ERC experienced by restatement firms vary with the remedies undertaken by firms to improve financial reporting credibility. Specifically, we focus on firms' actions related to financial reporting and the parties that have the most direct impact on financial reporting quality: increase in accounting conservatism and turnover of the senior management, external auditors, and audit committee chair.[20] This focus is motivated by prior findings as well as the views of regulators and practitioners. In its exposure draft for the conceptual framework for financial reporting, the FASB (2008, BC2.43) stresses that "whether users consider the information in an entity's financial report to be credible will depend heavily on their view of *the trustworthiness of the entity's management and auditors*, as well as on their view of the relevance of the information in the report and the degree to which it faithfully represents the underlying economic phenomena (emphasis added)." Practitioners share similar views. As quoted in GAO (2003), one industry expert comments that "too often, restatements involve both management pressing and exceeding the limits of reasonable accounting interpretations of GAAP and apparent auditor agreement and even participation in the reporting choices that ultimately require restatement (p. 39)."

For this purpose, we estimate the following regression:

[20] Note that Wilson (2008) also studies the impact of executive turnover and external auditor dismissals. Among the restatement firms, she finds that the decline in the ERC after restatement announcements is longer for firms without CEO turnovers or auditor dismissals than for other firms. However, she finds that even restatement firms without CEO turnovers or auditor dismissals experience a short-term drop in the ERC, three quarters after restatement announcements. Our finding based on material restatements contrasts with Wilson (2008). The research design differences, as discussed in Section 5, potentially explain the differences in results.

$$UR_{it} = \alpha_1 + \sum_{t=1}^{12} \alpha_{2,t} QTR_t + \beta_1 UE_{it} + \sum_{t=1}^{12} \beta_{2,t}[UE_{it} \times QTR_t] + \alpha_3 Change_i + \sum_{t=1}^{12} \alpha_{4,t} QTR_t \times Change_i + \beta_3 UE_{it} \times Change_i + \sum_{t=1}^{12} \beta_{4,t}[UE_{it} \times QTR_t \times Change_i] + \beta_5 NONLINEAR_{it} + \sum_{k=6}^{12} \beta_k CONTROLS_{it} + \sum_{k=13}^{19} \beta_k [UE_{it} \times CONTROLS_{it}] + \varepsilon_{it} \quad (2),$$

where *Change*$_i$ is an indicator for the event of interest, i.e., increase in conservatism, executive turnover, auditor dismissal, or audit committee chair turnover. It is set to one for material restatement firms that experience such an event in the specified period after restatement announcements and zero otherwise. Under this specification, coefficient β_1 captures ERC in the benchmark period for restatement firms without such an event and coefficient $\beta_{2,t}$ captures the change in the ERC for these firms in the quarters after restatement announcements. Thus, $\beta_1 + \beta_{2,t}$ measures the level of ERC for these firms in the post-restatement period. Coefficient β_3 captures the difference in ERC in the benchmark period between restatement firms with such an event and those without, and coefficient $\beta_{4,t}$ captures the incremental change in the ERC in the post-restatement period for restatement firms with such an event relative to those without. Thus, for restatement firms with such an event, $\beta_1 + \beta_3$ captures the level of ERC in the benchmark period, $\beta_{2,t} + \beta_{4,t}$ captures the change in the ERC, and $\beta_1 + \beta_{2,t} + \beta_3 + \beta_{4,t}$ captures the level of ERC in the post-restatement period. The interpretation of the coefficients is summarized as follows:

	material restatement firms without the event	material restatement firms with the event
ERC in the pre-restatement period	β_1	$\beta_1 + \beta_3$
ERC in the post-restatement period	$\beta_1 + \beta_{2,t}$	$\beta_1 + \beta_3 + \beta_{2,t} + \beta_{4,t}$
Change in the ERC	$\beta_{2,t}$	$\beta_{2,t} + \beta_{4,t}$

Note that our focus is on $\beta_{2,t}$ and $\beta_{2,t} + \beta_{4,t}$, which capture the change in the ERC from the pre-

to the post-restatement period for material restatement firms without and with the event of interest, respectively. We do not present all the individual coefficients in order to simplify the table presentation. Instead, we present summaries of the results, including the ERC in the benchmark period and the change in the ERC after restatement announcements, separately for material restatements with and without the remedy under study.

Increase in accounting conservatism

Given that material restatement firms on average report aggressively in the past (e.g., Ettredge et al. 2012) and such aggressive reporting practices contribute to investors' concerns with reporting credibility, we expect that restatement firms that significantly increase accounting conservatism experience a drop in the ERC for a shorter period than other restatement firms. We measure accounting conservatism using the C-Score developed by Khan and Watts (2009). We test whether the restatement firms that have an increase in C-Score from the year before the restatement (i.e., year t-1) to the year after (i.e., year t+1) experience a shorter period of decrease in the ERC than other restatement firms.[21]

The results are reported in Panel A of Table 6. The indicator, $Change_i$, is defined as one for firms with an increase in C-Score. We find that consistent with our prediction, the restatement firms that report more conservatively in the post-restatement period experience a significant decrease in the ERC for a shorter period than the other restatement firms (6 quarters vs. 11 quarters). This result indicates that increasing conservatism can bolster investors' confidence in reported earnings.

Executive turnover

Prior research finds that restatement firms experience a significantly higher frequency of

[21] We use year t-1 and year t+1 to measure the change in conservatism because investors likely need time to understand the implications of accounting policy changes. We obtain qualitatively similar and slightly weaker results when we use year t-1 and year t to measure the change in conservatism.

executive turnover after restatement announcements compared to other firms (e.g., Desai et al. 2006; Hennes et al. 2008). The common presumption is that firing the key executives can help restore financial reporting credibility. To test whether this is the case, we define $Change_i$ as one for restatement firms with both CEO and CFO turnover in the year of restatement announcement, and zero otherwise. Because Hennes et al. (2008) find that most material restatement firms experience a turnover of either CEO or CFO after restatement announcements, we focus on the turnover of both CEO and CFO to increase the power of our tests.[22]

We collect information on executives from 8-K. We find that of the 343 material restatements, 26.6% experience turnover of both CEO and CFO in the year of restatement announcement. Table 6, Panel B presents the regression results. As reported in the table, material restatement firms without CEO/CFO turnover experience a significant drop in the ERC in all the post-restatement quarters examined, except for quarter 12. The drop in the ERC ranges from 1.030 in quarter 10 to 2.776 in quarter 4. In contrast, material restatement firms with CEO/CFO turnover only experience a significant drop in the ERC for the second, third, and fourth quarter after restatement announcements.

Auditor dismissal

Prior research finds that restatement firms experience a significantly higher frequency of auditor turnovers compared to other firms (e.g., Hennes et al. 2012). While some of the auditor turnovers are auditor resignations, others are auditor dismissals initiated by the firm. Hennes et al. (2012) find that auditor resignations for restatement firms are associated with a negative

[22] If a restatement firm only replaces either CEO or CFO in this period, $Change_i$ is coded as zero. Also, if a restatement firm replaces both CEO and CFO before restatement announcements but still in the fiscal year of restatement announcement, $Change_i$ is coded as one. Hennes et al. (2008) find that some restatement firms replace executives before they make the restatement announcement as a signal of their determination to improve financial reporting quality. Also, the results are similar if we use CEO and CFO turnover in the year of restatement announcement and the year after.

market reaction, but auditor dismissals are associated with a positive market reaction. This finding is consistent with auditor dismissals signaling firms' determination to improve financial reporting quality and the market viewing auditor dismissals as good news. Consequently, we expect that financial reporting credibility after auditor dismissals is higher compared to other restatement firms. To test this prediction, we define $Change_i$ as one for material restatement firms with auditor dismissals in the year of the restatement announcement, and zero otherwise.[23] We collect auditor dismissal information from 8-K and Audit Analytics. We find that of the 343 material restatements, 14.5% are associated with auditor dismissals in the year of the restatement announcement.

Table 6, Panel C presents the regression results. As reported in the table, material restatement firms without auditor dismissals experience a significant drop in the ERC for 11 quarters after restatement announcements. The drop in the ERC ranges from 1.161 in quarter 7 to 2.724 in quarter 3. In contrast, material restatement firms with auditor dismissals only experience a significant drop in the ERC for four quarters in the post-restatement period.

Audit committee chair turnover

Audit committee is directly involved in the monitoring of financial reporting processes. Like replacing top executives and dismissing external auditors, replacing audit committee chair can also help improve financial reporting credibility. To test this prediction, we define $Change_i$ as one for material restatement firms that replace the chair of audit committee in the year of restatement announcement, and zero otherwise. We collect information on audit committee chair turnover from the IRRC, Board Analyst, and/or the proxy statement. We find that 30.3% of the material restatement firms replace the audit committee chair by the end of the year of restatement announcement.

