

Taking the Oath: Investor Response to SEC Certification

By

Paul A. Griffin and David H. Lont*

Version of
November 19, 2003

Preliminary
Comments Welcome

*Professor of Management and Associate Dean, Graduate School of Management, University of California, Davis; and Visiting Associate Professor, University of California, Davis, and Senior Lecturer, Department of Accountancy, University of Otago, Dunedin, respectively. The authors thank Glen Boyle, John Burke, Dan Dhaliwal, Alan MacGregor, Michael Maher, the participants at accounting seminars at the University of Otago and University of Technology, Sydney, and an anonymous reviewer for the 2004 APJAE Symposium for their comments. Michael Bowers assisted in the data collection. All errors and omissions are the responsibility of the authors. Communications to: pagriffin@ucdavis.edu, Graduate School of Management, University of California, Davis, CA 95616 (Tel) 530-752-7372 , (Fax) 425-799-4143.

Abstract

This study investigates the market response to the requirement that the principal executive and financial officer of an SEC registrant each state under oath that the firm's annual and quarterly financial reports are materially accurate and complete pursuant to the Securities Act of 1934. We hypothesize that investors should recognize the importance of these changes in financial reporting and, thus, respond at or around those events that should reveal the most information about those changes, specifically, the SEC order to certify (June 27, 2002), the passage of the Sarbanes-Oxley Act (July 25, 2002), and the first certification filing by a registrant. We base our measure of investor response on unsigned market-adjusted daily excess return around those events and compare these responses with identical measures for the same companies and reports in prior periods. We use unsigned excess return because we expect investors to respond in different ways to the certification requirements. We also test for variation in investor response on the basis of a proxy for the quality of financial reporting and subject the analyses to a number of controls and robustness checks. These tests help assure us that the effects we document are in response to the SEC requirement rather than to other, possibly unspecified, factors. Overall, the empirical results are consistent with the view that investors on the identified dates did, in fact, respond to the SEC certification requirements.

JEL Classification: G14, K22, M41

KEY WORDS: Securities and Exchange Commission, SEC certification, Sarbanes-Oxley, stock market response, securities regulation.

Taking the Oath: Investor Response to SEC Certification

“In a mad deadline rush, top executives from scores of large companies filed with federal securities regulators forms swearing that their latest financial results are accurate.” The Wall Street Journal, August 15, 2002, p. A-1.

1 Introduction

This paper examines the stock market response to perhaps the most significant change in the regulation of accounting and reporting since the 1930s, namely, the SEC requirement that a company's principal executive officer and principal financial officer each swear under oath that, to their knowledge, the company's annual and quarterly financial reports are materially accurate and complete pursuant to the Securities Act of 1934. This change occurred in three key stages, first, as an SEC order to require sworn statements of certification by the senior officials of SEC registrants with revenues in excess of \$1.2 billion, proposed on June 12, 2002 and effective as of June 27, second, as a provision of the Sarbanes-Oxley Act of 2002, passed on July 25, 2002, which effectively mandated the certification into the law, and, third, as an actual certification filing.

The SEC order identified 947 firms required to certify, of which 695 had a due date of August 14¹, with certifications by most of the remaining companies due before year end.² Of the August 14 companies, 631 met the deadline and 64 did not, although many of the latter received a filing extension. Uncertainty regarding the certification process was evident with regulators slows to confirm compliance such that only 334 certifications were

¹ Specifically, the 695 companies were those whose next fiscal quarter ended on or after June 30, 2002 or whose fiscal year ended on or after May 16, 2002, regardless of whether they actually filed their 10-Q or 10-K before or after August 14, 2002. Certification filings were not permitted under EDGAR. However, of the firms in our sample, 91.5% filed their Forms 10-K, 10-Q, or 8-K under EDGAR on days -1, 0, or 1, relative to the day of a CEO certification filing (and 72.2% filed on the same day as the certification).

² Also due before year end, were firms not on the SEC list but those required to certify under the SEC rules for all firms as mandated by Sarbanes-Oxley.

recorded as meeting the requirement as of the end of the next day³. The Wall Street Journal (08/21) reported that only 16 firms had yet to certify by August 20th.

The purpose of this study is to assess the investor response to SEC certification and related regulations⁴. Due to its far reaching implications for CEO/CFOs and others such as auditors, investment bankers, and attorneys, we hypothesize that investors should recognize certification as a significant event. If, as we posit in section 3, certification changed the expected costs and consequences of financial reporting, then investors at a minimum should have impounded these effects in the distribution of stock return around each of the aforementioned stages, that is, the adoption of the certification order (June 27, 2002), the passage of Sarbanes-Oxley (July 25, 2002), and the first certification filing by a registrant subject to the order. Investor response to these implications, at a minimum, should be reflected as a change in stock return volatility.

This research objective presents an interesting challenge from a design standpoint, which is to control for other factors that might concurrently influence stock return volatility on those days where the certification effects should be greatest. These other factors include not only general market influences but also numerous precursors to certification and related events, for instance, the Enron and WorldCom bankruptcies, the demise of Arthur Andersen & Co., and SEC and private securities litigation.⁵ We select standardized absolute excess return as an appropriate measure of return volatility (motivated and

³ As reported in Mckinnon, J. and K. Spors, (2002).

⁴ We use a broad definition for the SEC certification effect which includes the SEC certification order, the passage of the Sarbanes-Oxley Act of 2002, and the first certification filing.

⁵ Appendix A lists key events during the period April 2002 through August 2002, which includes the SEC certification study period, principally the third quarter of 2002.

defined in section 3.2). We control for return volatility in prior periods induced by earnings announcements and SEC filing dates and test, also, whether litigation-prone firms have greater volatility around the certification events. While we believe our controls are strenuous and conservative, there is always the risk that an effect might be present that our research design fails to detect. One study reports, for example, nothing unusual about return behavior around the SEC certification filing dates and, thus, concludes that it was either a “non event” as far as investors are concerned or had been fully anticipated earlier (Bhattacharya et al. 2002).⁶ Figure 1 provides a timeline of key events and unique dates that we consider in our research design.

