

The Importance of Distinguishing Errors from Irregularities in Restatement Research: The Case of Restatements and CEO/CFO Turnover

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First Version: September 2006
Current Version: September 2007

Abstract: Research on restatements has grown significantly in recent years. Many of these studies test hypotheses about the causes and consequences of intentional managerial misreporting but rely on restatement data (such as the GAO database) that contains both irregularities (intentional misstatements) and errors (unintentional misstatements). We argue that researchers can significantly enhance the power of tests related to restatements by distinguishing between errors and irregularities, particularly in recent periods when the relative frequency of error-related restatements is increasing. Based on the reading of numerous restatement announcements and the guidance boards receive from lawyers and the SEC on how to respond to suspicions of deliberate misreporting, we propose a straightforward procedure for classifying restatements as either errors or irregularities. We validate our procedure by showing that most of the restatements we classify as irregularities are followed by fraud-related class action lawsuits compared to only one lawsuit in the group of restatements classified as errors. As further validation of our proxy, we report that the market reaction to irregularities (-14%) is also significantly more negative than it is to errors (-2%). Finally, we demonstrate the importance of distinguishing errors from irregularities by showing the impact it has on inferences about the relation between restatements and CEO/CFO Turnover.

The authors thank the Smeal College of Business for financial support. We also thank Marty Butler, Rich Frankel, Scott Richardson, Nicole Thorne Jenkins, Tzachi Zach and workshop participants at the 2007 American Accounting Association Annual Conference, Barclays Global Investors, Boston University, Dartmouth College, University of Kentucky, University of Minnesota, Penn State University and Washington University-St. Louis for helpful comments. The previous version of this paper was titled, "Management Intent and CEO and CFO Turnover around Earnings Restatements: Evidence from the Post-Enron Era"

The Importance of Distinguishing Errors from Irregularities in Restatement Research: The Case of Restatements and CEO/CFO Turnover

1. Introduction

Accounting research on the causes and consequences of financial restatements has grown significantly in recent years. Such work focuses primarily on those restatements arising from the misapplication of GAAP, which can be classified as either *errors* (i.e., unintentional misapplications of GAAP) or *irregularities* (i.e., intentional misreporting).¹ Many of these studies test hypotheses about restatements involving irregularities but use data containing a mix of both errors and irregularities. We argue that the power of hypotheses tested on accounting restatements can be significantly improved either by limiting restatement samples to irregularities or by including a control variable distinguishing errors from irregularities.

Prior research supports the notion that investors, regulators, boards, and other stockholders differentiate between irregularities and errors. For example, Palmrose, Richardson, and Scholz (2004) report that the market reaction to restatement announcements related to fraud (i.e., deliberate misreporting) is -20% but is only 6% for non-fraud restatements. Samples constructed using only firms actually prosecuted for financial fraud or listed in the *Accounting and Auditing Enforcement Releases (AAERs)* would likely maintain the distinction between restatements caused by errors and restatements related to irregularities but would include only a subset of restatements due to irregularities.²

Unfortunately, the larger General Accounting Office (GAO) database, which is the most commonly used data source for recent restatement studies, does not contain a variable that

¹ SAS 53 defines irregularities as “intentional misstatements or omissions of amounts or disclosures in financial statements.” Technically, an irregularity only rises to fraud if users rely on the financial statements to their detriment (Young 2002). However, the distinction between fraud and irregularities has become blurred over the years and recent SAS guidelines (e.g., SAS 82) use the term “fraud” to refer to all intentional misstatements. We use the more inclusive term “irregularities” as there is still a subtle legal difference between irregularity and fraud.

² Limited resources, high burden of proof requirements, and granted leniency for self-remediation lead the SEC to pursue enforcement actions or recommend criminal charges in only a subset of cases of suspected fraud. See Feroz, Park, and Pastena (1991) for a description of the enforcement process.

differentiates between errors and irregularities.³ In fact, there is some confusion about the makeup of the database. In a 2002 letter to Senator Sarbanes, the GAO describes the database as “...restatements we identified as having been made because of accounting irregularities.” This characterization implies that the restatements included in the database are caused by intentional misapplication of GAAP, so it is not unreasonable that researchers might assume the database consists only of irregularities when it actually contains both errors and irregularities.

In this study, we propose a straightforward procedure for distinguishing errors from irregularities in a large sample of restatements. Ideally, all firms would explicitly disclose whether the restatement was caused by an irregularity or an error, but many do not.⁴ Since we cannot observe managerial intent and explicit disclosure by firms is sporadic, we construct our own procedure for classifying restatements as errors or irregularities. Based on our reading of numerous restatement disclosures, if the word “fraud” or “irregularity” is not explicitly used, the best indicator of an irregularity is the presence of an independent investigation into the accounting matter. This includes investigations undertaken by the SEC, the Attorney General’s Office, or independent investigations initiated by the company’s board.

Our reasoning for classifying firms announcing independent investigations as restatements due to irregularities is based on guidance boards receive from lawyers and the SEC on appropriate actions to take when confronted with suspicions of intentional misreporting. Faced with a potential accounting irregularity, boards are encouraged to launch a special committee to undertake an investigation, to contact the SEC, and to issue a press release to convey to investors that previous financial statements cannot be relied upon (Young 2002). By undertaking their own independent investigation of an irregularity, proactively contacting the SEC, and taking swift corrective action, firms can mitigate SEC sanctions or even reduce the likelihood of SEC

³ The GAO has released two restatement databases containing restatements announced between January 1, 1997 and September 30, 2005. An August 1, 2007 Google Scholar search for “GAO database restatements” found 275 papers, which provides a rough estimate of the large number of published and working papers using the GAO database.

⁴ As reported in Table 2, only about 41% of restatements we classify as irregularities explicitly use the term “irregularity.”

enforcement action altogether.⁵ As boards are more likely to perceive benefit in initiating a costly investigation for cases where deliberate misreporting is suspected, we use the presence of such an independent investigation to distinguish between errors and irregularities for restatements that cannot otherwise be classified.

For our primary analysis, we review all 8-K filings between 2002 and 2005 and identify restatements that correct previous misapplications of GAAP.⁶ Using the criteria outlined above, we classify 24% of the restatements as irregularities and 76% as errors.⁷ This is consistent with recent reports from the SEC indicating that a substantial percentage of recent restatements are related to basic accounting mistakes or data errors.⁸

We conduct several tests to validate our restatement classification. First, we compare the mean cumulative abnormal returns around the restatement announcements of the errors sample to the mean of the irregularities sample. Evidence reported by Palmrose et al. (2004) suggests that the market reaction to irregularities should be much more negative than it is to errors. One indication that our classification procedure is effective, therefore, would be a significant difference in the market reaction between the two groups. The mean (median) CARs for the error sample is -1.93% (-0.90%) compared to -13.64% (-19.4%) for the irregularities sample. The significantly more negative CARs for the irregularities sample provides validating support for the effectiveness of our procedure for separating irregularities from errors.

As a second validity test, we compare the frequency of class action lawsuits (for financial statement fraud) in the irregularities sample to the errors sample. A class action lawsuit alleging financial statement fraud would need to document conscious misreporting, so such suits might

⁵ <http://www.sec.gov/litigation/investreport/34-44969.htm>

⁶ Our inclusion criteria are the same used by the GAO during the same time period, but we obtain the restatement announcements from 8-K filings (the second GAO database had not yet been released at the time we began data collection) while they search news databases (e.g., Lexis/Nexis) to identify their restatements.

⁷ We intend to make an expanded version of this database available at <http://aleone.smeal.psu.edu/restatements.html>

⁸ See, for example, remarks by Scott A. Taub, Acting Chief Accountant of the SEC, in his speech at the Financial Executives International Meeting on November 17, 2006.

exist for restatements related to irregularities but will likely not exist for those related to errors. If our partitioning procedure works well, we should find that the class action lawsuits occur for firms in our irregularities sample but not in our errors sample. Consistent with this, we find that 84 of the 105 irregularities in our final sample had contemporaneous class action lawsuits. Of the 21 that did not, 17 were not being traded at the time of the announcement, had a market cap below \$25 million, were involved in an irregularity that occurred only at a subsidiary (not the parent-level), or had positive returns around the announcement. All of these factors would make a class action lawsuit unlikely even in the presence of an irregularity as these factors make it difficult for investors to prove that they relied on this information to their detriment or limit plaintiffs' ability to recover damages. This leaves only four observations that we classified as an irregularity where a class action lawsuit might be expected but is not found. In our final error sample of 83 restatements, we find only one class action lawsuit. Overall, both the CARs and the class action lawsuit analyses suggest that our procedure for partitioning errors and irregularities works well.

To demonstrate the importance of partitioning errors versus irregularities, we re-examine the relation between restatements and CEO/CFO turnover studied in earlier research. Studies generally report that executive turnover rates around restatements are significantly different from turnover rates in a control sample of non-restaters, although some question whether the observed turnover rates are too low to be consistent with effective board monitoring and strong corporate governance.⁹ For example, in a recent study on restatements, Collins, Reitenga, and Sanchez-Cuevas (2005) conclude that, "half the sample appear to have taken little or no action to penalize management." We contend that the lower than expected turnover rates observed in prior research are likely due to mixing together restatements due to both errors and irregularities.

Given that investors seem to view the restatements involving fraud as more severe, management's intention to deliberately misreport is likely to play a significant role in boards'

⁹ For examples of turnover rates in studies where there is statistically significant difference in turnover rates for restatement firms see: Desai, Hogan, and Wilkins (2006), Land (2006), Arthaud-Day, Certo, Dalton, and Dalton (2006), and Jayaraman, Mulford, and Wedge (2004).

decision to terminate managers when these misstatements are identified. Furthermore, although the termination of a top executive may be partly to punish the manager for the loss in shareholder value caused by the restatement, the termination is also a highly visible means of restoring financial reporting credibility, something that Farber (2005) notes is an important priority for firms accused of fraud. Consequently, we predict CEO and CFO turnover rates will be higher for restatements due to irregularities than those due to errors.

As expected, when we partition the restatements, turnover rates are much higher for irregularities than for errors. The percentage of restating firms experiencing turnover in the 13 months surrounding the restatements (six months before to six months after) is 49% (64%) for CEOs (CFOs) for irregularities but only 8% (12%) for errors. After excluding subsidiary-level restatements and expanding the turnover window to four years (2 years before and 2 years after) to be more consistent with prior research, the (untabulated) turnover rates for irregularities restatements are 67% for CEOs and 85% for CFOs.¹⁰ Furthermore, in 91% of irregularities, either the CEO or CFO leaves the firm. This evidence suggests that the relatively low turnover rates documented in past restatement research are due largely to the inclusion of errors that typically do not warrant firing senior managers. When the restatements are the result of intentional misbehavior (i.e., irregularities), boards take swift action to dismiss managers.

To control for other factors that might give rise to CEO/CFO turnover, we estimate logistic regressions for both CEO and CFO turnover. We find that additional controls, including leverage, the annual or quarterly nature of the restatement, ROA, CEO ownership, and long-window (day 240 to day 8) cumulative abnormal returns (CARs), do not diminish the significance of our severity measure (irregularity) in predicting executive turnover. Our multivariate tests show that, excluding restatements related to subsidiaries, both CEO and CFO turnover are significantly more likely if the restatement relates to an irregularity rather than to an unintentional error.

¹⁰ We show that most turnover (roughly 80%) linked to an irregularity occurs within a thirteen-month window surrounding the restatement announcement (six months before and six months after). Consequently, tests that use shorter windows (as opposed to early research that used windows as long as five years) are likely more appropriate.