[23] $Change_i$ is coded as zero for accounting irregularity firms with auditor resignations in this period.

The results are reported in Table 6, Panel D. We find that while the material restatement firms with audit committee chair turnover experience a significant drop in the ERC for four quarters after restatement announcements, those without audit committee chair turnover experience a significant drop in the ERC for 12 quarters after restatement announcements.

The analyses in this section indicate that undertaking prompt actions, such as increasing accounting conservatism, replacing CEO and CFO, dismissing external auditors, and replacing the audit committee chair, can significantly improve financial reporting credibility. While material restatement firms that undertake such remedies only experience a brief drop in the ERC, those that do not experience a significant drop in the ERC for almost three years after restatement announcements.

5. Change in the ERC for the restricted sample – Reconciliation with Wilson (2008)

We find that material restatement firms experience a long lasting reduction in the information content of earnings after restatement announcements. This contrasts with Wilson's (2008) finding that the drop in the information content of earnings is short-lived even for more severe restatements. In this section, we explore how the research design differences between our study and Wilson explain the discrepancy. We investigate two research design choices where Wilson differs from our study. First, Wilson imposes more restrictive sampling requirement by requiring that firms have complete data in the two quarters *immediately* surrounding restatement announcements. Second, Wilson uses different proxies for material restatements, proxies based on market reactions to restatement announcements or revenue recognition.

The impact of additional sample restriction

Following Wilson (2008), we now impose the requirement that firms have sufficient data to

compute all the variables used in the analyses for the two quarters immediately surrounding the restatement announcement (i.e., quarter 0 and quarter 1). As a result, 567 restatements, or 47% of the full sample, are dropped and the restricted sample includes 641 restatements, 167 of which are classified as accounting irregularities by Hennes et al. (2008). [24]

Table 7 reports the regression results for the restricted sample, using the same model specification as in Table 3. The impact of the additional sample restriction can be seen by comparing the results for material restatements in the restricted sample with those in the full sample (i.e., Column (2) of Table 7 versus Column (2) of Table 3). The comparison suggests that by relaxing the sample restriction, the decline in the ERC for material restatement firms extends from eight quarters to 11 quarters, due to the increased power of tests that result from a significantly larger sample size. While the estimated drop in the ERC in Table 3 has similar magnitude as in Table 7, it has a higher significance level. For example, $\beta_{11}$is -1.564 with a p-value of 0.022 in Table 3 and is -1.375 with a p-value of 0.106 in Table 7. The larger sample size in Table 3, with about 70% more firm-quarter observations than in Table 7, leads to smaller estimated standard errors for the coefficients and hence increased power of tests.

To understand why this seemingly innocuous sampling requirement leads to such a large drop in sample size, we examine firm characteristics, restatement characteristics, and future performance of the firms included in the restricted sample and those excluded. The untabulated analyses suggest that the large sample attrition arises mainly due to analysts' overall low tendency to update their quarterly forecasts prior to earnings announcements. For the full sample of restatements, in the year before restatement announcements, the median number of analysts following a firm is 8, but the median number of quarterly earnings forecasts issued by analysts in

[24] Wilson's sample includes 215 restatements over the period 1997-2002. Our inferences remain the same if we limit the restatements to those announced over the period 1997-2002.

the 60-day window before each earnings announcement is only 2. The statistics are similar for the year after restatement announcements (the numbers are 7 and 1.75, respectively). These numbers indicate that for each quarter, only about one-fourth of the analysts following the firm issue updated quarterly earnings forecasts prior to the earnings announcement. As a result, when we require updated quarterly forecast for both quarters 0 and 1 to calculate expected earnings, a significant proportion of the sample firms are excluded.

It is thus not surprising that we find that the excluded firms have fewer analysts following and are therefore less likely to have updated quarterly forecasts before earnings announcements. In the year before restatement announcements, the mean number of analysts following is 13.91 for the included firms, but it is only 7.41 for the excluded firms. Due to the difference in analyst coverage, it is much less likely for the excluded firms to have updated quarterly earnings forecasts prior to earnings announcements, in the quarters both before and after restatement announcements. This explains why these firms are excluded once the availability of updated quarterly forecasts in quarters 0 and 1 is required.

We also compare the included and excluded firms along other dimensions. We find that the primary difference between these two sets of firms is related to size, age, and growth potential (the market-to-book ratio). The excluded firms are much smaller, are younger, and have lower market-to-book ratios than the included firms. The mean of total assets is $2,616 million for the excluded firms but $11,157 million for the included firms. The mean of firm age, measured as the number of years since the firm first appeared in CRSP, is 16.3 years for the excluded firms but 19.1 years for the included firms. The mean market-to-book ratio is 2.19 for the excluded firms but 2.67 for the included firms. These differences likely explain why the two sets of firms differ greatly in analyst coverage.

In terms of restatement characteristics, there is some evidence that the restatements of the excluded firms are more severe – the proportion of restatements related to revenue recognition is higher (35.2% vs. 30.0%, with a p-value of 0.078), and the restatement magnitude is more negative (-4.7% of total assets vs. -2.4%, with a p-value of 0.023), while the restatement announcement return and the number of restated quarters are similar for the excluded and included firms. The two sets of firms are also similar in future performance and the probability of delisting (over the three-year period after the restatement announcement).

In sum, our comparison of the included and excluded firms suggests that the main reason for a firm to be excluded from the restricted sample is because of its smaller firm size and lower analyst coverage, which directly leads to a lower number of updated quarterly earnings forecasts.

The impact of different proxies for material restatements

Wilson (2008) finds that the significant drop in ERC for three quarters is mainly driven by the more severe restatements. Wilson uses restatements with more negative market reaction and revenue recognition related restatements to proxy for more severe restatements, whereas we use the accounting irregularities as classified by Hennes et al. (2008). We conduct additional analyses to gauge the impact of using different proxies on the results. Since Wilson use two approaches to identify severe restatements, we examine each approach in turn. For brevity, we do not tabulate the results, which are available upon request.

With respect to the proxy based on market reaction, we find that despite a significant overlap, the discrepancy between this proxy and the irregularity proxy is significant. By design, half of the 1,208 restatements in the full sample are classified as restatements with more negative market reactions and half as restatements with less negative market reactions. Of the 343 material restatements classified as accounting irregularities per Hennes et al., 212 are classified

as having more negative market reactions and the rest, 131, as having less negative market reactions. One possible reason for the discrepancy is that the market reaction around the restatement announcement may not fully incorporate the implication of the restatement. When we rerun the regressions, we find that the restatements with more negative market reaction experience a significant drop in the ERC for five quarters in the post-restatement period, a period much shorter compared to when the irregularity proxy is used (Column (2) of Table 3).

The findings are similar with respect to the proxy using revenue recognition to identify severe restatements. Of the 1016 restatements with known reasons, 328 restatements (about 32 percent) are related to revenue recognition. Of the 291 restatements with known reasons classified as accounting irregularities per Hennes et al., 143 are related to revenue recognition and 148 are related to other reasons. Restatements related to other reasons can also be severe. The regression results show that the restatements related to revenue recognition experience a significant drop in the ERC for five quarters in the post-restatement period, again shorter than when the irregularity proxy is used.

Overall, the above analyses suggest that despite the overlap, the discrepancy between the irregularity proxy and Wilson's proxies is significant enough to lead to different regression results. To the extent that the irregularity classification better captures severe restatements, using the market reaction or revenue recognition introduces noises into the tests and leads to less powerful tests.

Summary of the reconciliation with Wilson (2008)

In summary, we find that the two research design choices, different sampling requirement and different proxies for material restatements, likely explain the differences in findings between our study and Wilson (2008). By using less restrictive sampling requirements and potentially

more powerful proxy for material restatements, our analyses are able to detect the long-run drop in the ERC after restatement announcements. We would like to emphasize that given that Wilson (2008) and Hennes et al. (2008) are contemporaneous work, separating out accounting irregularities is not feasible when Wilson conducted her study; our tests are built upon, and benefit from the insights in, both studies.

6. Conclusion

In this paper, we investigate the drop in the information content of earnings after restatement announcements. Our sample includes 1,208 restatements announced over the period 1997-2006, of which 343 are classified as accounting irregularities per Hennes et al. (2008) – referred to as material restatements. Using the ERC to proxy for the information content of earnings, we find that the drop in the ERC from the pre- to the post-restatement period is both pronounced and long-lived for material restatement firms. The drop in the ERC is significantly negative for 11 quarters after restatement announcements and the average magnitude of the drop is more than half of the ERC in the pre-restatement period. In contrast, the drop in the ERC for other restatement firms only lasts for one quarter. We find that our results are not driven by contemporaneous changes in economic conditions and are also robust to using alternative sources of restatements (i.e., Audit Analytics), alternative classifications of material restatements (e.g., AAER cases), and alternative ways of calculating expected earnings (i.e., seasonal random walk model).