Overall, the results in this paper confirm our general hypothesis. We find that investors did, apparently, respond to certification, as evidenced by an increase in standardized absolute excess return. This increase occurred on those days when the implications of certification for financial reporting should have been greatest, that is, when the certification order was issued, the Sarbanes-Oxley Act was passed, and registrants first made their certifications public. Our results also indicate that the increase in absolute excess return was greater for firms with prior securities litigation, particularly around the date of passage of Sarbanes-Oxley. The investor response that we document is robust to different versions of our absolute excess return metric, controls for other factors unrelated to certification, and by design is conservative in that some of the effects we seek may be obscured by our procedures.

⁶ We discuss this study further in the discussion of our results.

This result, however, runs counter to the financial media that observed that certification seemed to have little bearing on investors and/or was obscured by other factors. The media, apparently, looked for but did not find an “unveiling any new dark undergrowth of malfeasance in corporate America” and instead found only a “few stray weeds” (Porter 2002).⁷ Moreover, the initial certifications did not uncover a trove of earnings restatements as had been predicted.⁸ Nonetheless, after controlling for earnings and other information, our analysis suggests that investors paid attention to the certification order, and in ways that reflect a differential impact across the sample. This evidence should be useful as a first step towards a broader understanding of the consequences of certification, one longer term implication of which should be to increase information quality and thus, eventually, reduce stock return volatility.⁹

2 Prior Research

The literature on the firm-specific effects of regulation based on stock market measures falls into two categories: one focuses on signed excess return (e.g., Schipper and Thompson 1983; Binder 1985; and Smith et al. 1986); the other on unsigned excess return

⁷ See, also, “Worthless Promises?”, *The Economist*, September 28, 2002.

⁸ Earnings restatements, however, did increase modestly after the SEC due date according to a survey by the Huron Consulting Group (2003). The number of restatements filed in the five months from September 2002 to December 2002 (185) was higher than the number of the restatements in the first seven months of that year (145) and, likewise, as compared to restatements in the same five-month periods in 2000 and 2001, of 113 and 122 respectively.

⁹ The purpose of the SEC order was primarily to provide greater assurance for investors and the public. “In light of recent reports of accounting irregularities at public companies, including some large and seemingly well-regarded companies, the purpose of the Commission’s investigation is to provide greater assurance to the Commission and to investors that persons have not violated, or are not currently violating, the provisions of the federal securities laws governing corporate issuers’ financial reporting and accounting practices, and to aid the Commission in assessing whether it is necessary or appropriate in the public interest or for the protection of investors for the Commission to adopt or amend rules and regulations governing corporate issuers’ reporting and accounting practices and/or for the Commission to recommend legislation to Congress concerning these matters.” (SEC Order, 2002).

or volatility (e.g., Simon 1989). The first group examines signed excess return around common and unique regulatory events and, typically, uses seemingly unrelated regression to test hypotheses regarding the sign and/or magnitude of excess return in response to a regulation (after controlling for other variables that might explain excess return and/or explain differential regulatory effects around those same dates). For example, Smith et al. (1986) formulate hypotheses about the stock market response to oil price regulation based on operating characteristics of petroleum firms. These studies require a model to partition the unexpected information about regulation at event dates into good or bad news hypothesized to increase or decrease stock prices. However, if the expectations model is not well specified (or not specified at all), this approach may mask some of the effects being investigated. For example, Binder (1985) fails to detect a significant change in event period average excess return for 20 regulations applied to 14 different industries.

As a result of these issues, this study adopts an approach that does *not* require hypotheses regarding the sign and/or magnitude of excess return in response to the regulation.

Instead, we require only the identification of an event date (or dates) around which time we hypothesize that firm-specific information about the regulation is transmitted to the market. Our approach thus follows Simon (1989), for example, who examines the economic effects of the 1933 Securities Act and tests for changes in the variance of excess stock return by comparing event period volatility with pre- and post-event period volatility and examining sub-samples whose effects are hypothesized to differ. Our approach also mirrors those used in numerous studies of the information content of earnings (e.g., Beaver 1968; May 1971; Rohrbach and Chandra 1989; Cready and Mynatt 1991; El Gazzar 1998; Landsman and Maydew 2002) and, more recently, of SEC filings (e.g., Qi et

al. 2000; Asthana and Balsam 2001). The more recent studies suggest methodological refinements, which we incorporate in the research design where appropriate. We also replicate, in part, the findings in Bhattacharya et al. (2002), who also examine the initial impact of the SEC order but, based on a different methodology, report little investor response. We seek to understand better their results in comparison to ours.

3 Research Design, Variables, Sample

3.1 Design

We capture the response of investors as a change in excess return volatility around three certification event dates. These event dates, we assert, provided new information to the market about the expected costs and consequences of the new regulations for financial reporting. For example, certification and Sarbanes-Oxley were not only considered costly to implement but were also raised the cost of preparing and auditing financial statements more generally. These costs were not clearly articulated in the regulations. The new rules also changed the oversight and enforcement authority of the SEC, set new rules for auditors, attorneys, board members, and outside financial analysts (increased reporting, fewer conflicts of interest), and imposed new penalties and threats on errant managers¹⁰. The new rules, however, provided little guidance as to how (and when) such costs of implementation and possible enforcement and/or litigation would apply to an individual

¹⁰ For example, Sarbanes-Oxley increased the statute of limitations from one to two years after the discovery of the fraud and from three to five years after the alleged violation. Newman (2002) predicts that this new time frame could increase aggregate class action settlements from \$10 billion in the past decade to \$30 to \$40 billion in the next decade.

registrant. Investors, therefore, could only respond in uncertain and diverse ways at the time of the initial requirements.¹¹

We select absolute excess return for firm i on day t standardized by the standard deviation of absolute excess return in a non-event period as our measure of excess return volatility.¹²

This measure, defined in section 3.2, captures market-adjusted changes in investor expectations in response to news and events on day t relative to market-adjusted changes in a non-event period. This metric, however, should understate the firm-particular effects of SEC certification because the market aggregates all firms' effects, including the certification and non-certification effects of the SEC certifiers themselves, which are all larger firms and, thus, dominate the market. A market factor will also reflect key events surrounding the Sarbanes-Oxley legislation, which among other items, mandated certification and introduced criminal penalties for all registrants.¹³

¹¹ Our choice of excess return volatility is also consistent with the view that the costs and consequences of certification, such as those mentioned, are partially known to investors prior to the certification events. In other words, investors are generally aware of these changes and update their expectations of future return quickly and unbiasedly, but not necessarily homogeneously, conditional on new information in the certification events. Perino (2002) discusses some litigation aspects of certification that could have increased investor uncertainty, for instance, changes in criminal penalties, deterrence effects, and court rulings, and the fact that many aspects of certification simply called on the SEC to develop new rules and guidelines.