Finally, we demonstrate the importance of separating errors from irregularities by examining the changes in the causes and consequences of restatements over time. In the case of restatements and CEO/CFO turnover, one might argue that the increased political and regulatory pressure in the wake of Enron and other accounting scandals affected executive turnover rates around restatements. Senator Sarbanes' 2002 statement that managers who step outside of GAAP "ought to be punished, and punished very severely" may reflect an increased intolerance for managerial misreporting in the post-Enron era.¹¹ Despite its many critics, the Sarbanes-Oxley Act certainly aims to make widespread governance improvements. This raises the question of whether executive turnover around restatements may be more likely in the current regime than in prior periods.

We compare board termination decisions in our 2002-2005 sample to a sample of restatements in 1997-1998 that we construct from the 2003 GAO database. Unexpectedly, frequency analysis suggests that the overall CEO and CFO turnover rates around restatements are lower in the later time period. However, the decrease in overall turnover is attributable to the decreasing proportion of irregularities among total restatements. We observe that the frequency of restatements caused by errors has gone up at a much faster rate than restatements caused by irregularities. As shown in Figure 5, roughly 48% of the restatements in our 1997-1998 sample relate to irregularities as compared to only 24% in our 2002-2005 sample. This suggests that when assessing turnover rates across time it is important to also consider changes in the mix of restatements over the same period. Once we eliminate restatements classified as errors, we find that the turnover rates for restatements due to irregularities have actually changed very little over time. Hence, our findings highlight the importance of distinguishing irregularities from errors to avoid making incorrect inferences for hypotheses involving managerial misconduct.

Although not a perfect measure of managerial intent (because management intent is impossible to actually observe), our procedure for identifying irregularities is fairly easy to

¹¹ Senator Paul S. Sarbanes, Senate Floor Statement on July 8, 2002 on the Public Company Accounting Reform and Investor Protection Act of 2002

implement and appears to be very effective at capturing important differences in restatements. For researchers, our findings suggest that partitioning on a proxy for irregularity can significantly enhance the power of tests in most studies related to restatements (particularly those that rely on the GAO database) and in certain cases may be necessary to avoid incorrect inferences. This is relevant for not only studies on turnover around restatements but also studies on other topics (e.g., insider trading, cost of capital, information content, etc.) that utilize a restatement setting.

The remainder of the paper is organized as follows. Section 2 discusses our restatement classification procedure. Section 3 describes our sample selection procedures and reports descriptive statistics. Section 4 discusses the results of our turnover example, and Section 5 concludes.

2.0 Restatements, the GAO database, and related research

A small sampling of research on accounting restatements includes such topics as: the market reaction to earnings restatements (Palmrose et al. 2004), restatements and the cost of capital (Hribar and Jenkins 2004), restatements and executive turnover (Desai et al. 2006, Jayaramnan et al 2004, Collins et al 2005, Land 2005, and Burks 2007), the information content of earnings after restatements (Wilson 2006), executive compensation and incentives to restate earnings (Burns and Kedia 2006 and Efendi, Srivastava, and Swanson 2007), and restatements and audit committee consequences (Srinivasan 2005). Although the subject matter varies widely, these studies generally have two things in common. First, these studies explore the causes and consequences of restatements with hypotheses based on the premise that restatements are due to aggressive accounting (intentional misreporting). For example, Kedia and Philippon (2007) study the economics of fraudulent reporting and refer to the misstated period for all the restatements in their sample as the “fraudulent reporting period.”¹²

¹² As other examples, the executive turnover studies hypothesize that executives are fired for aggressive accounting, and the compensation and restatement studies hypothesize that managers intentionally misstate earnings for compensation-related reasons.

Second, most of the recent restatements studies obtain restatement samples from the GAO database.¹³ Given the wide use of this database and the underlying assumption of deliberate misreporting made by most studies, further analysis of the types of restatements contained in the database is important for interpreting results of this line of research. If, for example, a large fraction of the restatements included in the GAO database are errors and not irregularities, we can conclude that the power of the tests conducted could be improved by concentrating only on irregularities within the dataset.

2.1 The GAO database

On October 4, 2002, the GAO issued a report titled “Financial Statement Restatements: Trends, Market Impacts, Regulatory Responses, and Remaining Challenges.” According to a January 17, 2003, GAO letter to Senator Sarbanes, the report is based on an analysis of “a listing of 919 restatements we identified as having been made because of **accounting irregularities** (emphasis ours) between January 1, 1997, and June 30, 2002.” This database of restatements was released to the public in early 2003, and a second database containing 1,390 restatements occurring between July 1, 2002 and September 30, 2005 was released in 2006.

The Chicago Bridge and Iron Works (CB&I) restatement is an example of a restatement arising from an irregularity that is contained in the 2006 GAO database. On October 31, 2005, CB&I announced that “the delay in releasing third quarter 2005 financial results was precipitated by a memo from a senior member of CB&I’s accounting department alleging accounting improprieties.”¹⁴ The accusation of misbehavior prompted an investigation by the board of directors, which revealed that there were deliberate accounting irregularities that would necessitate a restatement. This is representative of the type of misstatement that underlies the hypotheses being tested in a typical study that uses the GAO restatement database.

¹³ For just a few examples, Arthaud-Day et al. (2006), Badertscher et al. (2006), Desai et al. (2006), and Efendi et al. (2007) all use the GAO database to construct their sample.

¹⁴ <http://www.sec.gov/Archives/edgar/data/1027884/000095012905010329/h29789exv99w1.htm>

Surprisingly, given the GAOs own reference to the database as one consisting of irregularities, the GAO’s inclusion criteria actually resulted in many restatements caused only by errors appearing in the database. For example, the following is contained in an Applebee’s International restatement announcement that is included in the 2006 GAO database: “On February 9, 2005... like many other companies in the restaurant, retail and other industries, it had determined that it would correct its accounting treatment for leases.”¹⁵ Many retailers restated after the SEC issued a letter on February 7, 2005 clarifying their position on the treatment of certain lease features. As the SEC’s view on the proper treatment of a particular aspect of accounting for leases was not well understood prior to the SEC position letter and there is no evidence that Applebee’s was consciously misreporting, this accounting error does not meet the criteria for an irregularity. This is just one of many examples of restatements in the GAO database that is caused by an error rather than an irregularity.¹⁶

Most of the studies using the GAO database assume that the restatements are predominantly related to irregularities (i.e., intentional misstatements). This is not surprising given the GAO’s own reference to the restatements as “irregularities.” However, as is evident from the Applebee’s example, there are in fact restatements arising from unintentional errors in the GAO database. The extent of the loss of power in hypothesis testing using the GAO database that does not separate errors from irregularities likely depends on the frequency of errors versus irregularities.

2.1 Distinguishing Errors from Irregularities

We argue that research on the causes and consequences of restatements can be significantly improved by distinguishing errors from irregularities for two reasons. The first is on theoretical grounds. As discussed above the hypotheses being tested in the vast majority of restatement research assume that the financial misstatement was *intentional*. For this line of research on

¹⁵ <http://www.sec.gov/Archives/edgar/data/853665/000085366505000063/restatement8k.txt>

¹⁶ Other non-irregularity examples include restatements related to bookkeeping, data entry, and spreadsheet formula errors as well as apparent unintentional errors in the application of GAAP for complex items such as foreign currency adjustments, deferred tax liabilities, derivatives, and convertible debt.

misstatements, it is more appropriate for such studies to focus on irregularities rather than on errors.¹⁷ The second reason is that investors and regulators view irregularities as being much more severe, and controlling for the type (error versus irregularity) is likely to improve the power of tests and remove a possibility for incorrect inferences.

The most compelling evidence for the difference in restatement severity is that provided by Palmrose et al. (2004) who report that the market reaction to restatements involving fraud (those with associated *AAER* or that explicitly disclose fraud/irregularity) is -20% as compared to only -6% for non-fraud cases. The authors argue that the stock price reaction is likely greater in cases of fraud for two reasons. First, the revelation of fraud is likely to increase the discount rate because it reduces the reliability of management disclosures. Second, the revelation of fraud lead to increased costs related to litigation and regulatory actions, additional future monitoring, and future regulatory scrutiny.

The Palmrose et al. evidence suggests that, depending on the research question and the extent to which a researcher's sample contains a mix of errors and irregularities (such as in the GAO database), more powerful tests can be conducted by either controlling for the type of restatement (irregularity versus error) or by focusing exclusively on irregularities. As previously discussed, samples constructed using only firms actually prosecuted for financial fraud or listed in *AAERs* would maintain the distinction between restatements caused by errors and restatements related to irregularities but would likely include only a subset of the restatements due to irregularities. However, beginning with a larger alternate database (such as the GAO database) requires a systematic way to distinguish misstatements caused by irregularities from those caused by errors.

As we cannot observe managerial intent and explicit use of the word "irregularity" or "fraud" is sporadic, we construct our own procedure for classifying restatements as errors or irregularities. Based on our reading of numerous restatement disclosures, when the words "fraud"

¹⁷ The literature on restatements is vast and not all restatement studies assume intent. For example, Srinivasan (2005) examines the consequences of audit committee failure. In this case, even errors without intent could be construed as a failure of the audit committee. Therefore, although it would likely be helpful to distinguish error from irregularities, including errors in the analysis is not unreasonable.

or “irregularity” are not explicitly used, the next best indicator of an irregularity is the presence of an independent investigation into the accounting matter. This includes investigations undertaken by the SEC, the Attorney General’s Office, or independent investigations initiated by the company’s board. The link between an SEC or a criminal investigation into accounting matters and suspected fraud is fairly straightforward and is our secondary signal if a variant of “fraud” or “irregularity” is not used in the announcement. Lastly, we use the presence or absence of a board-initiated independent investigation to distinguish between errors and irregularities for restatements that cannot otherwise be classified. A board-initiated independent investigation, along with proactive contact with the SEC and internal corrective actions, is one tool that firms can use to mitigate SEC sanctions or even reduce the likelihood of SEC enforcement action altogether.¹⁸ As boards are more likely to perceive benefit in initiating a costly investigation for cases where deliberate misreporting is suspected (and the potential penalties are thus much higher), we use the presence of such an independent investigation as an indicator of an irregularity.

2.2 Irregularities at the Parent-Level versus the Subsidiary-Level

In some restatements the GAAP violation is isolated to a foreign subsidiary or distinct business unit within the firm. For example, Amcon Distributing Company filed an 8-K disclosing management's investigation into potential accounting irregularities that were discovered in the inventory accounting records of Hawaiian Natural Water Co., Inc., a wholly owned AMCON subsidiary. When irregularities are isolated to the subsidiary, it is likely that the firm’s overall financial reporting credibility will not be undermined to the same extent it would in the case of parent-level irregularities. For this reason we also distinguish between parent-level and subsidiary-level restatements.

¹⁸ <http://www.sec.gov/litigation/investreport/34-44969.htm>

3.0 Sample Selection and Descriptive Statistics

3.1 Sample Selection

Table 1 summarizes our restatement sample selection. Restatement firms are identified by searching the 8-K filings on the SEC EDGAR site from January 1, 2002 – June 15, 2006.¹⁹ To be included in our sample, a firm must announce an earnings restatement and reference an accounting error, an irregularity, or some type of investigation into accounting matters.²⁰ This procedure yields a total of 630 restatements. Using the classification scheme described above, 460 (73%) of these restatements are classified as errors and 170 (27%) are classified as irregularities. Consistent with prior research, we exclude firms in the financial services industry (SIC codes 6000-6999) as well as firms that do not have data available on Compustat. This leaves 361 restatements caused by errors and 132 restatements caused by irregularities.