In cross-sectional analyses, we find that the long-lived drop in the ERC experienced by material restatement firms is driven by those firm-quarters that are more likely to be subject to credibility concerns, such as those reporting good news, i.e., those reporting earnings higher than

analyst consensus forecasts, and those with high accruals. This provides further support to the notion that the reduction in the information content of earnings after restatement announcements is related to loss of financial reporting credibility. In addition, we find that material restatement firms that take prompt actions to enhance reporting credibility, by increasing accounting conservatism, removing CEO and CFO, dismissing external auditors, and replacing the chair of audit committee, experience a relatively short-lived drop in the ERC, only in the first year after restatement announcements. In contrast, for material restatement firms that do not take such prompt actions, the drop in the ERC lasts for almost three years. These analyses indicate that taking remedial actions in a timely fashion helps firms regain investors' trust.

Lastly, we reconcile our finding with Wilson (2008) who concludes that the drop in the information content of earnings is short-lived. We find that the discrepancy in inferences arises from two research design differences. First, Wilson requires that restatement firms have complete data in the two quarters immediately surrounding restatement announcements, and this requirement reduces the power of tests by decreasing the sample size by half. Second, Wilson's proxy of severe restatements is based on the market reaction or revenue recognition. Our analyses suggest that imposing a less restrictive sampling criterion – requiring data in at least one quarter in both the pre- and the post-restatement period – and using a potentially more powerful proxy for severe restatements enable us to increase the power of tests and detect the long-run drop in the ERC experienced by the material restatement firms.

Our study has important implications for investors, regulators, firms, and academia. We find that after restatement announcements, the reduction in the information content of earnings for material restatement firms lasts much longer than previously documented. This finding helps investors, regulators, as well as firms, better understand the adverse consequences of aggressive

financial reporting and the impact of the remedial actions undertaken by firms to regain investors' trust in accounting numbers. Our finding also reconciles the conflicting evidence in prior studies about the capital market consequences of restatements.

References

Anderson, K. L., and T. L. Yohn. 2002. The effect of 10-K restatements on firm value, information asymmetries, and investors' reliance on earnings. Working paper, Georgetown University.

Burks, J. J. 2011. Are investors confused by restatements after Sarbanes-Oxley? *The Accounting Review* 86 (2): 507-539.

Chen, X., Q. Cheng, and A. K. Lo. 2012. Accounting restatements and external financing choices. *Contemporary Accounting Research* forthcoming.

Cheng, Q., and D. Farber. 2008. Earnings restatements, changes in CEO compensation, and firm performance. *The Accounting Review* 83 (5): 1217-1250.

Cohen, D., A. Dey, and T. Lys. 2008. Real and accrual-based earnings management in the pre- and post-Sarbanes-Oxley periods. *The Accounting Review* 83 (3): 757-787.

Dechow, P., R. Sloan, and A. Sweeney. 1995. Detecting earnings management. *The Accounting Review* 70 (2): 193-225.

Dechow, P., R. Sloan, and A. Sweeney. 1996. Causes and consequences of earnings manipulation: an analysis of firms subject to enforcement actions by the SEC. *Contemporary Accounting Research* 13 (1): 1-36.

Dechow, P., W. Ge, C. Larson, and R. Sloan. 2011. Predicting material accounting misstatements. *Contemporary Accounting Research* 28 (1): 17-82.

Desai, H., C. Hogan, and M. Wilkins. 2006. The reputational penalty for aggressive accounting: earnings restatements and management turnover. *The Accounting Review* 81: 83-112.

Ettredge, M., Y. Huang, and W. Zhang. 2012. Earnings restatements and differential timeliness of accounting conservatism. *Journal of Accounting and Economics* 53: 489-503.

Farber, D. 2005. Restoring trust after fraud: does corporate governance matter? *The Accounting Review* 80: 539-561.

Financial Accounting Standard Board (FASB). 2008. Exposure draft, "Conceptual Framework for Financial Reporting." Financial Accounting Series No. 1570-100.

Foster, G. 1977. Quarterly accounting data: time-series properties and predictive-ability results. *The Accounting Review* 52: 1-21.

General Accounting Office (GAO). 2003. *Financial statement restatements: trends, market impacts, regulatory responses, and remaining challenges*. GAO-03-138. Washington, D.C.: Government Printing Office.

Gleason, C., N. Jenkins, and W. Johnson. 2008. The contagion effects of accounting restatements. *The Accounting Review* 83 (1): 83-110.

Graham, J. R., S. Li, and J. Qiu. 2008. Corporate misreporting and bank loan contracting. *Journal of Financial Economics* 89 (1): 44-61.

Hennes, K. M., A. J. Leone, and B. P. Miller. 2008. The importance of distinguishing errors from irregularities in restatement research: the case of restatements and CEO/CFO turnover. *The Accounting Review* 83 (6): 1487-1519.

Hennes, K. M., A. J. Leone, and B. P. Miller. 2012. Accounting restatements and auditor accountability. Working paper, University of Oklahoma.

Hribar, P., and N. T. Jenkins. 2004. The effect of accounting restatements on earnings revisions and the estimated cost of capital. *Review of Accounting Studies* 9: 337-356.

Khan, M., and R. Watts. 2009. Estimation and empirical properties of a firm-year measure of accounting conservatism. *Journal of Accounting and Economics* 48: 132-150.

Palmrose, Z. V., V. Richardson, and S. Scholz. 2004. Determinants of market reactions to restatement announcements. *Journal of Accounting and Economics* 37: 59-89.

Plumlee, M., and T. L. Yohn. 2010. An analysis of the underlying causes attributed to restatements. *Accounting Horizons* 24 (1): 41-64.

Skinner, D. J. 1994. Why firms voluntarily disclose bad news. *Journal of Accounting Research* 32: 38-60.

Skinner, D. J. 1997. Earnings disclosure and stockholder lawsuits. *Journal of Accounting and Economics* 23: 249-282.

Sloan, R. G. 1996. Do stock prices fully reflect information in accruals and cash flows about future earnings? *The Accounting Review* 71 (3): 289-315.

Srinivasan, S. 2005. Consequences of financial reporting failure for outside directors: evidence from accounting restatements and audit committee members. *Journal of Accounting Research* 43 (2): 291-334.

Wilson, W. 2008. An empirical analysis of the decline in the information content of earnings following restatements. *The Accounting Review* 83: 519-548.

Wu, M. 2002. Earnings restatements: a capital market perspective. Working paper, New York University.

TABLE 1
Sample selection and descriptive statistics of restatements

This table describes the selection process of the sample, 1,208 restatements announced in the period 1997-2006, and the characteristics of the restatements.

Panel A: Sample selection

This panel describes the sample selection process, first for the full sample and then for the restricted sample. The selection of the restricted sample follows Wilson (2008), who requires that firms have sufficient data to compute variables for the two quarters immediately surrounding the restatement announcement – quarter 0 and quarter 1.(Quarter 0 refers to the last fiscal quarter with the earnings announcement date before the restatement announcement. Quarter 1 refers to the first fiscal quarter with the earnings announcement date after the restatement announcement.) The main reason for the loss of restatements due to this restriction is the lack of analyst forecast data from I/B/E/S for quarter 0 or quarter 1.