¹² Tests of excess return volatility also employ squared excess stock return and the relative rank of squared excess stock return in the event period in the vector of event and non-event period excess returns. Rohrbach and Chandra (1989) suggest that the use of a standardized absolute return variable—which we use—gives a more powerful test than those based on standardized squared excess return, which is biased in favor of firms with large abnormal returns. We also examine our results using unstandardized excess stock return and a measure of abnormal response similar to May (1971), who deflates absolute excess return by *average* absolute excess return in a non-report period. See section 4.6 on robustness tests.

¹³ An alternative to extracting a market index would be to extract an equivalent return metric for a sample of firms with identical characteristics other than SEC certification. However, this would not be possible since there is no group that is equivalent to the approximately one thousand largest U. S. companies *but for* certification. Also, even if one were to construct a sample of approximately equivalent, smaller companies, this sample would reflect the anticipated effects of certification, since smaller firm certification would have been anticipated because of the proposed SEC rule and the Sarbanes-Oxley deliberations that indicated that certification would eventually be required for all firms.

We test the directional hypothesis that absolute excess return *increases* in response to the three events expected to reveal significant information about certification, namely, the date of the SEC order, the passage of Sarbanes-Oxley, and a registrant's first certification filing. However, it is also possible that investors recognized that these events could have more of an impact on one group of firms than others, such as firms with a history of faulty financial reporting and/or firms whose litigation costs are expected to be higher. Thus, in addition to our initial hypothesis, we test a second hypothesis that absolute excess return on the certification dates varies on the basis of financial reporting quality. We use prior securities class action litigation activity as a proxy for financial reporting quality, as firms whose accounting and reporting has been questioned in the past are those that some investors might reasonably believe to be most impacted by certification. We also test the hypothesis that absolute excess return on the certification dates varies on the basis of expected litigation cost. We use securities class action settlement amounts as a proxy for litigation cost, based on the notion that certification should be more consequential for firms with higher past settlements.

To control for and/or extract the influence of other factors that might otherwise explain the effects of certification, we first compare absolute excess return around the initial certification filing date with absolute excess return around equivalent SEC filing dates in earlier years. Second, we control for the effects of earnings releases in the second quarter 2002, from July 1 to September 30, 2002, relative to those earlier years. Indeed, a key element is to control for the earnings release that precedes an SEC certification (or an SEC filing if in an earlier period). Under 2002 SEC filing rules, an issuer must file a 10-Q within 45 days of the end of the fiscal quarter, and most issuers file close to the due date.

On the other hand, most companies release their quarterly earnings well before that date. However, should some earnings release dates be highly coincidental with those dates we posit should reveal information about the effects of certification, then we could erroneously conclude an effect due to certification that is a response to unexpected earnings. A third more general factor is the level of institutional ownership (and size), as less institutionally owned (and smaller) firms have been shown to respond more at earnings release and SEC filing dates than more institutionally held firms (e.g., El-Gazzar 1988). We also consider the timing of an initial certification filing, since clustered filings, which tend to arrive closer to SEC due date, should be more informative given information transfer.

3.2 Variables

As motivated in the previous section, the primary variable of analysis is standardized absolute excess return, defined as:

$$SAER_{it} = \text{abs}(R_{it} - R_{mt}) \div \sigma, \quad (1)$$

where abs = absolute value operator, R_{it} = CRSP return on common stock of firm i for day t ; R_{mt} = CRSP return on a value weighted market portfolio for day t , and σ = standard deviation of absolute excess return $R_{it^*} - R_{mt^*}$ measured over $t^* = t_b$ to t_e , excluding days -5 to 5 relative to event date 0. We exclude from our deflator the average return on those days hypothesized to be abnormally higher due to information effects, since its inclusion increases the chances that the effects being investigated will not be detected. Research

designs in this area of study typically hold out from the average those days hypothesized to have information effects.

The event dates are those dates hypothesized to reveal information about certification to investors, or in the case of the prior years, those dates in the same quarter during which the firm files a 10-Q or 10-K with the SEC.¹⁴ We also examine SAER around earnings release dates during the certification period and in prior years and use the same definition of a non-event window in these tests. Also, as noted previously, we control for earnings release dates in our tests of investor response to certification, as a small number of earnings release dates coincide with the dates on which we test for certification effects, for example, on July 25, 2002.

We test the statistical significance of SAER around an event date in two principal ways. First, we test for a *change* in SAER (or differential SAER) from day t_1 to day t_2 , where day t_0 is an event day and compare this with the change in SAER in a prior period. This variable, under the null hypothesis of no incremental investor response, has the advantage that it is symmetrically distributed around a mean of zero.¹⁵ In the presence of information effects, however, this difference should be positive before and negative after

¹⁴ In our empirical tests, we set $t_b = -10$ and $t_e = 10$ relative to event date $t = 0$. Although arbitrary, the choice of t_b and t_e is motivated primarily by an assumption of our test statistic, which we standardize by a measure of the standard deviation of unsigned excess return in a non-informational period. A t_b to t_e period longer than 21 trading days, excluding days -5 to 5, increases the possibility that the standardization measure includes the information effects that we seek to detect. For example, a period commencing at day -30 for an August 14, 2002 filing event dates back to July 2, 2002 and therefore includes almost all the effects of second-quarter 2002 earnings announcements.

¹⁵ This is consistent with the specification of each distribution of SAER as a weighted combination of a skewed distribution (e.g., chi square) and a symmetric distribution (e.g., normal), where the chi square parameters are the same across the two excess return distributions. To examine the effects of standardization on the regression, we also examine model (1) with unstandardized excess return (AER) as the dependent variable. See also section 4.6 on robustness tests.

an event date (or the window during which information effects should occur). We examine three specific event dates. The first two are common calendar dates—the effective date of the SEC order (June 27, 2002) and the passage of Sarbanes-Oxley (July 25, 2002). The third is the unique calendar date of a certification filing. Figure 1 shows the timeline of various event dates. Earnings release dates in 2002 occurred primarily between July 10 and August 1.