To reduce the cost of data collection, we randomly select approximately 25% of the restatements arising from errors. We include all irregularities to maintain power in later tests that look only at irregularities. After reading restatement announcements, we also drop 10 additional observations where the restatement had no income effect to be consistent with prior research. Lastly, we eliminate 27 cases where the accounting investigation ultimately did not lead to a restatement or is not yet completed. This leaves 83 errors and 105 irregularities for a total of 188 observations.

To adjust for the disproportional sampling (we select all irregularities but only a fraction of errors), we follow Manski and Lerman (1977) and weight by estimated population proportions. Error (irregularity) restatements are assigned a weight of 3.9(1). The weight of 3.9 for the errors

¹⁹ Beginning on August 14, 2004, the SEC now requires firms to file an 8-K with Item 4.02 (Non-Reliance of Previously Issued Financial Statements) whenever it is determined that previously issued financial statements should no longer be relied upon. This disclosure change likely enables us to identify more restatements in the time-period after 2004 for two reasons. First, prior to this change, although firms often disclose restatements either at the time a pending restatement is expected or at the time of an earnings announcement, such disclosure was not explicitly required. Second, the new coding scheme that includes a separate category explicitly for restatements greatly increases the accuracy of our search procedures. We do not believe this biases our tests.

²⁰ The specific regular expressions used to identify restatements are available from the authors upon request.

sample is computed by dividing the total number of restatements identified in the population (361) by the total number of observations sampled (93).

3.2 Validity of Irregularity Classification

We argue that irregularities are more severe than errors and that we can use the existence of an independent investigation to distinguish between irregularities and errors when explicit disclosure is not provided. To validate that we are obtaining a meaningful partition, we analyze the stock returns between 90 days prior to 90 days following the restatement announcement. If irregularities are more severe and if we are correctly identifying irregularities, then the market reaction for the irregularities sample should be more negative than for the errors sample. For comparison with prior research, Figure 1 first reports population-proportion adjusted mean and median CARs from t-90 to t+90 for the entire restatement sample.²¹

Consistent with prior research, there is a noticeable dip in returns in the days surrounding the restatement announcement with mean (median) CAR of -4.9% (-3.1%) from seven days before to seven days after the announcement. These returns are not as negative as reported in earlier research. For example, Palmrose et al. (2004) report mean (median) 2-day CARs of -9.5% (-5.1%), for restatements announced between 1995 and 1999. This is potentially explained by a change in the mix of restatements over time, as suggested by Figure 5 and discussed further in Section 4.3.4. Returns appear to be declining prior to the announcement, but we believe this decline is largely attributable to the difficulty in measuring the “information event.” We use the date that the firm announces that it will restate earnings as the announcement date, but firms may disclose that they are investigating accounting issues or considering a restatement in an earlier press release. These earlier announcements likely lead to trading in anticipation of the restatement.

²¹ Expected returns used to compute CARs are CRSP value-weighted returns with dividends. To avoid survivor bias, we do not require firms to trade on all 180 days. The number of observations ranges from 152-169.

Figure 2 reports the mean and median CARs separately for errors and irregularities.²² The CARs for our errors sample do not drift far from zero over the entire 180-day period and exhibit very little reaction to the restatement announcement. The returns are actually positive leading up to the announcement but mean (median) CARs are -1.93% (-0.90%) in the 15-day window around the announcement. In contrast, the CARs for the irregularities group decline substantially. The mean (median) CARs are -13.64% (19.14%) for the irregularity group around the same event window. In addition, the CARs drift -13% (12%) between day -90 to day -8 for the irregularities. Again, this downward drift prior to the announcement date suggests that a number of firms in our sample disclosed the possibility of a restatement before they announced definitively that they would restate earnings. Overall, this evidence is consistent with our classification of irregularities versus errors capturing the market's perception of the seriousness of the restatement.

To further validate that our procedure for identifying irregularities is effective, we compare the frequency of class action lawsuits claiming fraud for our error and irregularity samples. A class action lawsuit alleging financial statement fraud would need to document conscious misreporting, so such suits might exist for restatements related to irregularities but will likely not exist for those related to errors. If our partitioning procedure works well, we should find that the class action lawsuits occur for firms in our irregularities sample but not in our errors sample. Table 2, Panel A, reports a frequency count of errors and irregularities versus the filing of a class action lawsuit.²³ The first three columns of Panel A provide counts based on our classification criteria (announcement of an irregularity, regulatory investigation, or other independent investigation). Some firms have more than one of the required conditions (e.g., both an SEC investigation and an independent board investigation), so the three columns sum up to more than the "Total" column.

²² The number of observations ranges from 84 to 101 for irregularities and 68 to 69 for errors.

²³ We obtained class action lawsuit information from Lexis/Nexis and the Stanford Class Action Clearinghouse (<http://securities.stanford.edu>).

We find that 84 of the 105 irregularities in our final sample had contemporaneous class action lawsuits. Of the 21 cases without a class action suit, additional analysis (reported in Panel B) reveals that most these restatements appear to be cases where there are limited benefits to filing a suit. For 17 of these 21 cases, one or more of the following conditions existed: The firm's stock was not being traded at the time of the announcement, the firm had a market value below \$25 million, the restatement was at the subsidiary level, or the firm had positive announcement returns. There were only four cases where the restatement was code as an irregularity and there was no obvious reason to explain why a class action lawsuit was not filed. This again implies that we are properly identifying irregularities. It also suggests that our classification scheme is preferable to simply using the presence of a class action lawsuit to identify irregularities because using class action lawsuits will cause researchers to misclassify cases where fraud occurs but lawyers do not find it beneficial to sue (e.g., smaller firms or limited damages). We find only one case where a class action lawsuit was initiated but we did not code the restatement as being due to an irregularity. Overall, these findings suggest that classification appears to work quite well at distinguishing irregularities from errors.

4.0 Restatements and CEO/CFO turnover

To demonstrate the importance of partitioning errors versus irregularities, we re-examine the consequences that managers face for deliberate misreporting. Managers of restating firms likely face reduced compensation, decreased credibility, loss of employment, and even criminal charges depending on the severity of the GAAP violation. Although research on the effect of restatements on subsequent managerial compensation has recently emerged (e.g., Collins et al. (2005) and Glass, Lewis, and Co. (2005)), we follow earlier research and focus on loss of employment as the most severe punishment implementable by the board of directors. The complete intolerance for fraudulent reporting evident in much of the new post-Enron regulations and policy discussions suggest that we should see misbehaving executives being fired rather than simply receiving reduced bonuses.

Surprisingly, some prior turnover studies find no evidence that restatements, even restatements linked to explicit fraud, significantly affect the odds of CEO turnover. For example, Beneish (1999) finds no difference in CEO turnover for firms that violate GAAP during 1987-1993 as compared to a control sample of compliant firms, and Agrawal, Jaffe, and Karpoff (1999) similarly find little evidence that firms suspected of fraud (including accounting fraud) between 1978 and 1992 have any higher executive turnover than non-fraud firms.

Other studies do find that accounting restatements increase the likelihood of managerial turnover, although the number of misstating firms that do *not* experience any turnover is still somewhat higher than researchers expect. The percentage of firms experiencing executive turnover in prior samples varies depending on the number of executives and the time windows considered: Desai et al. (2006) find 51% of restating firms in 1997-1998 have turnover of their CEO, Chairman, or President within 2 years after restatement; Land (2006) estimates 45% of firms restating between 1996 and 1999 have CEO turnover in the year after the restatement; in the 2 years after the restatement, Arthaud-Day et al. (2006) observe CEO turnover in 43% and CFO turnover in 55% of their 1998-1999 sample of restating firms; and Jayaraman et al. (2004) find that 48% of their restating firms experience turnover of their CEO, Chairman, or President and 45% experience turnover of their CFO, Treasurer, or Controller in the 4 years after being listed in the 1999-2000 *AAERs*. Overall, past research suggests that a considerable portion of restating firms do not replace management in response to financial reporting failures.

A natural question given the existing evidence is whether the lower than expected turnover rates for restating firms is due to an agency problem, where boards fail to take act expeditiously to remove senior management when they should, or because a large fraction of restatements are simple errors and do not warrant executive turnover. Distinguishing between errors and irregularities should help to answer this question.

In addition to our error versus irregularity and parent versus subsidiary-level classifications discussed in the previous section, we also control for other factors that prior research suggests are likely related to turnover. Prior restatement studies (e.g., Palmrose and Scholz (2004) and Land

(2006)) argue that restatements of unaudited interim reports are viewed as less severe than restatements of audited annual reports, so we include a dummy for annual restatements. These studies also hypothesize that restatements of a larger dollar magnitude are more concerning to investors, so we include a scaled measure of the cumulative effect of the restatement. To control for potential entrenchment effects such as those documented in Denis, Denis, and Sarin (1997), we consider board and CEO ownership. Many prior studies, including Gilson (1989), find that turnover is more likely for financially distressed firms, so we also control for distress with LEVERAGE (debt to total assets).²⁴ Finally, we control for past stock performance, measured as the CAR in the 240 trading days (~ 1 year) prior to the restatement announcement up to 8 days prior to the announcement. This controls for potential performance-related reasons for terminating the CEO/CFO, such as those documented by Warner, Watts, and Wruck (1988) or Mian (2001). We also control for size by including indicator variables for size quintiles. To test our predictions for our severity measures while controlling for all the factors described above, we estimate the following model for CEO, CFO, and CEO or CFO turnover:

$$\begin{aligned}
 \text{TURNOVER} = & \beta_0 + \beta_1 \text{IRREGULARITY} + \beta_2 \text{SUBSIDIARY} \\
 & + \beta_3 \text{IRREGULARITY} * \text{SUBSIDIARY} \\
 & + \beta_4 \text{MAGNITUDE} + \beta_5 \text{ANNUAL} + \beta_6 \text{CEO_EQUITY} + \beta_7 \text{LEVERAGE} + \beta_8 \text{ROA} + \beta_9 \text{CAR} \\
 & + \beta_{10} \text{Size Quintile 1} + \beta_{11} \text{Size Quintile 2} + \beta_{12} \text{Size Quintile 4} + \beta_{13} \text{Size Quintile 5} + \varepsilon
 \end{aligned} \tag{1}$$

where:

TURNOVER=1 if the CEO (or CFO) leaves the firm within the 6 months before or the 6 months after the restatement announcement and 0 otherwise.

IRREGULARITY=1 if the restatement is classified as an irregularity (i.e., irregularity, fraud, SEC investigation, independent board investigation) and 0 otherwise.

MAGNITUDE= the cumulative amount of net income overstatement scaled by total assets in the year prior to the restatement announcement.²⁵

SUBSIDIARY=1 if the GAAP violation occurred in a subsidiary and 0 otherwise.

²⁴ We used the Altman (1968) Z-Score as an alternative measure of financial distress with comparable results. Tabulated results use leverage, rather than Z-score, as it allows us to retain more observations.

²⁵ Our MAGNITUDE variable is consistent with the measure used in Palmrose et al. (2004) and Srinivasan (2005).

ANNUAL=1 if the firm restated a 10-K and 0 if the firm restated only 10-Qs;

CEO_EQUITY=the percentage of equity ownership of the CEO in the year prior to the restatement;

LEVERAGE=Debt (#9 + #34) / Assets (#6);

ROA= Operating income after depreciation scaled by average assets (Compustat #178 / #6);

CAR_(t-240 - t-8)= The firm's cumulative abnormal returns from 240 trading days prior to the restatement announcement to 8 trading days prior, and expected returns are the CRSP value-weighted returns inclusive of dividends;

SIZE QUINTILE_i= An indicator variable for size quintiles based on total assets.