Restrictions		Sample size
Accounting restatements in the period 1997-2006 (per GAO reports)		2,705
Less:		
Firms not covered in Compustat	341	
Firms not covered in CRSP	54	
Firms not covered in I/B/E/S	515	
Foreign firms	153	
Firms with missing data throughout either the pre-restatement period (quarter -4 to quarter 0) or the post-restatement period (quarter 1 to quarter 12)	434	
Restatements in the full sample		1,208
Material restatements, i.e., accounting irregularities per Hennes et al. (2008)		343
Other restatements		865
Less:		
Firms with missing data in quarter 0 or quarter 1	567	
Restatements in the restricted sample		641
Material restatements, i.e., accounting irregularities per Hennes et al. (2008)		167
Other restatements		474

TABLE 1 (cont'd)

Panel B: Industry distribution of restatement firms in the full sample

Industry (per Fama and French classification)	All restatements		Material restatements	
	# of restatements	Percentage of total	# of restatements	Percentage of total
Apparel	12	0.99%	5	1.46%
Automobiles and Trucks	23	1.90%	10	2.92%
Banking	90	7.45%	21	6.12%
Business Services	189	15.65%	81	23.62%
Business Supplies	15	1.24%	3	0.87%
Communication	54	4.47%	16	4.66%
Computers	62	5.13%	30	8.75%
Defense	13	1.08%	0	0.00%
Electronic Equipment	49	4.06%	17	4.96%
Entertainment	21	1.74%	5	1.46%
Food Products	14	1.16%	3	0.87%
Healthcare	18	1.49%	6	1.75%
Insurance	39	3.23%	12	3.50%
Machinery	46	3.81%	17	4.96%
Medical Equipment	14	1.16%	2	0.58%
Personal Services	24	1.99%	11	3.21%
Petroleum and Natural Gas	47	3.89%	6	1.75%
Pharmaceutical Products	42	3.48%	16	4.66%
Restaurants, Hotels, Motels	31	2.57%	2	0.58%
Retail	123	10.18%	14	4.08%
Trading	23	1.90%	5	1.46%
Transportation	24	1.99%	4	1.17%
Utilities	46	3.81%	14	4.08%
Wholesale	29	2.40%	9	2.62%
All others	160	13.25%	34	9.91%
Total	1,208	100%	343	100%

TABLE 1 (cont'd)

Panel C: Yearly distribution of restatement announcements in the full sample

Restatement announcement year	All restatements		Material restatements	
	# of restatements	Percentage of total	# of restatements	Percentage of total
1997	27	2.24%	11	3.21%
1998	29	2.40%	14	4.08%
1999	70	5.79%	16	4.66%
2000	63	5.22%	17	4.96%
2001	96	7.95%	19	5.54%
2002	146	12.09%	63	18.37%
2003	144	11.92%	46	13.41%
2004	164	13.58%	54	15.74%
2005	351	29.06%	78	22.74%
2006 [a]	118	9.77%	25	7.29%
Total	1,208	100%	343	100%

[a] The GAO report only covers restatement announcements up to the first half of 2006.

Panel D: Restatement frequency at the firm level for the full sample

	All restatements		Material restatements	
	# of distinct firms	# of restatements represented	# of distinct firms	# of restatements represented
One restatement	670	670	179	179
Two restatements	158	316	47	94
Three restatements	46	138	15	45
Four or more restatements	17	84	5	25
Total	891	1,208	246	343

TABLE 2
Earnings announcement frequency and descriptive statistics on the regression variables

Panel A: Earnings announcement frequency

This table reports the number of firms with earnings announcements and data on regression variables in each of the 17 quarters around restatement announcements. Quarter 0 refers to the last fiscal quarter with the earnings announcement date before the restatement announcement. Quarter 1 refers to the first fiscal quarter with the earnings announcement date after the restatement announcement. Other quarters are defined accordingly. The full sample includes 1,208 restatements announced in the period 1997-2006, including 343 material restatements and 865 other restatements.

Quarter	All restatements	Material restatements
-4	760	220
-3	785	227
-2	823	234
-1	828	231
0	908	251
1	782	203
2	805	212
3	775	194
4	740	190
5	769	191
6	713	181
7	707	184
8	690	194
9	747	192
10	677	165
11	691	175
12	659	169
Total	12,859	3,413

TABLE 2 (cont'd)

Panel B: Descriptive statistics on the regression variables: All restatements in the full sample

This table reports the descriptive statistics on the variables used in the regression analyses for all restatements included in the full sample, separately for the pre- and post-restatement period. The descriptive statistics are based on 12,859 firm-quarters with required data from 1,208 restatements announced in the period 1997-2006. The pre-restatement period includes quarter -4 to quarter 0 and the post-restatement period includes quarter 1 to quarter 12.
UR is the cumulative abnormal returns in the three-day window around the earnings announcement date, where the abnormal return is calculated as the firm's return less the CRSP value-weighted market return. *UE* is the unexpected quarterly earnings at the earnings announcement date, scaled by price at the end of the fiscal quarter, with expected earnings proxied by the median of analyst forecasts issued within 60 days prior to the earnings announcement date. *NONLINEAR* is defined as $UE \times |UE|$. *MTB* is the market-to-book ratio. *BETA* is the market-model beta estimated over the year ending two days prior to the earnings announcement date. *SIZE* is the natural log of market value of equity. *LOSS* is an indicator variable equal to one if reported earnings per share is below 0. *Q4* is an indicator variable, equal to 1 if the earnings announcement is for the fourth quarter of the fiscal year. *PREDICT* is the variance of the absolute values of unexpected earnings over the two-year period prior to the earnings announcement, where unexpected earnings are based on a seasonal random walk. *PERSIST* is the autoregressive coefficient from Foster's (1977) model estimated over the two-year period prior to the earnings announcement. *AGE* is measured as the number of years since the firm first appeared in CRSP.

Variable	Mean	Median	Std.	Q1	Q3
Pre-restatement period (n= 4,104)					
UR	0.001	0.001	0.079	-0.037	0.041
UE	0.001	0.000	0.008	0.000	0.002
NONLINEAR	0.000	0.000	0.000	0.000	0.000
MTB	2.764	2.072	2.788	1.339	3.300
BETA	1.105	1.032	0.590	0.674	1.478
SIZE	7.153	7.046	1.600	5.975	8.229
LOSS	0.298	0.000	0.458	0.000	1.000
Q4	0.222	0.000	0.416	0.000	0.000
PREDICT	0.007	0.000	0.030	0.000	0.001
PERSIST	0.137	0.079	0.445	-0.154	0.421
AGE	19.171	11.000	19.012	6.000	29.000
Post-restatement period (n= 8,755)					
UR	0.002	0.000	0.076	-0.038	0.039
UE	0.002	0.000	0.023	-0.001	0.002
NONLINEAR	0.000***	0.000	0.000	0.000	0.000
MTB	2.667	2.089	2.703	1.349	3.270
BETA	1.176***	1.129***	0.530	0.812	1.496
SIZE	7.343***	7.222***	1.629	6.211	8.520
LOSS	0.277	0.000	0.448	0.000	1.000
Q4	0.230	0.000	0.421	0.000	0.000
PREDICT	0.010***	0.000***	0.038	0.000	0.001
PERSIST	0.122	0.087	0.412	-0.154	0.383
AGE	22.026***	14.000***	19.305	8.000	31.000

*** significantly different between the pre- and post-restatement period at the 0.01 level (two-sided).

TABLE 2 (cont'd)

Panel C: Descriptive statistics on the regression variables: Material restatements in the full sample

This table reports the descriptive statistics on the variables used in the regression analyses for material restatements in the full sample, separately for the pre- and post-restatement period. The descriptive statistics are based on 3,413 firm-quarters with required data from 343 material restatements announced in the period 1997-2006. The pre-restatement period includes quarter -4 to quarter 0 and the post-restatement period includes quarter 1 to quarter 12. See Panel B for variable definitions.

Variable	Mean	Median	Std.	Q1	Q3
Pre-restatement period (n= 1,163)					
UR	0.003	0.001	0.085	-0.041	0.043
UE	0.001	0.000	0.008	0.000	0.002
NONLINEAR	0.000	0.000	0.000	0.000	0.000
MTB	2.752	2.048	2.770	1.267	3.355
BETA	1.223	1.136	0.638	0.739	1.647
SIZE	7.524	7.413	1.634	6.257	8.770
LOSS	0.383	0.000	0.486	0.000	1.000
Q4	0.222	0.000	0.416	0.000	0.000
PREDICT	0.008	0.000	0.032	0.000	0.001
PERSIST	0.128	0.068	0.458	-0.186	0.437
AGE	18.560	11.000	18.733	5.000	28.000
Post-restatement period (n= 2,250)					
UR	0.009	0.003	0.077	-0.035	0.048
UE	0.003	0.000	0.029	-0.001	0.003
NONLINEAR	0.000***	0.000	0.001	0.000	0.000
MTB	2.423***	1.922***	2.990	1.204	3.142
BETA	1.215	1.136	0.544	0.845	1.538
SIZE	7.552	7.434	1.651	6.375	8.800
LOSS	0.348	0.000	0.476	0.000	1.000
Q4	0.230	0.000	0.421	0.000	0.000
PREDICT	0.019***	0.000***	0.054	0.000	0.003
PERSIST	0.142	0.105	0.428	-0.135	0.409
AGE	20.901***	14.000***	18.709	8.000	30.000

*** significantly different between the pre- and post-restatement period at the 0.01 level (two-sided).

TABLE 3
Change in the information content of earnings after restatement announcements

This table reports regression results from the following model:

$$UR_{it} = \alpha_1 + \sum_{t=1}^{12} \alpha_{2,t} QTR_t + \beta_1 UE_{it} + \sum_{t=1}^{12} \beta_{2,t}[UE_{it} \times QTR_t] + \beta_3 NONLINEAR_{it} + \sum_{k=4}^{10} \beta_k CONTROLS_{it} + \sum_{k=11}^{17} \beta_k [UE_{it} \times CONTROLS_{it}] + \varepsilon_{it} \quad (1)$$

where $CONTROLS_{it} = \{MTB_{it}, BETA_{it}, SIZE_{it}, LOSS_{it}, Q4_{it}, PREDICT_{it}, PERSIST_{it}\}$

UR_{it} is the cumulative abnormal returns in the three-day window around the earnings announcement date for firm *i* at quarter *t*, where the abnormal return is defined as the firm's return less the CRSP value-weighted market return. QTR_t is an indicator variable equal to 1 if the earnings announcement pertains to quarter *t* and 0 otherwise. UE_{it} is firm *i*'s unexpected quarterly earnings in quarter *t*, scaled by price at the end of the fiscal quarter, with expected earnings proxied by the median of analysts' earnings forecasts issued within 60 days prior to quarter t's earnings announcement date. Please see Panel B of Table 2 for the definition of control variables. The control variables are mean-adjusted so that the coefficient on *UE* can be interpreted as the earnings response coefficient (ERC) for a firm with average firm characteristics.