Second, we test for the *incremental* effects of the certification variables on SAER using a cross-sectional, time series regression system applied to the combined sample of responses around the 2002 certifications and earlier year’s filings aligned in calendar time from the third Monday in June to the third Friday of August of each year.¹⁶ We specify and test the following model applied to the calendar time series of absolute excess return, SAER_{it}, for each firm *i*:

$$\begin{aligned}
 \text{SAER}_{it} = & \alpha_i + \beta_{11} \text{ERD}_{it} + \beta_{12} \text{ERD}_{i,2002} + \beta_{21} \text{CCD}_{1it} + \beta_{22} \text{CCD}_{2it} + \beta_{31} \text{UFD}_{1it} \\
 & + \beta_{32} \text{UFD}_{2it} + \beta_{41} \text{CON}_{1it} + \beta_{42} \text{CON}_{2it} + \beta_{43} \text{CON}_{3it} + \beta_{51} \text{CCD}_{1it} \times \\
 & \text{LIT}_{it} + \beta_{52} \text{CCD}_{2it} \times \text{LIT}_{it} + \beta_{53} \text{UFD}_{2it} \times \text{LIT}_{it} + \varepsilon_{it} \quad (2)
 \end{aligned}$$

The independent variables are as follows: ERD_{it} = 1 if earnings release date occurs in the period from 1995 to 2002, 0 otherwise *or* ERD_{it} = 1 if earnings release date occurs in 2001 and 2002 only, 0 otherwise¹⁷; ERD_{i,2002} = 1 if earnings release date occurs in 2002 only, 0 otherwise; CCD_{1it} = 1 if June 27, 2002, 0 otherwise; CCD_{2it} = 1 if July 25, 2002, 0 otherwise; UFD_{1it} = 1 if SEC filing date or certification filing date, 0 otherwise; UFD_{2it} =

¹⁶ This calendar period includes the same number of trading days and weekdays for all years.

¹⁷ For ERD_{it}, we examined two versions of the incremental effects of earnings on SAER: (1) relative to earnings releases in 1995-2002 and (2) relative to earnings releases in 2001 and 2002 only. The second version of the ERD variable controls for the more recent effects of earnings while examining the impact of certification on SAER. The empirical results are robust to both versions of ERD_{it}.

1 if August 14, 2002, 0 otherwise; $CON_{1it} = 1$ if year = 2002, 0 otherwise; $CON_{2it} = 1$ if market capitalization > median market capitalization in given year, 0 otherwise; and $CON_{3it} = 1$ if percentage institutional holdings > median institutional holdings in given year, 0 otherwise. Model (2) also interacts CCD_{1it} , CCD_{2it} , and UFD_{2it} with LIT_{it} , where $LIT_{it} = 1$ if the company was sued in a federal securities class action lawsuit in 1995-2001, 0 otherwise. These interactive variables test for whether the coefficient on CCD_{1it} , CCD_{2it} , or UFD_{2it} differs for firms subject to securities litigation versus those not subject to litigation.¹⁸

Our expectations regarding the regression coefficients are as follows: The earnings release date (ERD_{it}) coefficients β_{11} and β_{12} should be positive, consistent with prior evidence on the impact of earnings releases on $SAER_{it}$ (see section 2). We should also observe higher $SAER_{it}$ on or around a common SEC certification date (CCD_{it}), such as the effective date of the SEC order on June 27 or the passage of Sarbanes-Oxley on July 25; and on or around the unique certification filing dates (UFD_{it}) (mostly on August 14). Thus, the coefficients β_{21} , β_{22} , β_{31} and β_{32} should be positive.

We also expect that other partitions of the sample, for example, based on high or low market capitalization or institutional holdings, would explain $SAER$ consistent with prior research. These effects would be reflected as significant β_4 coefficients for the control variables CON_{it} . We also control for the possibility that earnings announcement effects in the earlier years could be different than the effects in 2002 apart from the specific effects

¹⁸ ERD_{it} , CCD_{it} , and UFD_{it} are set equal to 1 on those days when information effects are expected to be present. Consistent with much prior research, model (1) assumes a three-day event window, in that information effects relative to an event at t are assumed present at $t-1$, t , and $t+1$. ERD_{it} , CCD_{it} , and UFD_{it} are thus coded “1” on days -1, 0, and 1, and 0 elsewhere.

of certification. In terms of the interaction between CCD_{1it} , CCD_{2it} , UFD_{2it} with LIT_{it} , we hypothesize that the β_5 coefficients should be positive since investors should be more concerned with the impact of certification and Sarbanes-Oxley on those companies accused of securities law violations, the large majority of which relate to GAAP or auditing violations (Bajaj et al., 2000).¹⁹

3.3 Sample

Table 1 summarizes the certification sample by market capitalization, market-to-book ratio, institutional holdings, event date less release date (in days), primary earnings per share, total assets, and the standard deviation of absolute excess return in a non-event period. The data are reported for each of the years 1995 through 2002 and in total as well. The stock return data are from CRSP; all financial data are from Compustat 2001; and the prior securities litigation activity data are from Institutional Shareholder Services, Inc. These database constraints limit the number of sample firms for analysis to less than the 947 firms identified initially by the SEC. Our final sample consists of 641 companies with complete return data, which represents a substantial majority of the 695 firms required to certify by the August 14 due date.

As table 1 indicates, the companies are large, mostly profitable, and generally have been growing in size, except for market capitalization in the most recent year. The companies are also on average 64 percent owned by institutions. The table also indicates that the number of days from earnings release to SEC filing remains relatively constant across the

¹⁹ We also tested whether a firm that was audited by Arthur Andersen & Co., in addition to the litigation variable, impacted on our analysis. It did not, so we do not include these additional results in the paper.

years. Certification, thus, does not appear to have changed the time between earnings release and SEC filing, a factor that if decreasing could complicate the interpretation of investor response to an earnings release in that more earnings releases could be considered late. Finally, not including the days around earnings releases and certification events, the variance of absolute excess return generally increases. This favors the use of a standardized measure of unsigned excess return. Observe, however, that the variance of absolute excess return in 2002 in the non-event period, while not higher than in the two previous years, is generally higher than in the previous years combined. To the extent that this reflects information effects in the 2002 non-event period, standardized unsigned excess return in 2002 should be downward biased.