4.1 The Turnover Window

In contrast to many prior restatement studies, we consider turnover both before and after the announcement date for two reasons. First, if management turnover occurs prior to the announcement, it may be the case that new management discovered GAAP violations perpetuated by prior management. In such a case, we would not expect current management to be dismissed for the acts of previous management. If these pre-announcement management changes are not considered, researchers will incorrectly conclude that the boards failed to take swift action to terminate at-fault managers. A second reason to include the pre-restatement announcement period is that an initial investigation into irregularities can occur many months before a restatement is publicly announced. CEOs and CFOs may be terminated during an investigation but before the restatement is announced. These measurement problems suggest that expanding the turnover window to include a timeframe before the restatement announcement is appropriate.

In our primary analysis, we use a thirteen-month window (six months before and six months after) around the restatement announcement.²⁶ However, given the lack of consensus in past research on the appropriate measurement window for executive turnover around restatements, we review the timing of turnover to assess the most appropriate window. We plot the cumulative turnover rates for restatements caused by intentional and unintentional GAAP

²⁶ Identifying exact announcement dates related to restatements is challenging. We use the date that an intention to restate is first made (not the date that an initial investigation or a potential restatement is announced).

violations beginning six months before to two years after the restatement announcement. Figure 3 plots the CEO cumulative turnover rates beginning six months prior to the restatement announcement for our entire 2002-2005 sample. The plot shows that most of the turnover for both IRREGULARITIES and ERRORS occur very close to the announcement between six months before and six months after the restatement announcement. In the IRREGULARITY sample, (untabulated) a total of 50 (89% of all turnover) CEOs announce they are leaving their firm over this time period. Very little turnover occurs after six months following the restatement announcement. The turnover rate is much lower for ERROR restatements (a total of 9), but it is still concentrated around the five months before and five months after the announcement where 7 (77%) CEO departures are announced.

Figure 4 plots cumulative CFO turnover for our entire 2002-2005 sample. As in the case of CEO turnover, most of the CFO turnover occurs close to the restatement announcement. Roughly 92% of the CFO turnover (63 out of 79) occurs between six months prior to and six months following the restatement announcement of an IRREGULARITY. CFO turnover is less concentrated for the ERROR cases where 10 out of 18 restatements (55%) occur between six months prior to and six months following the restatement.

Overall, this analysis suggests that most turnover occurs close to the restatement announcement and that using windows that cover six months before and six months after the restatement will safely capture most of the turnover related to restatements. More importantly, the fact that most of the turnover occurs close to the restatement suggests that the turnover is likely related to the restatement.²⁷ Using longer windows will tend to introduce more noise into the analysis (i.e., more cases of turnover unrelated to the restatement).

²⁷ Even without considering the close proximity to a restatement, we find that the vast majority of the turnovers in this window would be classified as forced using the methodology employed by Parrino (1997).

4.2 Descriptive Statistics

Descriptive Statistics are reported in Table 3. The table contains statistics for our 2002-2005 ERROR and IRREGULARITY samples as well as for a random sample of firm-year observations, stratified on 2-digit SIC code and year, for comparison purposes only. To mitigate the impact of outliers, all variables are winsorized at the bottom and top 1%. All variables are measured in the year prior to the restatement announcement.

Somewhat surprisingly, measures of size (sales, total assets, and market value) suggest that the IRREGULARITY restatement firms are the largest. For example, mean (median) sales in millions of dollars of the ERROR, IRREGULARITY, and random sample groups are 2,725 (533), 3,984 (497), and 2,252 (163), respectively. Mean (median) ROA is lower for the IRREGULARITY group (mean = -1.8%, median = 3.0%) compared to the ERROR group (mean = 3.3% and median = 5.6%), though the mean is higher than that of the random sample (mean = -12.1%).

Mean (median) net income/assets is -2.3(2.3%), -14.2% (-3.6%), and -22.7% (2.2%) for ERROR, IRREGULARITY and random sample groups, respectively. LEVERAGE is higher for the IRREGULARITY sample (mean = 0.29, median = 0.25) compared to the ERROR sample (mean = 0.25, median = 0.17). The IRREGULARITY group has a higher MAGNITUDE (mean = 11.9%, median = 1.50%) compared to the ERROR group (mean = 4.0% and median = 0.7%), which is consistent with an irregularity representing a more serious control failure. Stock ownership of the CEO is similar between ERROR (mean = 9%, median = 3%) and IRREGULARITY (mean = 7%, median = 2%).²⁸ Overall, the performance characteristics and stock ownership of the unintentional and intentional groups are fairly similar. Both groups, however, appear to be larger than a random sample of the Compustat population.

²⁸ We do not hand-collect ownership information for our random sample.

4.3 Main Results

4.3.1 Univariate Analysis

Table 4 reports frequency information on CEO and CFO turnover rates across various groups for our 2002-2005 sample. Beginning with the 324 restatements classified as ERRORS (actual count is 83 but count is weighted by 3.9 for comparability to the intentional sample), we find that the turnover rate is substantially higher for CFOs; more specifically, we observe that 8.4% (12.0%) of the CEOs (CFOs) turned over within between 6 months before and 6 months after the restatement announcement. In 15.7% of the restatements classified as ERRORS, either the CEO or CFO resigned.²⁹ The turnover rates for the IRREGULARITY cases are much higher than the ERROR cases. In the IRREGULARITY cases, the turnover rate for CEOs (CFOs) is 48.6% (63.8%) and the combined turnover rate for either a CEO or CFO is 73.3%. This implies that a CEO (CFO) leaves more frequently around misstatements due to IRREGULARITIES than around those dealing with ERRORS, which is consistent with our expectation that boards are more likely to terminate CEOs and CFOs when the GAAP violation that necessitated the restatement is perceived as intentional.

We next compare the turnover rates of the subsidiary-level restatements to the parent-level restatements. As expected, in the case of IRREGULARITIES the turnover rates for subsidiary-level restatements are lower than for parent-level restatements. CEO (CFO) turnover rates for subsidiary-level restatements are 29.2% (41.7%) compared to 54.3% (70.4%) for parent-level restatements. This is consistent with the firm attributing the IRREGULARITY misstatement to managers at the subsidiary. Supporting this explanation, in virtually every case where we classify the restatement as an IRREGULARITY at the subsidiary-level, we find that the firm announced that the subsidiary-level managers were terminated. In untabulated results, we find that turnover

²⁹ It is difficult to compare the turnover rates that we document to prior restatement research because past research investigates different time periods, different groupings of officers, and different window lengths. For non-restatement samples, Yermack (2004) finds an unconditional annual rate of CEO turnover of 13.8% in Fortune 500 firms from 1994 to 1996. More recent research by Kaplan and Minton (2006) finds that CEO turnover in Fortune 500 firms is 16.5% over the period from 1998 to 2005. We find an annual turnover rate (6 months before to 6 months after) of 48.6% (8.4%) for the irregularity (error) restatement firms in our sample.

rates for parent-level restatements are extremely high when a four-year window (two years before to two years after) is considered. Over this time-period, we find that the CEO (CFO) turnover rate for parent-level IRREGULARITY restatements is 66.7% (85.2%) and in 91.4% of the cases either the CEO or CFO leaves the firm.

Finally, we compare turnover related to annual restatements to those of quarterly restatements. Given that quarterly financial statements have not undergone the audit process, we expect quarterly restatements to be viewed as being less severe than annual restatements. We consider a restatement to be annual when the 10-K is restated and quarterly when only 10-Qs are restated. The frequency of quarterly restatements in our sample is much lower than annual restatements. There are 372 annual restatements (281 ERRORS and 91 IRREGULARITIES) and only 57 quarterly restatements (43 ERRORS and 14 IRREGULARITIES). As expected, the turnover rates are higher for annual restatements in the IRREGULARITY group.

In summary, we observe that turnover appears to be strongly related to the underlying intent behind the GAAP violation. IRREGULARITIES appear to lead to greater turnover of both CEOs and CFOs, but the turnover rates are reduced when the problem can be isolated to a subsidiary. In the next section, we provide logistic regression analysis to further support these observations.

4.3.2 Multivariate Analysis

Our observations from Table 4 support our predictions that perceived intentional GAAP violations give rise to higher CEO and CFO turnover rates and that the turnover rates for IRREGULARITY restatements will be lower when the irregularity causing the restatement occurs at the subsidiary-level. However, other factors that cause turnover are also likely to be correlated

with intentional GAAP violations. To control for these factors, we estimate logistic regressions for CEO, CFO, and CEO or CFO turnover.³⁰

Table 5 reports results for our 2002-2005 turnover regressions. Consistent with our prediction, the coefficient on IRREGULARITY is positive and significant ($p < 0.01$). Given a parent-level restatement, a CEO is more likely to turnover if the restatement was an intentional violation rather than an error. To test whether turnover rates are lower for intentional, subsidiary-level restatements than for intentional, parent-level restatements, we test $\beta_2 + \beta_3 < 0$. As reported in Table 5, $\beta_2 + \beta_3 = -1.5$ and is significantly less than zero ($p < 0.05$ one-tailed test). All p-values in the remainder of this paper are reported as one-tailed when the sign is predicted. Of the control variables, only CEO_Equity is significant in the expected direction ($p < 0.05$). The negative coefficient on CEO_Equity is consistent with the CEOs using their ownership in the firm to make it more difficult for boards to fire them.

Results for CFO turnover are very similar to our CEO turnover results. The signs and significance levels on IRREGULARITY and $\beta_2 + \beta_3$ are consistent with our predictions. The coefficient on IRREGULARITY is 3.38 (significant at $p < 0.01$), suggesting that, conditional on a parent-level restatement, a CFO is more likely to turn over if the restatement is an IRREGULARITY rather than an ERROR. $\beta_2 + \beta_3 = -1.74$ and is significantly less than zero ($p < 0.05$), suggesting that turnover for CFOs is also lower for intentional misstatements if the misstatements occur at the subsidiary level. The negative coefficient on $CAR_{(t-240,t-8)}$ is significant ($p < 0.05$), which is consistent with CFOs of poorer performing firms being more likely to turnover. The coefficient on LEVERAGE is also weakly significantly positive in the CFO regression ($p < 0.10$), suggesting that turnover is more likely for more distressed firms. Finally, the size controls suggest that the probability of CFO turnover declines with firm size.

³⁰ Given the strong relation between bankruptcy and CEO turnover described in past research (e.g., Beneish 1999) we test the sensitivity of our results to bankruptcy filings. We identify all firms that file for bankruptcy at any point after the restatement announcement. There are 21 firms with restatements classified as irregularities and only 2 with restatements classified as errors. Although the turnover rate for the remainder of the irregularities group declines, it is still significantly higher than the error group. The CEO turnover rate for firms that do not file for bankruptcy is 42.9% for irregularities restatements and 8.6% for error restatements.

When CEO and CFO turnover are combined, results are very similar. The signs and significance levels of the coefficients for our IRREGULARITY prediction remain consistent. Further, in all three models we fail to find significant evidence that MAGNITUDE has any effect on executive turnover after we control for IRREGULARITY. Consistent with prior literature, we continue to find some evidence that prior performance and managerial ownership are also related executive turnover.