The table reports the coefficient estimates, the corresponding p-values (one-sided for the coefficients in the box and two-sided otherwise), the number of observations, and adjusted R^2. The p-values are based on standard errors adjusted for firm-level clustering. The regression is based on 12,859 firm-quarters with required data from 1,208 restatements announced in the period 1997-2006. We tabulate the results after eliminating outliers, defined as observations with studentized residuals greater than 2.5 in absolute value.

TABLE 3 (cont'd)

	All restatements (1)		Material restatements (2)		Other restatements (3)	
	Coef.	p-value	Coef.	p-value	Coef.	p-value
Intercept	0.000	0.866	-0.005	0.027	0.006	0.066
UE	2.319	0.001	3.298	0.001	2.021	0.001
$UE \times QTR_1$	**-1.385**	**0.001**	**-2.133**	**0.002**	**-1.077**	**0.002**
$UE \times QTR_2$	**-0.683**	**0.017**	**-2.321**	**0.001**	0.016	0.513
$UE \times QTR_3$	**-1.017**	**0.004**	**-2.621**	**0.001**	-0.470	0.117
$UE \times QTR_4$	-0.379	0.199	**-2.375**	**0.001**	1.444	0.985
$UE \times QTR_5$	0.080	0.573	**-1.986**	**0.001**	1.043	0.934
$UE \times QTR_6$	-0.399	0.224	**-1.900**	**0.004**	0.201	0.614
$UE \times QTR_7$	0.243	0.612	**-1.008**	**0.044**	0.651	0.811
$UE \times QTR_8$	-0.639	0.112	**-1.777**	**0.002**	0.054	0.530
$UE \times QTR_9$	**-1.196**	**0.006**	**-1.673**	**0.005**	-0.775	0.124
$UE \times QTR_{10}$	0.025	0.618	**-1.027**	**0.050**	0.157	0.593
$UE \times QTR_{11}$	0.456	0.815	**-1.564**	**0.022**	1.190	0.973
$UE \times QTR_{12}$	0.240	0.664	-0.643	0.287	0.668	0.866
NONLINEAR	7.960	0.007	3.420	0.285	11.321	0.004
MTB	-0.001	0.259	0.000	0.908	-0.001	0.292
BETA	-0.001	0.245	0.000	0.896	-0.002	0.065
SIZE	0.000	0.660	-0.004	0.003	-0.001	0.490
LOSS	-0.007	0.001	-0.006	0.001	-0.008	0.001
Q4	0.002	0.004	0.000	0.779	0.003	0.001
PREDICT	0.002	0.102	0.001	0.673	0.000	0.778
PERSIST	0.001	0.382	0.001	0.347	0.000	0.843
UE× MTB	-0.064	0.467	-0.012	0.932	-0.193	0.199
UE× BETA	0.115	0.400	0.151	0.415	0.165	0.321
UE× SIZE	0.662	0.001	0.454	0.021	0.812	0.001
UE× LOSS	-0.290	0.015	-0.478	0.001	-0.240	0.097
UE× Q4	-0.272	0.014	0.027	0.829	-0.526	0.001
UE× PREDICT	-0.080	0.206	-0.035	0.678	-0.007	0.931
UE× PERSIST	0.013	0.924	-0.084	0.689	-0.029	0.845
Quarter-fixed effects	Yes		Yes		Yes	
N	12,859		3,413		9,446	
Adj. R^2	0.073		0.111		0.076	

TABLE 4
Change in the information content of earnings after restatement announcements – using restatements from the Audit Analytics database

This table reports regression results from the following model:

$$UR_{it} = \alpha_1 + \sum_{t=1}^{12} \alpha_{2,t} QTR_t + \beta_1 UE_{it} + \sum_{t=1}^{12} \beta_{2,t} [UE_{it} \times QTR_t] + \beta_3 NONLINEAR_{it} + \sum_{k=4}^{10} \beta_k CONTROLS_{it} + \sum_{k=11}^{17} \beta_k [UE_{it} \times CONTROLS_{it}] + \varepsilon_{it} \quad (1)$$

where $CONTROLS_{it} = \{MTB_{it}, BETA_{it}, SIZE_{it}, LOSS_{it}, Q4_{it}, PREDICT_{it}, PERSIST_{it}\}$

UR_{it} is the cumulative abnormal returns in the three-day window around the earnings announcement date for firm i at quarter t, where the abnormal return is defined as the firm's return less the CRSP value-weighted market return. QTR_t is an indicator variable equal to 1 if the earnings announcement pertains to quarter t and 0 otherwise. UE_{it} is firm i's unexpected quarterly earnings in quarter t, scaled by price at the end of the fiscal quarter, with expected earnings proxied by the median of analysts' earnings forecasts issued within 60 days prior to quarter t's earnings announcement date. Please see Panel B of Table 2 for the definition of control variables. The control variables are mean-adjusted so that the coefficient on UE can be interpreted as the earnings response coefficient (ERC) for a firm with average firm characteristics.

The table reports the coefficient estimates, the corresponding p-values (one-sided for the coefficients in the box and two-sided otherwise), the number of observations, and adjusted R^2. The p-values are based on standard errors adjusted for firm-level clustering. The regression is based on 21,261 firm-quarters with required data from 2,033 restatements announced in the period 2000-2008, as obtained from the Audit Analytics database. Of the 2,033 restatements, 211 restatements are classified as material restatements (i.e., those indicated as frauds in the Audit Analytics database or associated with AAERs), and the rest are classified as other restatements. We tabulate the results after eliminating outliers, defined as observations with studentized residuals greater than 2.5 in absolute value.

TABLE 4 (cont'd)

	All restatements (1)		Material restatements (2)		Other restatements (3)	
	Coef.	p-value	Coef.	p-value	Coef.	p-value
Intercept	0.001	0.382	0.009	0.014	0.000	0.938
UE	1.556	0.001	1.792	0.001	1.810	0.001
$UE \times QTR_1$	**-0.268**	**0.033**	**-1.156**	**0.006**	**-0.394**	**0.015**
$UE \times QTR_2$	**-0.346**	**0.009**	**-0.741**	**0.001**	**-0.323**	**0.095**
$UE \times QTR_3$	-0.110	0.232	**-1.331**	**0.029**	-0.078	0.318
$UE \times QTR_4$	-0.102	0.234	**-0.848**	**0.034**	-0.138	0.173
$UE \times QTR_5$	-0.091	0.264	**-0.406**	**0.062**	-0.158	0.149
$UE \times QTR_6$	-0.036	0.401	**-0.830**	**0.009**	0.059	0.636
$UE \times QTR_7$	**-0.174**	**0.075**	**-0.421**	**0.046**	-0.073	0.289
$UE \times QTR_8$	0.004	0.514	**-0.349**	**0.052**	0.046	0.621
$UE \times QTR_9$	0.119	0.746	**-0.557**	**0.032**	0.103	0.722
$UE \times QTR_{10}$	0.082	0.701	**-0.402**	**0.097**	0.044	0.599
$UE \times QTR_{11}$	0.072	0.702	-0.917	0.187	0.026	0.573
$UE \times QTR_{12}$	0.063	0.695	-0.090	0.389	0.034	0.599
NONLINEAR	-6.524	0.006	3.061	0.376	-12.529	0.001
MTB	-0.001	0.257	0.001	0.550	-0.001	0.176
BETA	0.000	0.884	0.003	0.230	0.000	0.520
SIZE	-0.003	0.001	-0.004	0.053	-0.003	0.001
LOSS	-0.009	0.001	-0.007	0.001	-0.009	0.001
Q4	0.000	0.515	0.001	0.536	0.000	0.697
PREDICT	0.003	0.002	0.000	0.899	0.003	0.001
PERSIST	0.001	0.242	0.005	0.008	0.000	0.719
UE× MTB	0.006	0.853	0.112	0.050	0.068	0.159
UE× BETA	0.058	0.173	-0.019	0.825	0.081	0.074
UE× SIZE	-0.019	0.712	0.163	0.095	-0.011	0.855
UE× LOSS	-0.573	0.001	-0.820	0.001	-0.518	0.001
UE× Q4	-0.194	0.001	-0.124	0.185	-0.200	0.001
UE× PREDICT	-0.006	0.679	0.080	0.049	-0.013	0.386
UE× PERSIST	-0.019	0.658	-0.042	0.269	0.010	0.808
Quarter-fixed effects	Yes		Yes		Yes	
N	21,261		2,034		19,227	
Adj. R^2	0.066		0.075		0.071	