Table 2 summarizes the distribution of the SEC filing and earnings release dates by day of the month. As the table shows, the certification filings in 2002 occur mostly in August and cluster increasingly towards the August 14 due date. The distribution of equivalent SEC filing dates in 1995-2001 is similar, also clustering increasingly around 45 days after the end of the fiscal quarter. The table also shows the distribution of earnings release dates in 2002 versus prior years. Observe that these distributions are not as concentrated around a small number of dates, as are the SEC dates, with the majority occurring during mid to late July, well ahead of the SEC due date. Earnings release dates for 2002 are qualitatively similar to the same dates in earlier years. As such, this table offers no evidence that the distribution of earnings release and SEC filing dates has changed as a result of certification. Also, this table shows that most of the 2002 earnings news occurs in the window *after* the effective date of the certification order but *before* a certification filing. For example, 89 percent of 2002 earnings are released by August 8. Investor

response to a 2002 earnings release, however, could reflect uncertainty as a result of the SEC order and in anticipation of a filing.

4 Results

The results are presented in three stages. First, we report the results of investor response based on a short window around the certification filing date (section 4.1). We also examine investor response to prior SEC filings and earnings releases based on equivalent short window measures (section 4.2). The second stage examines the investor response to the three certification events (SEC Order, Sarbanes-Oxley passage, or first Certification filing) in a multiple regression context that controls for other information and events that might otherwise influence the effects of certification. The three events are tested both jointly (section 4.3) and as separate events (section 4.4). Third, section 4.6 summarizes tests of robustness of the research design, including a calendar day, portfolio analysis of investor response and a replication of results in a prior study.

4.1 Certification Filing Date Tests

Table 3 summarizes the short-window tests of investor response around the day of a certification filing. This table reports changes in SAER (SAER on the later day minus the earlier day) from day -1 to day 2. Thus, a positive number in table 3 indicates an increase in SAER, whereas a negative number represents a decrease. Table 3 also reports the type-I error probability that the SAER change is zero. Following earlier research on the investor response to SEC 10-K and 10-Q filings, we expect the strongest positive response to occur on day 0, the day of the filing. Investor response following days 0 and/or 1 should be lower, however, and hence we expect these differences to be negative. We also

expect investor response to a certification filing to be greater than in prior periods since those earlier SEC filings do not include or incorporate by reference a sworn certification.

The results confirm our hypothesis that investors responded positively and incrementally to the certification filing order. The results hold for the full certification sample, and the partitions accord with prior research. For example, the response for firms with low institutional holdings is generally stronger than firms with high institutional holdings (e.g., El-Gazzar 1988) and the response on concentrated filing days (i.e., August 14) is greater than on less concentrated days (e.g., Griffin 2003). Also, investor response increases when earnings announcement is closer to certification date, consistent with the view that certification may reflect some lagged component of the information in earnings. In short, table 3 documents with statistical reliability that investors responded positively around the certification filing date and in ways consistent with prior research on the market reaction to SEC filings. The response on August 14 is greater than on the other certification filing days. A certification filing, however, is an ending point in the chronology of certification events, and, thus, the effects that we capture at certification filing date include only those not anticipated by investors because of events or information prior to that date.

4.2 Earnings Release Date Tests

Given that the SEC order was effective in late June 2002, investor response to the announcement of second quarter 2002 earnings (for December 31 fiscal year firms) may include information about certification in addition to information about earnings more generally. As such, we examine whether the earnings announcement response in 2002

exceeds the response for the same firms and quarters in earlier years. As a non-statistical indicator, figure 2 compares mean SAER for second quarter 2002 with mean SAER in the earlier years. This plot shows a higher market response in 2002 around the time of a second-quarter earnings release. It also shows a more protracted response in 2002 than in the earlier years, possibly, a result of additional news about certification. Recall that Sarbanes-Oxley was passed and signed into law in late July such that the deliberations relating thereto transpired during earnings season.²⁰ We return to this point in section 4.3 but, first, we document formally that the investor response to a 2002 earnings release is significant and exceeds the response in earlier years. We present our tests in table 4 for the full certifier sample and for the same partitions as in table 3. The results of these partitions help us understand whether the elevated response to earnings releases is related to certification effects and/or to other factors.

As shown in all panels of table 4, investors responded significantly around earnings release date, and this response is higher in 2002 versus the other years. SAER plainly increases from day -1 to day 0 and then generally declines from day 0 or 1 to day 2 as earnings information is transmitted into prices. We observe little difference at 2002 earnings release date, however, depending on the level of institutional holdings and whether the release is closer to or further away from certification. Note, also, that the impact on unsigned excess return of the earnings releases of the 17 firms on August 14,

²⁰ Observe that figure 2 spikes on event day 5 (relative to the day of a second quarter earnings release in 2002). To consider a possible source for this spike, we identify from the distribution of earnings release dates for the second quarter of 2002 the day with the highest frequency of earnings announcements, which is July 18, 2002. July 25, 2002 falls five trading days after this date, which is the date of passage of Sarbanes-Oxley. This is a date on which we hypothesize there should be a significant investor response. Figure 2, therefore, is consistent with a calendar day response to the passage of Sarbanes-Oxley on July 25. We test this hypothesis formally in the regression analysis in section 4.3.

2002 is not significant (and thus not likely to influence the overall sample response to certification). Overall, these results are broadly consistent with prior research on the market reaction at earnings release date.²¹ They do not address, however, whether the events prior to and including SEC certification and other factors might help explain the higher response to an earnings release in 2002. We use multiple regression to address this question.

4.3 Multiple Regression Tests

This section presents the results from estimating regression model (2). This model specifies investor response for firm *i* on day *t* as a function of (a) common events that affect all firms on the same day, (b) unique events that affect each firm on specific, non-identical days, (c) factors intended to control for cross-sectional and/or time series variation, and (d) interaction variables that would explain whether the common or unique effects in (a) and (b) differ across firms. We identify two *common* events. These are the SEC certification order on June 27, 2002 and the passage of the Sarbanes-Oxley legislation on July 25, 2002. We identify two categories of firm/day *unique* events as the second quarter earnings release date and the SEC filing date (for second quarter 10-Q for December 31 SEC filers in 1995 through 2001) or the 2002 SEC certification filing date. Since all the independent variables are specified as unit variables, the parameter

²¹ By comparing the average response of investors around the 2002 earnings release dates to the average response of investors around the 2002 certification dates, we are also able to obtain an approximate measure of the relative significance of the certification responses. For example, the average earnings SAER on days -1, 0, and 1 in 2002 is 61.74 percent, 78.61 percent, and 75.79 percent higher than the average certification SAER around days -1, 0, and 1 on August 14, 2002.

coefficients capture an overall “mean shift”, that is, they estimate the average incremental increase or decrease in mean SAER as a result of that variable.