Given the CAR distributions reported in Figures 1 and 2, one question is whether our partition on irregularity/error is any better than simply using restatement announcement returns. In other words, IRREGULARITY could simply be capturing the market reaction to restatements, which is an overall measure of severity. In table 6 we compare the effectiveness of this alternative proxy by re-estimating our model substituting announcement CARs ($CAR_{(t-7-t+7)}$) for IRREGULARITY. For all turnovers (CEO, CFO, CEO/CFO), the main effect, $CAR_{(t-7-t+7)}$, is similar in sign and significance to IRREGULARITY, though $\beta_2+\beta_3$ is not significantly different from zero. However, the explanatory power of the model (measured by Psuedo-R2 or Log Likelihood) is much lower. For example, the log likelihoods using $CAR_{(t-7-t+7)}$ as a proxy for severity are 20.9, 40.8, and 36.9 compared with log likelihoods of 41.7, 74.4, and 75.4 when using IRREGULARITY as a proxy for severity, for the CEO, CFO, and CEO/CFO turnover regressions, respectively. These findings suggest that, although short-window CARs are a good proxy for severity, IRREGULARITY appears to be more effective, at least in explaining turnover.³¹

4.3.3 Descriptive Review of Irregularities with No Turnover

Although the high turnover rates that we document are suggestive of boards acting swiftly to remove managers involved in irregularities, it is still somewhat surprising that parent-level irregularities do not always lead to the resignation of the CEO and CFO. To understand what

³¹One potential reason that CARs may be less effective in explaining turnover stems from the measurement error caused by the difficulty identifying the exact announcement date at which to measure the CAR.

factors explain why in 20% of the cases (16 of 81) neither the CEO nor the CFO left within the 13-month window, we perform a detailed examination of each of these cases. Our review of these cases is summarized in Table 7.

There are eight cases where either the CEO or CFO left the firm in the 18 months preceding the 13-month window (i.e., from two years to six months prior to the restatement). In these cases, it is likely that the incoming CEO (CFO) was not blamed for the misstatement as he/she was able to attribute the problem to his/her predecessor (current management may in fact have been the one to discover the problem). There are three cases where the CEO or CFO left the firm after the six-month window but the departure occurs around the time the investigation was concluded. These “no turnover” cases are attributable to our use of a shorter turnover window. Finally, there are four cases where it was subsequently concluded either from the independent investigation or the SEC investigation that no intentional GAAP violations occurred. This leaves only one case, Asconi Corp., where it appears that an irregularity occurred but neither the CFO nor the CEO is terminated. However, Asconi’s CEO and CFO together hold over 90% of the company’s stock, which makes them fairly atypical for a public firm. We conclude from this analysis that boards rarely fail to discipline senior management when intentional misstatements are discovered.

4.3.4 Changes in mix of errors versus irregularities over time and its impact on inferences.

In this section, we demonstrate the importance of partitioning errors versus irregularities by investigating whether penalties for managerial misreporting have changed after the scandals that resulted in the heightened governance environment. More specifically, we examine whether changes in the regulatory environment resulting from accounting scandals occurring in 2001 increased the likelihood that boards will terminate executives when they disclose accounting restatements. This analysis provides an opportunity to demonstrate the importance of partitioning errors and irregularities, since the mix of errors versus irregularities may change over time and failure to separate irregularities would lead to incorrect inferences.

To demonstrate this potential problem, we construct a second sample from the GAO database (2003) and include all restatements between January 1, 1997 and December 31, 1998. We select this time period because it provides a clean window before the accounting scandals and subsequent regulation and is comparable to other recent research on the restatement research (e.g., Desai et al. 2006). The 1997-1998 sample consists of 194 unique firms as identified by the GAO database. Of these, we exclude 16 firms in the financial services industry (SIC codes 6000-6999) to be consistent with prior research, and 29 firms that are not publicly traded or otherwise have missing data. We drop an additional 13 observations where further investigation reveals that the restatement had no income impact, pertained only to the representation of now-discontinued operations, or was announced contemporaneously with a merger. This results in a final sample of 136 restatements for 1997-1998 sample.

Figure 5 compares the proportion of errors versus irregularities in the 1997-1998 sample to that of the 2002-2005 sample. The proportion of IRREGULARITIES went from 48% in the 1997-1998 sample down to 24% in the 2002-2005 sample. The reason for this change is primarily due to the substantial increase in more innocuous restatements that occurred after the Sarbanes-Oxley Act. One obvious implication of this change in mix is that incorrect inferences about the causes and consequences of restatements over time are likely to be made if intentional restatements are not distinguished from errors.

We compare turnover rates in the 1997-1998 sample to the 2002-2005 sample to see if the increased focus on governance has led to a corresponding increase in executive terminations around restatements. Table 8 reports logistic regression results estimating model (1) with the addition of an indicator variable, POST, which is equal to 1 if the restatement is from our 2002-2005 sample and 0 if it is from our 1997-1998 sample. For ease of exposition, we exclude the interaction term between IRREGULARITY and SUBSIDIARY. Size quintile controls are included in the regression but not reported in the table for brevity. Column (1) reports results with CEO Turnover as the dependent variable and IRREGULARITY left out of the regression. Without IRREGULARITY, the coefficient on POST is negative and significant ($p < .01$),

suggesting the overall turnover rates actually declined across the time periods. Similar results are obtained in column (5) for CEO/CFO turnover, but there is no evidence of a change in CFO turnover in column (3).

When the IRREGULARITY indicator variable is added to the regressions, the significance level on POST disappears in the CEO turnover (2), CFO turnover regressions (4) and combined CEO/CFO turnover (6). Alternatively, if we were interested, as is more likely, in testing how managers are punished for deliberate misreporting, it would be more appropriate for us to focus on only the irregularities from the start. Thus results using only restatements classified as irregularities are presented in Table 9.

As shown in Table 9, the coefficient on POST is insignificant across all three regressions. This suggests that there is no evidence that turnover rates for irregularities have changed significantly across the two sample periods. Given the extremely high turnover rates in the 2002-2005 sample period, we do not interpret this as ineffective governance continuing even after additional regulation was implemented. Instead, we interpret this as indicating that boards *continue to be effective* at taking action in response to irregularities.

5.0 Concluding Comments

Research on restatements has grown significantly over the past several years. The vast majority of this research relies on the GAO databases that include a mix of both *errors* and *irregularities*. We propose a straightforward procedure for distinguishing errors from irregularities in a large sample of restatements. If the word “fraud” or “irregularity” is not explicitly used, we contend that the best indicator of an irregularity is the presence of an independent investigation into the accounting matter. This includes investigations undertaken by the SEC, the Attorney General’s Office, or independent investigations initiated by the company’s board. We based our measure on the reading of numerous restatement disclosures and on guidance boards receive from the both the SEC and lawyers specializing in restatement litigation.

We validate our measure in several ways. First, we find that CARs for the irregularities sample are significantly more negative than the error sample. As a second validity test, we

compare the frequency of class action lawsuits (for financial statement fraud) in the irregularities sample to the errors sample. We find in instances where a class action suit is likely (e.g., large market cap, parent-level irregularity, negative announcement returns) the vast majority of irregularities do result in class action lawsuits. Further, we find only one occurrence of a restatement in our error sample that resulted in a class action lawsuit. Both the CARs and the class action patterns suggest that our classification procedure yields a meaningful partition of restatements.

To demonstrate the importance of partitioning errors versus irregularities, we re-examine the relation between restatements and CEO/CFO turnover studied in earlier research. As expected, when we partition the restatements, turnover rates are much higher for irregularities than for errors. In our 2002-2005 sample, the cumulative turnover rate in the 13 months surrounding the restatements (six months before to six months after) for CEOs (CFOs) is 49% (64%) for irregularities but only 8% (12%) for restatements we classify as errors. After excluding subsidiary-level restatements and expanding the turnover window to four-years (2 years before and 2 years after) to be more consistent with prior research, the (untabulated) turnover rates for irregularity restatements are 67% for CEOs and 85% for CFOs. In 91% of these irregularity cases, either the CEO or CFO leaves the firm. This evidence suggests that the relatively low turnover rates documented in past research are due largely to the inclusion of unintentional errors in prior restatement samples.

Finally, we demonstrate that conditioning on restatement type is critical to interpreting changes in turnover rates over time. Without controlling for errors versus irregularities, we obtain the counter-intuitive result that turnover rates around restatements have declined in the post-Enron era. However, examining only cases where turnover would be expected (irregularities), we find no evidence of a change in turnover rates for irregularities after the 2001 accounting scandals.

For researchers, our finding suggests that the power of tests on the consequences of restatements (e.g., turnover, market reaction, etc.) can be greatly enhanced by classifying

restatements as either errors or irregularities and, in the specific case of restatements and turnover, focusing on relatively shorter turnover windows. Data sources such as the GAO sample mix together both intentional (irregularities) and unintentional (errors) violations of GAAP, which are substantially different in perceived severity. Our procedure for identifying irregularities appears quite effective at distinguishing between irregularities and errors and is relatively easy to implement in future research utilizing a restatement setting.

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Table 1 – Sample Selection

	Errors	Irregularities	Total
Number of restatements identified from 8-K filings	460	170	630
Financial Services	43	19	62
Firms not on Compustat	56	19	75
Total Available	361	132	493
Less firms not randomly selected	268		268
Observations	93	132	225
Less cases where restatement had no income impact	10	0	9
Less cases where investigation did not lead to restatement or is not complete	0	27	27
Final Sample	<u>83</u>	<u>105</u>	<u>188</u>
Weighting by population proportion	<u>3.9</u>	<u>1.0</u>	
Weighted Sample	<u>324</u>	<u>105</u>	<u>439</u>

Notes: Our sample was obtained as follows. We identified all 8-K disclosures where firms disclosed a restatement or intended restatement due to a misapplication of GAAP between January 1, 2002 and December 31, 2005. This includes 8-Ks filed specifically to announce a restatement, to announce a change in auditor, or to announce quarterly or annual financial statements. If a firm announced more than one restatement during this time-period, we selected the first restatement disclosed. This process yielded 630 restatements. Of these 460 are restatements arising from errors and 170 are from irregularities. We classify restatements as irregularities if the firm referred to the misstatement as an irregularity or announced an SEC/DOJ or other independent investigation into the accounting misstatement. Of these we exclude firms in the financial services industry (SIC codes 6000-6999) as well as firms that do not have data available on Compustat, which leaves us with 361 errors and 132 irregularities. To reduce the cost of data collection, we randomly select approximately 1/4 of the restatements caused by errors. We include all irregularities to maintain power in later tests for this group. From this we drop 10 observations from the error group where the restatement had no income impact. (These generally related to reclassifications or corrections to shares outstanding used in the computation of EPS.) Finally, we eliminate 27 irregularities where the investigation ultimately did not lead to a restatement or where the investigation has not yet been completed.

Table 2 – Class Action Lawsuits and Error/Irregularity Classifications

Panel A

	<u>Reason for classification as Irregularity</u>				Total Error
	<u>Announced</u> an Irregularity	SEC /DOJ Investigation	Other Investigation	Total Irregularity	
Class Action Lawsuit	36	64	60	84	1
No Class Action Lawsuit	7	9	16	21	82
Total	43	73	76	105	83

Firms are classified into the intentional sample if the report an *irregularity*, an SEC or Department of Justice investigation, or an other independent investigation. The intentional type columns do not sum up “Total Intentional” because some restatements have more than one type of related investigation (e.g., an *irregularity* and an SEC investigation and a board investigation).