TABLE 5
Change in the information content of earnings after restatement announcements
- the impact of financial reporting credibility

This table reports regression results from the following model:

$$UR_{it} = \alpha_1 + \sum_{t=1}^{12} \alpha_{2,t} QTR_t + \beta_1 UE_{it} + \sum_{t=1}^{12} \beta_{2,t}[UE_{it} \times QTR_t] + \beta_3 NONLINEAR_{it} + \sum_{k=4}^{10} \beta_k CONTROLS_{it} + \sum_{k=11}^{17} \beta_k [UE_{it} \times CONTROLS_{it}] + \varepsilon_{it} \quad (1)$$

where $CONTROLS_{it} = \{MTB_{it}, BETA_{it}, SIZE_{it}, LOSS_{it}, Q4_{it}, PREDICT_{it}, PERSIST_{it}\}$

UR_{it} is the cumulative abnormal returns in the three-day window around the earnings announcement date for firm *i* at quarter *t*, where the abnormal return is defined as the firm's return less the CRSP value-weighted market return. QTR_t is an indicator variable equal to 1 if the earnings announcement pertains to quarter *t* and 0 otherwise. UE_{it} is firm *i*'s unexpected quarterly earnings in quarter *t*, scaled by price at the end of the fiscal quarter, with expected earnings proxied by the median of analysts' earnings forecasts issued within 60 days prior to quarter t's earnings announcement date. Please see Panel B of Table 2 for the definition of control variables. The control variables are mean-adjusted so that the coefficient on *UE* can be interpreted as the earnings response coefficient (ERC) for a firm with average firm characteristics.

The table reports the coefficient estimates, the corresponding p-values (one-sided for the coefficients in the box and two-sided otherwise), the number of observations, and adjusted R^2. The p-values are based on standard errors adjusted for firm-level clustering. We tabulate the results after eliminating outliers, defined as observations with studentized residuals greater than 2.5 in absolute value.

In Panel A, the regressions are estimated separately for the good news group – firm-quarters with positive unexpected earnings– and for the bad news group – firm-quarters with negative unexpected earnings. The regressions are based on 3,413 firm-quarters with required data from 343 material restatements announced in the period 1997-2006. In Panel B, the regressions are estimated separately for the high accrual group and the low accrual group. The high (low) accrual group includes firm-quarters with total accruals higher (lower) than industry means based on all non-restating firms in Compustat in that quarter, with industries defined based on the Fama and French classification. Total accruals are calculated as income before extraordinary items minus the sum of operating cash flows and investing cash flows, scaled by total assets. The regressions are based on 3,374 firm-quarters with required data from 343 material restatements announced in the period 1997-2006.

TABLE 5 (cont'd)

Panel A: Good news versus bad news

	Good news group (1)		Bad news group (2)	
	Coef.	p-value	Coef.	p-value
Intercept	0.018	0.001	-0.004	0.314
UE	2.310	0.005	2.063	0.074
$UE \times QTR_1$	**-2.103**	**0.001**	-1.870	0.161
$UE \times QTR_2$	**-2.579**	**0.010**	**-2.959**	**0.042**
$UE \times QTR_3$	**-2.551**	**0.001**	1.331	0.786
$UE \times QTR_4$	**-2.430**	**0.001**	-0.083	0.480
$UE \times QTR_5$	**-2.301**	**0.002**	0.673	0.650
$UE \times QTR_6$	**-1.073**	**0.057**	**-2.064**	**0.073**
$UE \times QTR_7$	**-2.164**	**0.001**	1.095	0.727
$UE \times QTR_8$	**-1.663**	**0.016**	-1.999	0.173
$UE \times QTR_9$	**-1.400**	**0.043**	**-2.494**	**0.060**
$UE \times QTR_{10}$	**-2.343**	**0.001**	0.671	0.624
$UE \times QTR_{11}$	**-1.163**	**0.085**	0.167	0.532
$UE \times QTR_{12}$	0.950	0.790	-0.071	0.487
NONLINEAR	9.950	0.790	-1.159	0.736
MTB	0.003	0.312	-0.004	0.158
BETA	0.000	0.894	-0.003	0.345
SIZE	-0.006	0.015	-0.005	0.132
LOSS	-0.006	0.030	-0.001	0.823
Q4	-0.001	0.723	0.003	0.170
PREDICT	0.001	0.716	-0.003	0.501
PERSIST	0.003	0.232	-0.002	0.484
UE× MTB	-0.095	0.550	-0.368	0.333
UE× BETA	0.117	0.594	0.163	0.744
UE× SIZE	0.333	0.119	-0.120	0.806
UE× LOSS	-0.451	0.001	-0.287	0.560
UE× Q4	0.061	0.762	0.424	0.255
UE× PREDICT	0.037	0.719	-0.358	0.394
UE× PERSIST	-0.128	0.524	-0.280	0.596
Quarter-fixed effects	Yes		Yes	
N	1,909		1,504	
Adj. R^2	0.093		0.045	

TABLE 5 (cont'd)

Panel B: High accruals versus low accruals

	High accrual group (1)		Low accrual group (2)	
	Coef.	p-value	Coef.	p-value
Intercept	0.005	0.470	0.009	0.004
UE	4.032	0.001	3.016	0.001
$UE \times QTR_1$	**-3.049**	**0.002**	-0.546	0.273
$UE \times QTR_2$	**-2.970**	**0.001**	**-1.634**	**0.021**
$UE \times QTR_3$	**-3.793**	**0.042**	**-2.091**	**0.004**
$UE \times QTR_4$	**-4.099**	**0.001**	**-1.202**	**0.059**
$UE \times QTR_5$	**-4.752**	**0.001**	-0.918	0.144
$UE \times QTR_6$	**-3.918**	**0.019**	-0.982	0.165
$UE \times QTR_7$	**-3.832**	**0.001**	-0.183	0.394
$UE \times QTR_8$	**-2.485**	**0.052**	-0.988	0.114
$UE \times QTR_9$	**-2.691**	**0.080**	-0.890	0.137
$UE \times QTR_{10}$	**-3.450**	**0.008**	-0.414	0.302
$UE \times QTR_{11}$	**-3.354**	**0.055**	-0.693	0.258
$UE \times QTR_{12}$	0.490	0.651	1.043	0.758
NONLINEAR	-12.056	0.230	2.554	0.432
MTB	0.002	0.358	-0.001	0.761
BETA	-0.002	0.571	0.000	0.953
SIZE	-0.007	0.019	-0.003	0.117
LOSS	-0.012	0.162	-0.005	0.013
Q4	-0.002	0.394	0.001	0.402
PREDICT	0.001	0.892	0.001	0.575
PERSIST	0.003	0.173	0.000	0.840
UE× MTB	-0.166	0.621	-0.002	0.991
UE× BETA	0.762	0.174	0.177	0.378
UE× SIZE	0.836	0.023	0.430	0.137
UE× LOSS	-1.555	0.002	-0.226	0.238
UE× Q4	0.257	0.520	0.104	0.585
UE× PREDICT	0.221	0.410	-0.148	0.065
UE× PERSIST	0.125	0.664	-0.177	0.399
Quarter-fixed effects	Yes		Yes	
N	1,280		2,094	
Adj. R^2	0.146		0.121	

TABLE 6
Remedy actions undertaken by the firm and the change in the information content of earnings after restatement announcements

This table presents summary of regression results from the following regression:

$$UR_{it} = \alpha_1 + \sum_{t=1}^{12} \alpha_{2,t} QTR_{it} + \beta_1 UE_{it} + \sum_{t=1}^{12} \beta_{2,t} [UE_{it} \times QTR_{it}] + \alpha_3 Change_i + \sum_{t=1}^{12} \alpha_{4,t} QTR_{it} \times Change_i + \beta_3 UE_{it} \times Change_i + \sum_{t=1}^{12} \beta_{4,t} [UE_{it} \times QTR_{it} \times Change_i] + \beta_5 NONLINEAR_{it} + \sum_{k=6}^{12} \beta_k CONTROLS_{it} + \sum_{k=13}^{19} \beta_k [UE_{it} \times CONTROLS_{it}] + \varepsilon_{it} \quad (2)$$

where $CONTROLS_{it} = \{MTB_{it}, BETA_{it}, SIZE_{it}, LOSS_{it}, Q4_{it}, PREDICT_{it}, PERSIST_{it}\}$

UR_{it} is the cumulative abnormal returns in the three-day window around the earnings announcement date for firm i at quarter t, where the abnormal return is defined as the firm's return less the CRSP value-weighted market return. QTR_t is an indicator variable equal to 1 if the earnings announcement pertains to quarter t and 0 otherwise. UE_{it} is firm i's unexpected quarterly earnings in quarter t, scaled by price at the end of the fiscal quarter, with expected earnings proxied by the median of analysts' earnings forecasts issued within 60 days prior to quarter t's earnings announcement date. Please see individual panels for the definition of *Change*$_i$ and Panel B of Table 2 for the definition of other variables. The control variables are mean-adjusted so that the coefficient on *UE* can be interpreted as the earnings response coefficient (ERC) for a firm with average firm characteristics.