Since we are dealing with events on common and different days, we estimate jointly the parameters in model (2) as a multivariate regression model system in the spirit of the seemingly unrelated regression method as proposed by Zellner (1962) and applied in the finance and accounting literature, for example, by Schipper and Thompson (1983) Hughes and Ricks (1984), Binder (1985), and Smith et al. (1986). We specify a system of linear equations and test the null hypothesis that the average coefficient across equations/firms for a particular independent variable is zero versus the alternative hypothesis that it is positive or negative conditional on our prediction and/or the prior literature.²² This econometric approach also allows for variation across equations/firms in residual variance as well as non-zero contemporaneous residual covariance, which can lead to biased test statistics if model (2) were estimated cross-sectionally in event time to test for the presence of an effect of each information variable. Our application differs from the previous applications, however, in that model (2) specifies the dependent variable vector as unsigned excess return rather than signed total or cumulative return.

Table 5 summarizes the results for five specifications of regression model (2). All parameters are estimated using maximum likelihood estimation, except for specification 2, which estimates the parameters using ordinary least squares for comparison. The

²² We estimate model (2) using REML (residual maximum likelihood) estimation techniques, with the earnings announcement date and SEC filing date variables specified as random effects since these measures are “repeated” for each of six years. Unlike, ordinary least squares, this method recognizes contemporaneous correlation across equations/firms in estimating the system coefficients. REML estimates are generated using JMP Version 5 by JMP Software, a division of SAS Institute, Inc.

dependent variable is SAER, where the standard deviation of absolute excess return in the non event period is based on all returns in the calendar period in each year from the third Monday in June to the third Friday in August, except those days hypothesized to reflect information effects as specified by the independent variables.²³ The independent variables for equation (2) are defined in section 3.2.

From table 5, panel A, we observe the following. The coefficient β_{11} on ERD is positive and highly significant, thus indicating that investors responded around the day of an earnings announcement. On the other hand, the coefficient β_{12} is insignificant, thereby suggesting that investors did not respond incrementally at earnings release date in 2002 compared to the other years after controlling for all the other events and variables. As hypothesized, the coefficients β_{21} and β_{22} on the two common dates—CCD₁ and CCD₂, respectively—are both positive and significant, with the stronger effect for CCD₂. In other words, SAER is incrementally higher around those days after controlling for day-specific earnings announcement effects (and the other control variables). Other than certification filing itself, as we have posited already, these two CCD events are the days on which it is most likely that investors would have reacted to the effects of certification.

Investors may also have responded around the day of the actual certification filing, even though, as we have suggested and shown, this response should be moderated by

²³ While SAER is the appropriate variable, we also examined results based on AER (unstandardized) as the dependent variable to assess the effects of standardization on our results, which as we have indicated earlier tend to bias our tests conservatively. Recall that the second and third quarters of 2002 reflect firm-specific volatility apart from the direct effects of the events we study (e.g., from the bankruptcy of Enron and WorldCom). As such, when we deflate by a measure of volatility based on non-event days in June through August 2002, this volatility measure is still higher than in the other years, and this reduces the 2002 standardized SAER measure, potentially obscuring from the standardized measure some of effects that we seek to identify.

information conveyed by the earlier CCD events. The regression model estimates the filing response for both SEC and certification filing days in general and, specifically, for filings made on August 14, 2002. The results are as hypothesized, and indicate that investors responded positively and significantly to certification filings on August 14 (the coefficient on β_{32} is positive) but not to filings and certifications on the other dates, which reflect a less-than-average response (the coefficient on β_{31} is negative).²⁴ This result is consistent with research on the market impact of 10-K and 10-Q filings that documents a stronger average response on days of concentrated filings than non-concentrated filings (under the view that information transfer is greater on concentrated filing days). Note that the results in table 5 control for SEC filings in other years as well as those earnings announcements that are close to a certification event date.

We comment on four further aspects of table 5. First, with regard to the impact of the control variables in the regression, the results differ predictably on the basis of market capitalization, in that the response for smaller firms is greater than the response for larger firms. The addition of a size factor makes little difference to the other parameter estimates. However, when market capitalization and institutional holdings are included in the same regression, the institutional holdings coefficient is insignificant, due most likely to positive correlation between market capitalization and institutional holdings.²⁵

²⁴ Note that these results are consistent with the short window tests in table 3, which also examine the increase in SAER around an SEC filing or certification filing date.

²⁵ The sign of the coefficient for institutional holdings when market capitalization is not included in regression model (1) is negative and significant, consistent with the extant literature.

Second, the β_{52} coefficient is positive and significant (in most of the regressions) for the $CCD_2 \times LIT$ variable. This indicates that the investor response, which is higher for the average firm at the time of the passage of Sarbanes-Oxley, is even higher for firms subject to securities litigation versus those not subject to litigation. This also holds, to a lesser extent, as of the common certification date of August 14, 2002. The other interactive variable is insignificant, and thus its effect does not differ on the basis of the litigation variable.

Third, we observe little difference in the significance levels of the coefficients when estimated using maximum likelihood or ordinary least squares procedures. While the differences should be small in a regression system that contains several identical explanatory variables (i.e., CCD_1 , CCD_2), it is also apparent that the power from the large number of observations in the system more than offsets a loss of efficiency in estimating the coefficients using OLS, so that the same conclusions are drawn based on the two alternative econometric procedures.

Fourth, we comment on the results in panel B, which are based only on observations in 2001 and 2002. As such, the difference in these two panels is that the observed effects for the certification variables and the interactive variables in panel B are incremental to the effects of earnings releases in 2001 and 2002 rather than the effects of earnings releases in 1995-2002, which are shown in panel A. The results are generally similar, with the one difference being that the incremental response to earnings announcements in 2002 relative to prior years (coefficient β_{12}) is positive and significant in panel B, whereas it is positive and mostly insignificant in panel A.