Panel B- Classified as Irregularity but No Class Action Suit

	Count
Firms not being traded at time of announcement	3
Firms with market value below \$25 million	8
Restatement was at the subsidiary-level	7
Firms with positive short-window returns	3
Total	21
Less multiple occurrences	-4
Firms with at least one of the above	17
Misstatements coded as an <i>irregularity</i> for presence of SEC investigation, but no class action found	4
Total	21

Table 3 - Descriptive Statistics

	Error				Irregularity				Random Sample			
	N	Mean	Median	Std	N	Mean	Median	Std	N	Mean	Median	Std
Sales	80	2725	533	6356	94	3984	497	8228	179	2252	163	6575
Sales Growth	80	14.7%	8.3%	42.4%	94	24.0%	4.7%	102.1%	172	21.6%	7.2%	97.8%
Total Assets	82	2788	405	6857	104	4775	569	9683	180	2367	152	7252
Market Value	73	2247	387	5544	93	3212	436	7250	161	2631	151	7563
ROA	82	3.3%	5.6%	13.6%	104	-1.8%	3.0%	17.6%	176	-12.1%	5.0%	63.9%
Income/Assets	80	-2.3%	2.3%	16.5%	94	-14.2%	-3.6%	34.7%	173	-22.7%	2.2%	87.3%
Leverage	82	0.25	0.17	0.27	103	0.29	0.25	0.24	178	0.34	0.19	0.53
MAGNITUDE	81	4%	0.7%	16.6%	93	11.9%	1.5%	38.6%	N/A	N/A	N/A	N/A
CEO Stock Ownership	83	9%	3%	15%	104	7%	2%	15%	N/A	N/A	N/A	N/A

Notes: Details of the sample selection procedure for restatement firms are provided in Table 1. In addition to the restatement sample, we also include a random sample for comparison purposes. This random sample is stratified by industry and year to mirror the representation of the restatement firms. Variables listed above are those reported in the year prior to the restatement (not restated). Sales is Compustat #12. Sales growth is the change in sales from t-2 to t-1 scaled by sales in t-2. Total assets is Compustat #6. Market Value is Compustat #25*#199. ROA is operating income after depreciation scaled by Assets (Compustat #178/#6). Income/Assets is Compustat #172/#6. Leverage is Debt (#9+#34)/Assets (#6). CEO_Equity is the fraction of CEO ownership in the year of the restatement. In cases where we are unable to obtain ownership information in the year of the restatement, we use the prior year. We do not collect ownership information for the random sample.

The amounts reported above do not always capture the restated amounts. Whether or not the Compustat values are the initially reported amounts or the restated amounts depends on the timing of the restatements. If, for example, a firm with fiscal-year end of December 31, 2005 files a 10-K in March 2006 but later amends that filing prior to Compustat's next "cut" of the database, say November 2006, then Compustat uses the November 2006 data and ignores the original filing (in March 2006). In these cases, the data reported in this table are the restated figures. If, on the other hand, a company amends a prior year after Compustat's next "cut" of the data, the restated information will appear in Compustat's special restatement variables. In these cases, our descriptive statistics will not include the restated amounts.

Table 4 – Turnover Frequency

	Error				Irregularity				Total				
	Turnover %				Turnover %				Turnover %				
	N	CEO		CFO	or CFO	N	CEO		CFO	or CFO	N	CEO	
Total		324	8.4				12.0	15.7				105	48.6
Subsidiary vs. Parent Level													
Subsidiary-Level	43	9.1	9.1	9.1	24	29.2	41.7	50.0	67	16.3	20.8	23.8	
Parent-Level	281	8.3	12.5	16.7	81	54.3	70.4	80.2	362	18.6	25.5	30.9	
Annual vs. Quarterly													
Annual	281	8.3	11.1	15.3	91	49.5	67.0	74.7	372	18.4	24.8	29.8	
Quarterly	43	9.1	18.2	18.2	14	42.9	42.9	64.3	57	17.4	24.3	29.5	

Notes: This table summarizes the turnover rates for restatements caused by Errors and Irregularities, and further partitioned on subsidiary-level/parent-level and Annual/Quarterly. Sample selection and determination of intentional versus unintentional classifications are described in Table 1. A subsidiary-level restatement is defined as a restatement that occurred in a subsidiary. All other restatements are considered to be parent-level restatements. Annual restatements are those that required restatement of a 10-K filing. Quarterly filings are those that only affected 10-Q filings. Turnover is considered to have occurred if a CEO or CFO left the firm in the six months before to six months after the restatement or investigation announcement, whichever is first. The frequency counts for the error restatements are weighted by population proportion for comparison to the irregularity restatement sample. As discussed in Table 1, we selected a random sample consisting of approximately 1/4 of the error cases that we identified but analyzed all irregularity cases. To approximate the total turnover we would expect to observe in the population of all restatements, we assign 3.9 times the weight to the error cases.

Table 5 – Logistic Regression – Turnover

$$\text{TURNOVER} = \beta_0 + \beta_1 \text{IRREGULARITY} + \beta_2 \text{SUBSIDIARY} + \beta_3 \text{IRREGULARITY} * \text{SUBSIDIARY} \\ + \beta_4 \text{MAGNITUDE} + \beta_5 \text{ANNUAL} + \beta_6 \text{CEO_EQUITY} + \beta_7 \text{LEVERAGE} + \beta_8 \text{ROA} + \beta_9 \text{CAR}_{(t-240-t-8)} \\ + \beta_{10} \text{Size Quintile 1} + \beta_{11} \text{Size Quintile 2} + \beta_{12} \text{Size Quintile 4} + \beta_{13} \text{Size Quintile 5} + \varepsilon$$

	Pred. Sign	CEO Turnover	CFO Turnover	CEO or CFO Turnover
Intercept		-2.05** (6.55)	-1.68* (4.66)	-1.01 (1.92)
IRREGULARITY	+	2.56*** (23.27)	3.38*** (27.19)	3.32*** (31.07)
SUBSIDIARY	?	-0.23 (0.06)	-0.12 (0.01)	-0.59 (0.41)
IRREGULARITY*SUBSIDIARY	-	-1.27 (1.09)	-1.62 (1.63)	-1.3 (1.15)
MAGNITUDE	+	0.63 (0.40)	-0.44 (0.22)	-0.41 (0.17)
ANNUAL	+	0.13 (0.03)	0.33 (0.21)	0.05 (0.00)
CEO_EQUITY	-	-0.05** (3.88)	-0.01 (0.62)	-0.03* (1.91)
LEVERAGE	+	-0.82 (0.68)	1.3* (2.28)	0.97 (1.37)
ROA	-	0.68 (0.15)	-1.33 (0.49)	0.28 (0.02)
CAR _(t-240-t-8)	-	-0.08 (0.03)	-0.87** (3.04)	-0.87** (3.30)
Size Quintile 1	?	0.71 (0.43)	-0.33 (0.09)	-0.24 (0.05)
Size Quintile 2	?	1.03* (1.72)	-0.34 (0.22)	-0.16 (0.05)
Size Quintile 4	?	0.12 (0.04)	-1.4** (4.19)	-1.14** (3.39)
Size Quintile 5	?	-0.29 (0.21)	-2.43*** (10.29)	-1.71*** (6.80)
Test of $\beta_2 + \beta_3 < 0$	-	-1.5** (3.73)	-1.74** (4.55)	-1.89*** (5.77)
Psuedo-R2		33.02%	50.18%	48.96%
Log Likelihood		41.65	74.43	75.43
N		172	172	172

Notes: Logistic regressions of variations of model (1) are reported above. Chi-square statistics are in parentheses. Psuedo-R² is the Nagelkerke (1991) Psuedo-R². Sample selection information is detailed in Table 1. We lose 24 observations due to certain missing data on Compustat, leaving 164 observations. To approximate the total turnover we would expect to observe in the population of all restatements, we estimate the logistic regression assigning approximately 3.9 times the weight to the error cases and then normalizing the sample size. The dependent variable, TURNOVER, is 1 if the executive left the firm in the 6 months before or 6 months after the restatement or investigation announcement, whichever is first. IRREGULARITY is 1 if the restatement announcement explicitly refers to an irregularity as the reason for the restatement or discloses either an SEC investigation or an independent board investigation, and 0 otherwise. SUBSIDIARY is 1 if the restatement occurred in a subsidiary and 0 otherwise. MAGNITUDE is the amount of net income overstatement scaled by total assets in the year prior to the restatement announcement. ANNUAL is 1 if the firm restated a 10-K and 0 if the firm restated only 10-Qs. CEO_EQUITY is the fraction of CEO ownership in the year of the restatement. Leverage is Debt (#9+#34)/Assets (#6). ROA is operating income before interest and taxes scaled by Assets (Compustat #178/#6). CAR_(t-240-t-8) is the firm's cumulative abnormal returns from 240 trading days prior to the restatement announcement to 8 trading days prior, and expected returns are the CRSP value-weighted returns inclusive of dividends. ***, **, * represent p-values at the 1%, 5%, and 10%, respectively (p-values are reported as one-tailed when the sign is predicted).

Table 6 – Turnover Logistic Regression – Short-Window CARs as Severity

$$\text{TURNOVER} = \beta_0 + \beta_1 \text{CAR}_{(t-7-t+7)} + \beta_2 \text{SUBSIDIARY} + \beta_3 \text{CAR}_{(t-7-t+7)} * \text{SUBSIDIARY} + \beta_4 \text{MAGNITUDE} + \beta_5 \text{ANNUAL} \\ + \beta_6 \text{CEO_EQUITY} + \beta_7 \text{LEVERAGE} + \beta_8 \text{ROA} + \beta_9 \text{CAR}_{(t-240-t-8)} + \beta_{10} \text{Size Quintile 1} + \beta_{11} \text{Size Quintile 2} \\ + \beta_{12} \text{Size Quintile 4} + \beta_{13} \text{Size Quintile 5} + \varepsilon$$

	Pred. Sign	CEO Turnover	CFO Turnover	CEO or CFO Turnover
Intercept		-1.45* (3.61)	-1.14 (2.35)	-0.63 (0.83)
CAR _(t-7-t+7)	+	-3.33** (3.80)	-4.31*** (6.16)	-3.33** (4.25)
SUBSIDIARY	?	-0.93 (1.27)	-1.34* (2.32)	-1.6** (3.59)
CAR _(t-7-t+7) *SUBSIDIARY	-	-0.21 (0.00)	-2.45 (0.38)	-3.81 (0.91)
MAGNITUDE	+	0.95 (0.30)	0.39 (0.08)	0.51 (0.13)
ANNUAL	+	0.25 (0.15)	0.23 (0.12)	0.07 (0.01)
CEO EQUITY	-	-0.07** (3.33)	-0.01 (0.40)	-0.02 (1.02)
LEVERAGE	+	0.06 (0.00)	1.64** (3.30)	1.41** (2.83)
ROA	-	-0.58 (0.11)	-1.78 (0.99)	-0.62 (0.14)
CAR _(t-240-t-8)	-	-0.81* (2.46)	-1.55*** (8.54)	-1.57*** (9.74)
Size Quintile 1	?	0.9 (0.66)	0.32 (0.09)	0.3 (0.08)
Size Quintile 2	?	-0.1 (0.02)	-1.17* (2.58)	-1.06* (2.37)
Size Quintile 4	?	0.24 (0.16)	-0.55 (0.95)	-0.47 (0.76)
Size Quintile 5	?	0.06 (0.01)	-1.03** (3.16)	-0.65 (1.57)
Test of $\beta_2 + \beta_3 < 0$	-	-1.14 (0.09)	-3.79 (0.67)	-5.41 (1.38)
Pseudo-R ²		18.66%	32.28%	28.28%
Log Likelihood		20.93	40.8	36.86
N		162	162	162

Notes: Logistic regressions of variations of model (1) are reported above with short-term CARs to proxy for severity. Chi-square statistics are in parentheses. Pseudo-R² is the Nagelkerke (1991) Pseudo-R². Sample selection information is detailed in Table 1. We lose 27 observations due to certain missing data on Compustat or CRSP, leaving 161 observations. To approximate the total turnover we would expect to observe in the population of all restatements, we estimate the logistic regression assigning approximately 3.9 times the weight to the low severity cases and then normalizing the sample size. The dependent variable, TURNOVER, is 1 if the executive left the firm in the 6 months before or 6 months after the restatement or investigation announcement, whichever is first. CAR_(t-7-t+7) is the firm's cumulative abnormal returns from 7 trading days prior to the restatement announcement through 7 trading days after the announcement. SUBSIDIARY is 1 if the restatement occurred in a subsidiary and 0 otherwise. MAGNITUDE is the amount of Net Income overstatement scaled by total assets in the year prior to the restatement announcement. ANNUAL is 1 if the firm restated a 10-K and 0 if the firm restated only 10-Qs. CEO_EQUITY is the fraction of CEO ownership in the year of the restatement. LEVERAGE is Debt (#9+#34)/Assets (#6). ROA is operating income before interest and taxes scaled by Assets (Compustat #178/#6). CAR_(t-240-t-8) is the firm's cumulative abnormal returns from 240 trading days prior to the restatement announcement to 8 trading days prior. Expected returns are the CRSP value-weighted returns inclusive of dividends. ***, **, * represent p-values at the 1%, 5%, and 10%, respectively (p-values are reported as one-tailed when the sign is predicted).