The table presents the difference in the ERC between the post-restatement period and the pre-restatement period, separately for material restatement firms with *Change*$_i$ equal to one and those with *Change*$_i$ equal to zero, and the corresponding one-sided p-values. The p-values are based on standard errors adjusted for firm-level clustering. The regression is based on the material restatements in the full sample – 3,413 firm-quarters with required data from 343 material restatements announced in the period 1997-2006. We eliminate outliers, defined as observations with studentized residuals greater than 2.5 in absolute value.

TABLE 6 (cont'd)

Panel A: Increase in accounting conservatism and the drop in the ERC

In this panel, $Change_i$ is one for restatement firms with an increase in *C-Score*, as developed in Khan and Watts (2009), from the year before to the year after the restatement announcement, and zero otherwise. 38.8% of the material restatement firms experience an increase in C-Score over this period.

	Material restatement firms **without** an increase in C-Score			Material restatement firms **with** an increase in C-Score		
		Coef.	p-value		Coef.	p-value
Pre-restatement period ERC	β_1	**3.214**	**0.001**	$\beta_1 + \beta_3$	**3.630**	**0.001**
Difference in the ERC between quarter t in the post-restatement period and the pre-restatement period						
Quarter 1	$\beta_{2,t=1}$	**-1.944**	**0.035**	$\beta_{2,t=1} + \beta_{4,t=1}$	**-2.671**	**0.004**
2	$\beta_{2,t=2}$	**-1.762**	**0.002**	$\beta_{2,t=2} + \beta_{4,t=2}$	**-2.380**	**0.002**
3	$\beta_{2,t=3}$	**-2.767**	**0.001**	$\beta_{2,t=3} + \beta_{4,t=3}$	**-2.903**	**0.017**
4	$\beta_{2,t=4}$	**-2.402**	**0.001**	$\beta_{2,t=4} + \beta_{4,t=4}$	**-2.192**	**0.002**
5	$\beta_{2,t=5}$	**-1.597**	**0.008**	$\beta_{2,t=5} + \beta_{4,t=5}$	**-2.248**	**0.011**
6	$\beta_{2,t=6}$	**-1.560**	**0.065**	$\beta_{2,t=6} + \beta_{4,t=6}$	**-2.727**	**0.050**
7	$\beta_{2,t=7}$	**-0.996**	**0.063**	$\beta_{2,t=7} + \beta_{4,t=7}$	-0.240	0.375
8	$\beta_{2,t=8}$	**-1.602**	**0.017**	$\beta_{2,t=8} + \beta_{4,t=8}$	-1.279	0.110
9	$\beta_{2,t=9}$	**-1.503**	**0.006**	$\beta_{2,t=9} + \beta_{4,t=9}$	-0.429	0.362
10	$\beta_{2,t=10}$	**-1.346**	**0.035**	$\beta_{2,t=10} + \beta_{4,t=10}$	-0.846	0.155
11	$\beta_{2,t=11}$	**-1.414**	**0.034**	$\beta_{2,t=11} + \beta_{4,t=11}$	0.408	0.420
12	$\beta_{2,t=12}$	0.141	0.526	$\beta_{2,t=12} + \beta_{4,t=12}$	-1.176	0.139

TABLE 6 (cont'd)

Panel B: Executive turnover and the drop in the ERC

In this panel, $Change_i$ is one for restatement firms with turnover of both CEO and CFO in the year of restatement announcement, and zero otherwise. 26.6% of the material restatement firms experience both CEO and CFO turnover in the year of restatement announcement.

	Material restatement firms **without** CEO/CFO turnover			Material restatement firms **with** CEO/CFO turnover		
		Coef.	p-value		Coef.	p-value
Pre-restatement period ERC	β_1	**3.470**	**0.001**	$\beta_1 + \beta_3$	**3.148**	**0.001**
Difference in the ERC between quarter t in the post-restatement period and the pre-restatement period						
Quarter 1	$\beta_{2,t=1}$	**-2.233**	**0.004**	$\beta_{2,t=1} + \beta_{4,t=1}$	-1.591	0.165
2	$\beta_{2,t=2}$	**-2.371**	**0.001**	$\beta_{2,t=2} + \beta_{4,t=2}$	**-2.188**	**0.001**
3	$\beta_{2,t=3}$	**-1.477**	**0.042**	$\beta_{2,t=3} + \beta_{4,t=3}$	**-3.372**	**0.001**
4	$\beta_{2,t=4}$	**-2.776**	**0.001**	$\beta_{2,t=4} + \beta_{4,t=4}$	**-1.273**	**0.074**
5	$\beta_{2,t=5}$	**-2.184**	**0.001**	$\beta_{2,t=5} + \beta_{4,t=5}$	-0.907	0.102
6	$\beta_{2,t=6}$	**-2.459**	**0.001**	$\beta_{2,t=6} + \beta_{4,t=6}$	0.116	0.500
7	$\beta_{2,t=7}$	**-1.702**	**0.029**	$\beta_{2,t=7} + \beta_{4,t=7}$	-0.219	0.397
8	$\beta_{2,t=8}$	**-1.911**	**0.003**	$\beta_{2,t=8} + \beta_{4,t=8}$	-0.686	0.297
9	$\beta_{2,t=9}$	**-2.171**	**0.003**	$\beta_{2,t=9} + \beta_{4,t=9}$	-0.746	0.220
10	$\beta_{2,t=10}$	**-1.030**	**0.085**	$\beta_{2,t=10} + \beta_{4,t=10}$	0.235	0.547
11	$\beta_{2,t=11}$	**-1.628**	**0.026**	$\beta_{2,t=11} + \beta_{4,t=11}$	0.770	0.634
12	$\beta_{2,t=12}$	-0.629	0.255	$\beta_{2,t=12} + \beta_{4,t=12}$	0.018	0.504

TABLE 6 (cont'd)

Panel C: Auditor dismissal and the drop in the ERC

In this panel, $Change_i$ is one for restatement firms with auditor dismissals in the year of restatement announcement, and zero otherwise. 14.5% of the material restatement firms experience auditor dismissal in the year of restatement announcement. Note that $Change_i$ is zero for restatement firms with auditor resignations.