4.4 Event Study Tests

Rather than analyze the three certification dates as sequential and related events (as in the previous section), we also examine the investor response to the three “independent” events. For each event, we align excess stock return to the event date and test whether the response at day 0 is positive and differs on the basis of litigation cost after controlling for market capitalization, institutional holdings, and earnings releases on the same day as the event date. Specifically, we test the following cross-sectional regression model, where the dependent variable, DEP_{i0e} , is either AER_{i0} or $SAER_{i0}$, for each certifier firm i at time $t=0$ for event date $e=$ SEC Order, Sarbanes-Oxley passage, or Certification filing.

$$DEP_{i0e} = \alpha_i + \beta_1MCP_{ie} + \beta_2INS_{ie} + \beta_3ERD_{ie} + \beta_4LTC_i + \varepsilon_{ie}, \quad (3)$$

and where the independent variables are unit variables defined as MCP = market capitalization as of December 31, 2001 (higher=1, lower=0), INS = institutional holdings (higher=1, lower=0), ERD = earnings release date (on event date =1, otherwise 0), and LTC = a proxy for expected litigation cost (higher =1, lower =0), based on the dollar amount of the most recent prior securities class action settlement for a certifier company, if any, as reported in the Institutional Shareholder Services, Inc. securities class action database.

Table 6 summarizes the results of 12 specifications of model (3).²⁶ Table 6 also reports t tests of the difference in AER from day -2 to day 0, defined as $AER_{i0} - AER_{i,-2}$, and

²⁶ Model (3) is estimated using ordinary least squares, which assumes cross-sectional independence of the residuals. Given event clustering, which can create dependencies across observations, this assumption may be violated. The significance levels in table 6 may therefore be overstated.

whether that difference varies on the basis of LTC.²⁷ Panel A summarizes the results for the SEC Order (June 27). For regressions 1 and 2, the coefficient on LTC is positive and significant, and thus AER varies on the basis of this variable. However, when SAER is the dependent variable (AER deflated by a measure of standard deviation of AER), the coefficient on LTC is not significant, suggesting that the effects of litigation cost are, in part, removed by use of a deflated dependent variable.²⁸ Panel A also examines whether $AER_{i0} - AER_{i,-2}$ is greater for higher LTC firms versus lower LTC firms. The increase for higher LTC firms (.0091) exceeds the increase for lower LTC firms (.0037). The difference in the increase, however (.0054) is not significant.

Table 6, panel B, shows similar effects around the Sarbanes-Oxley date. For example, the coefficients on LTC are positive and significant in regressions 5 and 6 but not 7 and 8; and the increase from day -2 to day 0 for higher LTC firms (.0187) exceeds the increase for lower LTC firms (.0126), although the difference is not significant.

Table 6, panel C, reports the market effects at certification filing date. Separate results are provided for the August 14 and non-August 14 filings. Again, similar to panels A and B, the responses at day 0 are greater for the higher LTC firms, and the increase in AER from day -2 to 0 is higher for higher LTC firms, though, as in the previous panels, the differences in the increase from day -2 to 0 are not statistically significant.

²⁷ The results for differences in SAER are same, as $AER_{i,2}$ and $AER_{i,0}$ are deflated by the same measure of standard deviation to derive $SAER_{i,2}$ and $SAER_{i,0}$.

²⁸ This result also suggests that prices impound expected litigation cost, since higher LTC firms have higher AER in general, not just around certification dates. An ideal proxy of litigation cost, therefore, should measure the incremental litigation cost due to certification and Sarbanes-Oxley and compare this with the incremental change in AER around the certification dates.

4.5 Discussion and interpretation

The results thus suggest that investors did, in fact, respond around the key events associated with SEC certification. Table 5 indicates that the responses are not subsumed by the investor response to earnings announcements and are incremental to the effects of otherwise equivalent SEC filings in earlier years. Table 5 also shows that the response around the passage of Sarbanes-Oxley differs on the basis of whether the firm had been involved in securities litigation in prior years. Table 6 generally supports these results, and using a proxy for litigation cost, suggests that the response around each of the three dates is higher for firms with higher litigation costs.

These results should be interpreted with care, however, for several reasons. First, our proxies for expected litigation cost and/or information quality are based on past litigation and, as such, these factors should already be priced into return. Thus, a part of the differential response based on prior litigation could be due to litigation cost in general rather than a change in litigation cost caused by certification. Second, factors other than litigation cost and/or information quality may explain a differential response around the three certification dates. As we suggested earlier, investor response should result from increased uncertainty about the costs of implementation of and compliance with new auditing standards and other regulations (whose higher cost may, in part, also be motivated by increased litigation cost). Third, the responses we observe may be partially explained by firm-level changes in accounting choice strategy, for example, from an

aggressive stance to a more conservative approach also, in part, motivated by higher litigation costs.²⁹

4.6 Robustness Tests

We conduct three kinds of analyses to examine the robustness of our results to alternative tests and procedures. First, we examine the results for additional partitions of the certifier sample and for different absolute excess return metrics, including an absolute excess return measure that adjusts for common market and industry factors. These alternative metrics enable us to examine the effect of dependencies across same-day excess return, possibly not captured by market-adjusted return and/or the maximum likelihood estimation approach as described in section 4.3. Second, we reproduce some of the results in a prior study on the impact of certification using our metrics. Third, we analyze unsigned excess return around certification filing date based on calendar day portfolios, thereby providing a further check on the effect of dependencies in contemporaneous excess return.³⁰

The first set of tests comprises the following. We recast tables 3 through 5 based on (a) an excess return variable similar to May (1971), by dividing unsigned excess return by average unsigned excess return, (b) the assumption that the day on which information effects occur is day 0 (rather than days -1, 0, and 1), and (c) three additional partitions of

²⁹ Basu (1997), for example, documents that earnings response coefficients generally increase in “regimes” of higher litigation cost (and when earnings reflect bad news more quickly than good news in response to that higher cost). Such increase, however, should be more consistent with an increase in AER than SAER around the certification dates, as SAER equals AER deflated by the standard deviation of AER in a non-event period, and AER in part reflects litigation cost.