Table 7 – Analysis of Cases where neither CEO nor CFO Turnover in the 13-month Window around a restatement caused by an *irregularity*.

	Count
Total number of observations classified as intentional and parent-level where neither the CEO nor the CFO left within the 13-month window (-6 to +6 months).	16
Either the CEO or CFO left the firm between 24 and 7 months before the restatement announcement. These are cases where the incoming officers likely attributed the misstatement to their predecessors.	8
Either the CEO or CFO left the firm at a date later than 6 months after the restatement but around the time the investigation is concluded.	3
The investigation (independent internal or external) specifically determined that the misstatement was not intentional.	<u>4</u>
Total	<u>15</u>
Case of apparent fraud where there was no turnover (Asconi)	1

Summary of Asconi Case:

The Company (Asconi) issued ten million shares during 2003 to the company's CEO and CFO, who together hold over 90% of the company's stock. The issuances were originally treated as if they were equity transactions. The SEC conducted a formal investigation and determined that the market value of the ten million shares of Common Stock issued during 2003 should have been charged against the Company's income statement as compensation. The investigation remains unresolved, but Asconi completed a reverse stock split in 2006 that reduced the number of shareholders to less than 300 and thus relieves them from public filing requirements.

Table 8 – Logistic Regression- PRE Versus POST Analysis

$$\text{TURNOVER} = \beta_0 + \beta_1 \text{IRREGULARITY} + \beta_2 \text{POST} + \beta_3 \text{SUBSIDIARY} + \beta_4 \text{ANNUAL} + \beta_5 \text{CEO_EQUITY} + \beta_6 \text{LEVERAGE} + \beta_7 \text{ROA} + \varepsilon$$

	Pred. Sign	CEO Turnover		CFO Turnover		CEO or CFO Turnover	
		(1)	(2)	(3)	(4)	(5)	(6)
Intercept		-1.04* (4.24)	-1.89*** (11.59)	-0.37 (0.63)	-1.28** (5.76)	0.29 (0.38)	-0.49 (0.83)
IRREGULARITY	+		1.95*** (37.22)		2.4*** (48.24)		2.65*** (54.28)
POST	?	-0.54* (2.14)	-0.19 (0.23)	-0.41 (1.37)	-0.02 (0.00)	-0.8** (5.07)	-0.46 (1.28)
SUBSIDIARY	-	-0.39 (0.87)	-0.84** (3.51)	-0.49 (1.54)	-1.12*** (5.93)	-0.62* (2.62)	-1.42*** (9.14)
ANNUAL	+	0.49* (1.93)	0.3 (0.61)	0.3 (0.79)	0.14 (0.13)	0.39 (1.34)	0.2 (0.26)
CEO_EQUITY	-	-0.03* (2.42)	-0.04** (3.04)	-0.01 (0.42)	-0.02 (1.21)	-0.01 (0.82)	-0.02* (2.21)
LEVERAGE	+	-0.09 (0.02)	-0.17 (0.07)	1.06** (3.69)	1.25** (4.31)	0.79* (2.05)	0.91* (2.24)
ROA	-	-1.68** (5.15)	-0.91 (1.37)	-1.06* (2.18)	-0.11 (0.02)	-2.03*** (6.71)	-0.96 (1.45)
CAR _(t-240-t-8)	-	-0.81*** (6.08)	-0.44* (1.79)	-1.17*** (13.49)	-0.84*** (6.85)	-1.15*** (13.93)	-0.81*** (6.11)
Pseudo-R2		14.07%	30.97%	21.57%	42.43%	24.42%	47.53%
Log Likelihood		30.32	71.34	50.83	109.9	59.8	130.19
N		298	298	298	298	298	298

Notes: Logistic regressions of variations of model (1) are reported above. Chi-square statistics are in parentheses. Pseudo-R² is the Nagelkerke Pseudo-R². Sample selection information is detailed in Table 1. We include the 136 firms from the pre-period and the 164 firms from the post-period that are not missing data. As previously discussed, in the post-period we assign approximately 3.9 times the weight to the low severity cases and then normalizing the sample size. The dependent variable, TURNOVER, is 1 if the executive left the firm in the 6 months before or 6 months after the restatement or investigation announcement, whichever is first. IRREGULARITY is 1 if the restatement announcement explicitly refers to an *irregularity* as the reason for the restatement or discloses either an SEC investigation or an independent board investigation, and 0 otherwise. POST is 1 if the restatement occurred in 1997 or 1998 and 0 if the restatement occurred between 2002 and 2005. SUBSIDIARY is 1 if the restatement occurred in a subsidiary and 0 otherwise. ANNUAL is 1 if the firm restated a 10-K and 0 if the firm restated only 10-Qs. CEO_EQUITY is the fraction of CEO ownership in the year of the restatement. In cases where we are unable to obtain ownership information in the year of the restatement, we use the prior year. LEVERAGE is Debt (#9+#34)/Assets (#6). ROA is operating income before interest and taxes scaled by Assets (Compustat #178/#6). CAR_(t-240-t-8) is the firm's cumulative abnormal returns from 240 trading days prior to the restatement announcement to 8 trading days prior, and expected returns are the CRSP value-weighted returns inclusive of dividends. Size quintile controls are included in the regression but not reported in the tables (for brevity). ***, **, * represent p-values at the 1%, 5%, and 10%, respectively (p-values are reported as one-tailed when the sign is predicted).

Table 9 – Logistic Regression PRE Versus POST, IRREGULARITY Only

$$\text{TURNOVER} = \beta_0 + \beta_1 \text{POST} + \beta_2 \text{SUBSIDIARY} + \beta_3 \text{ANNUAL} + \beta_4 \text{CEO_EQUITY} + \beta_5 \text{LEVERAGE} + \beta_6 \text{ROA} + \beta_7 \text{CAR}_{(t-240-t-8)} + \beta_8 \text{Size Quintile 1} + \beta_9 \text{Size Quintile 2} + \beta_{10} \text{Size Quintile 4} + \beta_{11} \text{Size Quintile 5} + \varepsilon$$

	Pred. Sign	CEO Turnover	CFO Turnover	CEO or CFO Turnover
Intercept		-0.1 (0.03)	0.56 (0.77)	1.54* (4.08)
POST	?	-0.04 (0.01)	0.59 (1.45)	0.09 (0.02)
SUBSIDIARY	-	-1.16*** (6.69)	-1.57*** (10.54)	-1.91*** (13.70)
ANNUAL	+	0.47 (1.13)	0.84** (3.16)	0.9* (2.44)
CEO_EQUITY	-	-0.03* (1.90)	-0.01 (0.35)	-0.02 (1.39)
LEVERAGE	+	-0.12 (0.02)	1.28* (1.80)	2.12** (2.90)
ROA	-	-1.58* (2.69)	-0.31 (0.10)	-2.82** (4.26)
CAR _(t-240-t-8)	-	-0.53* (2.42)	-0.7** (3.90)	-0.94** (5.36)
Size Quintile 1	?	-1.09* (2.08)	-1.1* (1.87)	-2.05** (4.31)
Size Quintile 2	?	0.95* (2.33)	0.13 (0.03)	0.25 (0.07)
Size Quintile 4	?	0.34 (0.43)	-1.57*** (6.46)	-1.5** (4.26)
Size Quintile 5	?	-0.32 (0.38)	-2.17*** (11.45)	-2.18*** (8.64)
Pseudo-R2		19.23%	27.46%	36.39%
Log Likelihood		25.23	36.28	45.51
N		162	162	162

Notes: Logistic regressions of variations of model (1) are reported above. We exclude all unintentional misstatement and include the 62 firms from the pre-period and the 105 firms from the post-period that are not missing data. Chi-square statistics are in parentheses. Pseudo-R² is the Nagelkerke (1991) Pseudo-R². Sample selection information is detailed in Table 1. The dependent variable, TURNOVER, is 1 if the executive left the firm in the 6 months before or 6 months after the restatement or investigation announcement, whichever is first. CAR_(t-7-t+7) is the firm's cumulative abnormal returns from 7 trading days prior to the restatement announcement through 7 trading days after the announcement, and expected returns are the CRSP value-weighted returns inclusive of dividends. SUBSIDIARY is 1 if the restatement occurred in a subsidiary and 0 otherwise. POST is 1 if the restatement occurred in 1997 or 1998 and 0 if the restatement occurred between 2002 and 2005. ANNUAL is 1 if the firm restated a 10-K and 0 if the firm restated only 10-Qs. CEO_EQUITY is the fraction of CEO ownership in the year of the restatement. LEVERAGE is Debt (#9+#34)/Assets (#6). ROA is operating income before interest and taxes scaled by Assets (Compustat #178/#6). CAR_(t-90-t-8) is the firm's cumulative abnormal returns from 90 trading days prior to the restatement announcement to 8 trading days prior, and expected returns are the CRSP value-weighted returns inclusive of dividends. ***, **, * represent p-values at the 1%, 5%, and 10%, respectively (p-values are reported as one-tailed when the sign is predicted).