	Material restatement firms **without** auditor dismissal			Material restatement firms **with** auditor dismissal		
		Coef.	p-value		Coef.	p-value
Pre-restatement period ERC	β_1	**3.331**	**0.001**	$\beta_1 + \beta_3$	**3.091**	**0.001**
Difference in the ERC between quarter t in the post-restatement period and the pre-restatement period						
Quarter 1	$\beta_{2,t=1}$	**-2.208**	**0.003**	$\beta_{2,t=1} + \beta_{4,t=1}$	**-2.235**	**0.090**
2	$\beta_{2,t=2}$	**-2.227**	**0.001**	$\beta_{2,t=2} + \beta_{4,t=2}$	**-2.254**	**0.001**
3	$\beta_{2,t=3}$	**-2.724**	**0.001**	$\beta_{2,t=3} + \beta_{4,t=3}$	-1.619	0.214
4	$\beta_{2,t=4}$	**-2.388**	**0.001**	$\beta_{2,t=4} + \beta_{4,t=4}$	**-2.308**	**0.001**
5	$\beta_{2,t=5}$	**-1.933**	**0.002**	$\beta_{2,t=5} + \beta_{4,t=5}$	**-2.360**	**0.055**
6	$\beta_{2,t=6}$	**-2.313**	**0.002**	$\beta_{2,t=6} + \beta_{4,t=6}$	-0.755	0.138
7	$\beta_{2,t=7}$	**-1.161**	**0.057**	$\beta_{2,t=7} + \beta_{4,t=7}$	-0.657	0.120
8	$\beta_{2,t=8}$	**-1.900**	**0.004**	$\beta_{2,t=8} + \beta_{4,t=8}$	-1.234	0.180
9	$\beta_{2,t=9}$	**-1.783**	**0.008**	$\beta_{2,t=9} + \beta_{4,t=9}$	-0.003	0.501
10	$\beta_{2,t=10}$	**-1.269**	**0.060**	$\beta_{2,t=10} + \beta_{4,t=10}$	1.001	0.799
11	$\beta_{2,t=11}$	**-1.769**	**0.016**	$\beta_{2,t=11} + \beta_{4,t=11}$	0.322	0.592
12	$\beta_{2,t=12}$	-0.795	0.211	$\beta_{2,t=12} + \beta_{4,t=12}$	0.848	0.332

TABLE 6 (cont'd)

Panel D: Audit committee chair turnover and the drop in the ERC

In this panel, $Change_i$ is one for restatement firms with turnover of the audit committee chair in the year of restatement announcement, and zero otherwise. 30.3% of the material restatement firms experience audit committee chair turnover in the year of restatement announcement.

	Material restatement firms **without** audit committee chair turnover			Material restatement firms **with** audit committee chair turnover		
		Coef.	p-value		Coef.	p-value
Pre-restatement period ERC	β_1	**3.326**	**0.001**	$\beta_1 + \beta_3$	**3.369**	**0.001**
Difference in the ERC between quarter t in the post-restatement period and the pre-restatement period						
Quarter 1	$\beta_{2,t=1}$	**-2.264**	**0.003**	$\beta_{2,t=1} + \beta_{4,t=1}$	**-2.378**	**0.089**
2	$\beta_{2,t=2}$	**-2.026**	**0.001**	$\beta_{2,t=2} + \beta_{4,t=2}$	**-1.778**	**0.048**
3	$\beta_{2,t=3}$	**-2.657**	**0.001**	$\beta_{2,t=3} + \beta_{4,t=3}$	**-2.283**	**0.072**
4	$\beta_{2,t=4}$	**-2.439**	**0.001**	$\beta_{2,t=4} + \beta_{4,t=4}$	**-1.710**	**0.055**
5	$\beta_{2,t=5}$	**-1.744**	**0.003**	$\beta_{2,t=5} + \beta_{4,t=5}$	0.446	0.597
6	$\beta_{2,t=6}$	**-2.279**	**0.047**	$\beta_{2,t=6} + \beta_{4,t=6}$	-1.271	0.137
7	$\beta_{2,t=7}$	**-0.715**	**0.092**	$\beta_{2,t=7} + \beta_{4,t=7}$	-1.667	0.153
8	$\beta_{2,t=8}$	**-1.510**	**0.026**	$\beta_{2,t=8} + \beta_{4,t=8}$	-0.895	0.202
9	$\beta_{2,t=9}$	**-1.169**	**0.085**	$\beta_{2,t=9} + \beta_{4,t=9}$	-1.309	0.124
10	$\beta_{2,t=10}$	**-0.923**	**0.086**	$\beta_{2,t=10} + \beta_{4,t=10}$	0.857	0.739
11	$\beta_{2,t=11}$	**-1.192**	**0.062**	$\beta_{2,t=11} + \beta_{4,t=11}$	1.664	0.735
12	$\beta_{2,t=12}$	**-1.411**	**0.051**	$\beta_{2,t=12} + \beta_{4,t=12}$	2.549	0.937

TABLE 7
Change in the information content of earnings after restatement announcements - Analysis of the restricted sample (reconciliation with Wilson 2008)

This table reports regression results from the following model:

$$UR_{it} = \alpha_1 + \sum_{t=1}^{12} \alpha_{2,t} QTR_t + \beta_1 UE_{it} + \sum_{t=1}^{12} \beta_{2,t}[UE_{it} \times QTR_t] + \beta_3 NONLINEAR_{it} + \sum_{k=4}^{10} \beta_k CONTROLS_{it} + \sum_{k=11}^{17} \beta_k [UE_{it} \times CONTROLS_{it}] + \varepsilon_{it} \quad (1)$$

where $CONTROLS_{it} = \{MTB_{it}, BETA_{it}, SIZE_{it}, LOSS_{it}, Q4_{it}, PREDICT_{it}, PERSIST_{it}\}$

UR_{it} is the cumulative abnormal returns in the three-day window around the earnings announcement date for firm *i* at quarter *t*, where the abnormal return is defined as the firm's return less the CRSP value-weighted market return. QTR_t is an indicator variable equal to 1 if the earnings announcement pertains to quarter *t* and 0 otherwise. UE_{it} is firm *i*'s unexpected quarterly earnings in quarter *t*, scaled by price at the end of the fiscal quarter, with expected earnings proxied by the median of analysts' earnings forecasts issued within 60 days prior to quarter t's earnings announcement date. Please see Panel B of Table 2 for the definition of control variables. The control variables are mean-adjusted so that the coefficient on *UE* can be interpreted as the earnings response coefficient (ERC) for a firm with average firm characteristics.

The table reports the coefficient estimates, the corresponding p-values (one-sided for the coefficients in the box and two-sided otherwise), the number of observations, and adjusted R^2. The p-values are based on standard errors adjusted for firm-level clustering. The regression is based on the restricted sample – 8,157 firm-quarters with required data from 641 restatements announced in the period 1997-2006. All restatement firms are required to have sufficient data for the two quarters immediately around the restatement announcement. We tabulate the results after eliminating outliers, defined as observations with studentized residuals greater than 2.5 in absolute value.

TABLE 7 (cont'd)

	All restatements (1)		Material restatements (2)		Other restatements (3)	
	Coef.	p-value	Coef.	p-value	Coef.	p-value
Intercept	-0.002	0.374	0.006	0.066	-0.005	0.027
UE	3.456	0.001	3.610	0.001	3.444	0.001
$UE \times QTR_1$	**-1.516**	**0.001**	**-2.676**	**0.001**	**-0.913**	**0.090**
$UE \times QTR_2$	**-1.572**	**0.001**	**-2.502**	**0.001**	**-1.530**	**0.057**
$UE \times QTR_3$	**-2.112**	**0.001**	**-2.660**	**0.001**	**-1.568**	**0.051**
$UE \times QTR_4$	**-1.429**	**0.009**	**-2.770**	**0.001**	0.680	0.795
$UE \times QTR_5$	-0.351	0.267	**-2.374**	**0.001**	0.728	0.786
$UE \times QTR_6$	-0.588	0.194	**-1.805**	**0.019**	0.230	0.593
$UE \times QTR_7$	-0.012	0.493	**-0.993**	**0.087**	0.826	0.770
$UE \times QTR_8$	-0.701	0.149	**-1.271**	**0.053**	-0.564	0.257
$UE \times QTR_9$	-0.668	0.160	-1.167	0.109	-0.417	0.345
$UE \times QTR_{10}$	-0.856	0.128	-1.197	0.107	-0.266	0.396
$UE \times QTR_{11}$	0.003	0.502	-1.375	0.106	1.070	0.932
$UE \times QTR_{12}$	-0.607	0.196	-1.130	0.122	0.339	0.661
NONLINEAR	3.132	0.340	2.478	0.487	6.658	0.200
MTB	-0.002	0.114	-0.001	0.719	-0.001	0.181
BETA	-0.001	0.233	0.000	0.911	-0.002	0.104
SIZE	0.000	0.631	-0.001	0.424	-0.001	0.516
LOSS	-0.006	0.001	-0.003	0.093	-0.008	0.001
Q4	0.002	0.028	-0.002	0.315	0.003	0.003
PREDICT	0.001	0.618	0.000	0.992	-0.001	0.589
PERSIST	0.001	0.196	0.001	0.555	0.001	0.368
UE× MTB	0.100	0.462	-0.092	0.425	0.445	0.121
UE× BETA	-0.037	0.828	0.451	0.054	-0.292	0.184
UE× SIZE	0.458	0.035	0.370	0.098	0.615	0.026
UE× LOSS	-0.365	0.009	-0.384	0.013	-0.448	0.029
UE× Q4	-0.361	0.007	0.136	0.266	-0.675	0.001
UE× PREDICT	-0.142	0.101	-0.175	0.128	-0.073	0.539
UE× PERSIST	-0.212	0.242	-0.250	0.186	-0.100	0.639
Quarter-fixed effects	Yes		Yes		Yes	
N	8,157		2,016		6,141	
Adj. R^2	0.084		0.122		0.090	