Figure 1: Cumulative Abnormal Returns: 180 Days Surrounding Restatement Announcement

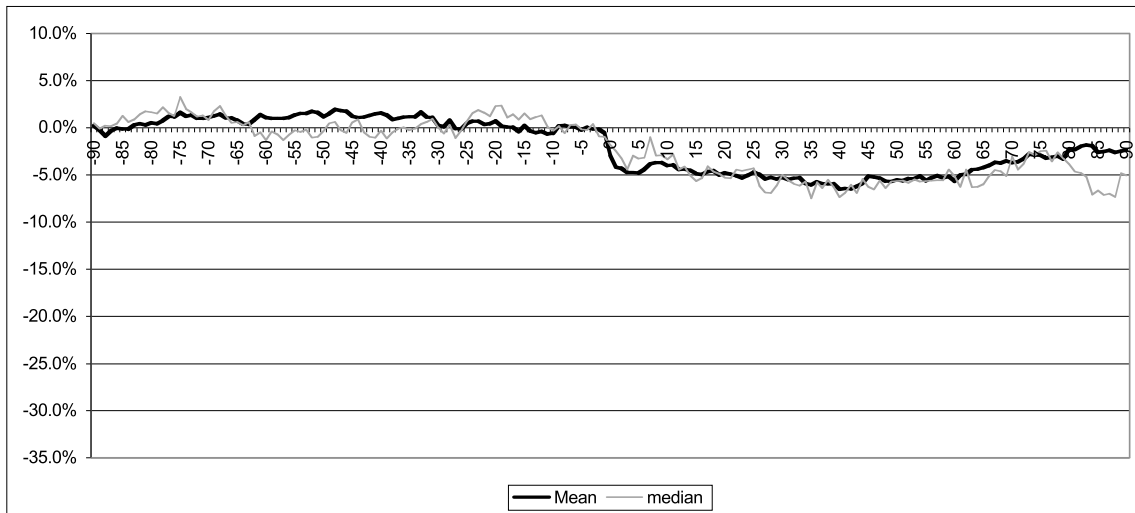
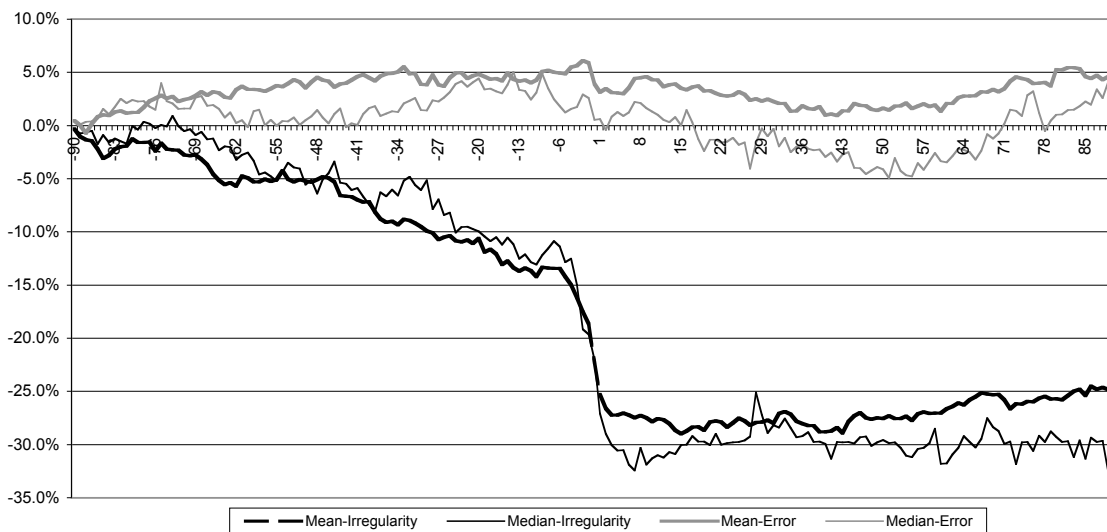


Figure 2: Cumulative Abnormal Returns: 180 Days Surrounding Restatement Announcement grouped by Errors and Irregularities



Notes: Figure 1 reports the mean and median cumulative abnormal returns for all restating firms beginning 90 trading days prior to the restatement announcement and ending 90 days after the restatements. Expected returns are CRSP value-weighted returns with dividends. To avoid survivor bias, we do not require observations to trade over the entire 180-day window. The number of observations ranges from 152 to 169. Figure 2 reports the mean and median cumulative abnormal returns for intentional and unintentional GAAP violations. The number of observations ranges from 84 to 101 for irregularity and 68 to 69 for error restatements.

Figure 3: Percentage of Firms with CEO Turnover over Time Relative to Restatement Announcement Date

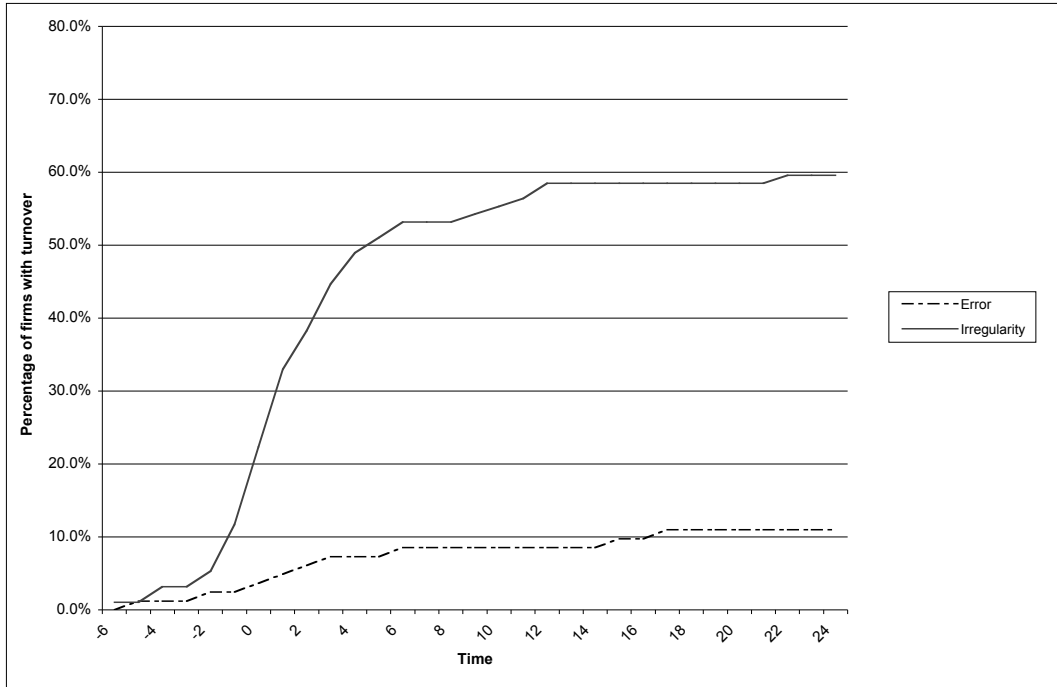
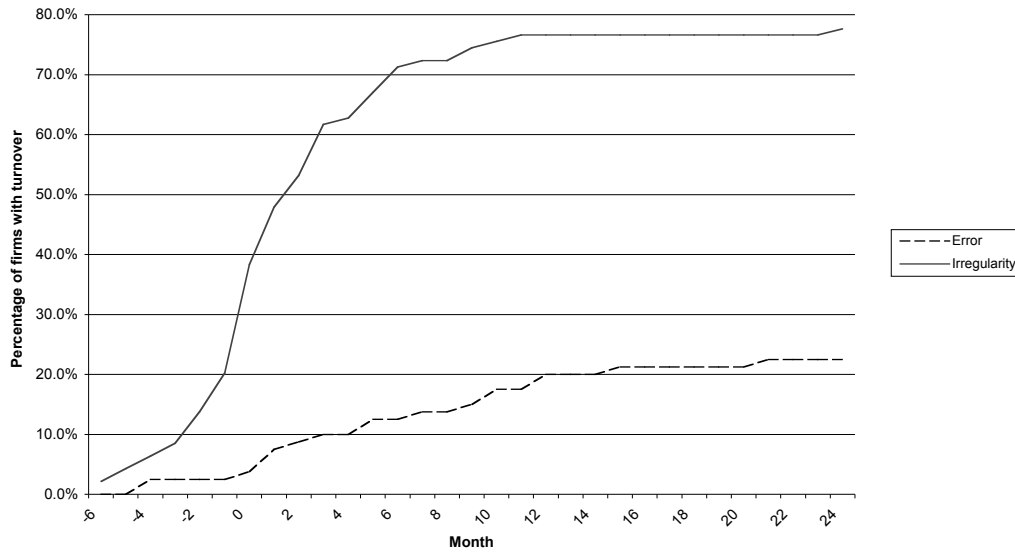
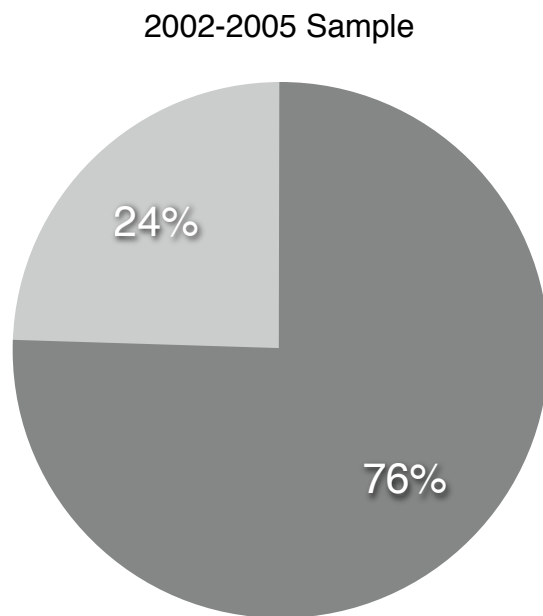
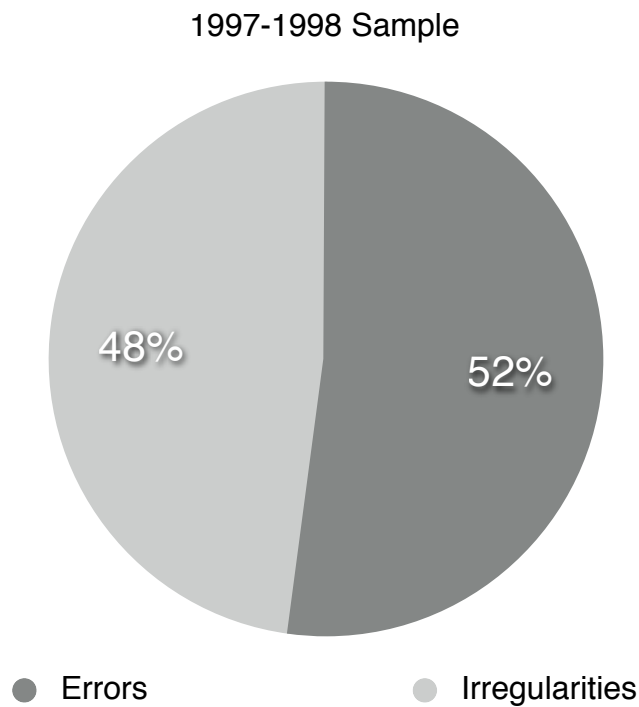


Figure 4: Percentage of Firms with CFO Turnover over Time Relative to Restatement Announcement Date



Notes: Figure 1 reports the cumulative CEO turnover percentage from month -6 to month +24, relative to the date of the restatement announcement, which is the first date the firm announces that it will restate earnings (it is possible that the firm previously announced an investigation or potential restatement). A restatement is classified as an irregularity if the announcement explicitly refers to an irregularity as the reason for the restatement or discloses either an SEC investigation or an independent board investigation, and 0 otherwise. Sample details are reported in Table 1. Figure 3 replicates Figure 4 for CFO turnover. If a firm has turnover more than once during the 30 month window, we select the turnover that occurred closest to the restatement announcement and do not count other turnovers that occur, which understates the overall turnover rates.

Figure 5 Errors Versus Irregularities



The 1997-1998 sample consists of 194 unique firms as identified by the GAO database. Of these, we exclude 16 firms in the financial services industry (SIC codes 6000-6999) to be consistent with prior research, and 29 firms that are not publicly traded or otherwise have missing data. We drop an additional 11 observations where further investigation reveals that the restatement had no income impact, pertained only to the representation of now-discontinued operations, or was announced contemporaneously with a merger. This results in a final sample of 138 restatements for 1997-1998 sample. The sample consists of 72 errors and 66 irregularities. See Table 1 for a description of the 2002-2005 sample.