³⁰ Robustness results are available on request.

the certifier sample. These additional partitions comprise certifiers that filed contemporaneously with a 10-Q, certifiers with December 31 fiscal year ends (for which the earnings and SEC filing date is for the second fiscal quarter), and certifiers with lower and higher analyst coverage, based on median IBES analyst forecast coverage as of the end of each fiscal year. In addition, we re-estimate model (2) under several alternative definitions of the variables. We use an alternative measure of excess daily return calculated as total return for firm i less an industry index of return for firm i , where the industry index is calculated as the mean return for all firms in the same three-digit SIC code as each firm in the certification sample.³¹

Other than for industry adjusted excess return and the partition based on IBES analyst coverage, both on which we comment next, our results and our conclusions with respect to certification do not change qualitatively when we adopt these different assumptions and procedures. In the case of industry-adjusted excess return the results for the certification variables are less significant. However, while less significant, the type I probabilities for the certification variables are still sufficiently below conventional norms to reject the hypothesis that they are non-zero.

For the analyst coverage partition, while the univariate measures of investor response as summarized in tables 3 and 4 do not differ appreciably for firms with higher or lower analyst coverage, the multiple regression results in table 5 for the 2002 certification response variables are generally stronger for firms with lower coverage than with higher

³¹ We then take the absolute value or standardized absolute value of these differences and follow the same procedures as before.

coverage. However, we would expect this result to the extent that prior research suggests that analyst coverage proxies for information quality (e.g., Lang and Lundholm 1996) and/or information processing by informed investors (e.g., Brennan et al. 1993; Brennan and Subramanyam 1995). Prices established by investors who are better informed or who have higher quality information should, *ceteris paribus*, respond less to a certification announcement, and this is what we find.

We also replicate and extend certain parts of the findings in Bhattacharya et al. (2002)(BGH). BGH study the market response for SEC filers and “non-filers”, where a non-filer is a firm listed in the SEC order that did not file a certification at all *or* in the standard form (Exhibit A from the SEC order) by August 14. For the non filers, they find that CAR does not decline as hypothesized but instead rises³². The effect of information transfer from early or on-time filers (certifiers) to late filers (non-certifiers) compounds this comparison, as information transfer can incorporate certification effects in non-certifiers’ returns at the time of certifiers’ earlier filings.³³ BGH speculate that the market had already separated and therefore anticipated both types of firms.

BGH also consider price and volume volatility tests. Beaver (1968) and others use this approach (as we do) because such tests require “no assumptions about the expectations models of investors” (p.68). BGH report that “with a few exceptions”, their results

³²However, non-filers are a relatively small sample, only 24 in BGH’s study, of which 15 did file their own version of the certification. In our sample, 10 firms filed by the August 14 deadline. A number of those were not anticipated to report in the standard form (for example, Adelphia, Enron, World Com) and therefore would not necessarily imply bad news.

³³ For example, Noreen and Lacey (1983) and Wild and Ramesh (1989) document this effect in the context of earnings releases.

suggest nothing unusual happened around the key dates that we both investigate, even after consideration of their volatility measures.

First, we examine their plot of “normalized volatility in event time” (in their figure 3), which is broadly similar to the SAER measure we use in this paper. We use the same standardization and sample partitioning procedures for the “certifier” group as they used, and thus standardize by dividing absolute daily return $|R_{it}|$ for a certifier by its average return from 75 days before to 20 days after the certification date, where a certifier is defined as a firm that reports on or before August 14, 2002. Our analysis shows similar patterns to those reported in their figure 3. We also replicate their figure 3 based on absolute market adjusted excess return, $|(R_{it} - R_{mt})|$, for both a value weighted and an equally weighted version of the index R_{mt} , and find little difference in the patterns shown, except that “normalized volatility” measure based on excess return is slightly higher when we use an equally weighted market index than when we use a value weighted market index (which is expected given that a value-weighted market index “weights” certifiers more than an equally weight market index). We observe a similar pattern when we use an equally weighted market index in our measure of standardized absolute excess return (SAER).

BGH also test for differences or variation in *signed* excess return between certifiers and non certifiers, and report these results in their tables 3 and 4. We replicate these results too. Table 7 reports the mean excess return and t-tests of the mean excess return for portfolios of certifiers that share the same event date, which is similar to the approach adopted by BGH in their table 3. We use the same sample as in our replication of BGH

figure 3, although our sample sizes for each event date are slightly different because we did not rely on the certification date that was stated by the SEC (as in BGH) and, instead, checked each date against the actual filing made and corrected the SEC date for any difference. Contrary to BGH table 3, our t tests reject the hypothesis that mean portfolio (signed) excess return is zero on several of the certification days, namely, August 8 (positive), 12 (negative), 13 (negative), and 14 (positive). We draw a similar conclusion when we widen our event window to include the day after certification.

Finally, we comment on the results in BGH table 5, which reports tests of unusual “volatility” on key event dates, in the same spirit as our approach based on SAER. Specifically, their table summarizes tests of whether the volatility for certifiers (certifications prior to and including August 14) and non-certifiers (certifications on August 15) differs from a series mean calculated 75 days before and 10 days after an event (or between April 1 and August 30, 2002 for a calendar day). Their results do not suggest an overall significant investor response. Table 5 (panel B) of BGH, nonetheless, do report a significant investor response ($p = 0.033$) for certifications on August 14 only, which is consistent with the analyses in tables 3 and 5 of this study.³⁴ A comparison of mean return volatility on the other two common dates—June 27 and July 25—reveals, however, that the choice of a standardization metric appears to make a difference. We choose a shorter standardization period to minimize the effects of other information on the certification or SEC filing measures and report in table 5 a significant response on these

³⁴ The regressions in table 5 include an indicator variable only for those certifications on August 14, where the investor response is measured over a three-day window. We also estimate a specification of model (1) that includes an additional indicator variable as 1 for all the non-August 14 certification dates, otherwise 0. However, when estimated in conjunction with the other variables in the model (earnings releases and control variables), the coefficient for the “non-August 14 certifications” is not significant.

two dates. When we use a longer window with no days excluded (e.g., 85 days as in BGH), the standardization period more likely includes the information effects being examined, thus lowering the power of the test.

4.7 Calendar day portfolio analysis

As a supplement to our event-based analysis, we examine the investor response to certification based on calendar day portfolios. For each certification date in 2002 and SEC filing date in 1995-2001, we form an excess return portfolio as an equally weighted average of all certifications/filings on that day. We then construct a portfolio excess return series for all trading days in August 2002. For example, if 10 certifications occur on August 1, 2002, the calendar day portfolio excess return is calculated as the mean of the 10 individual excess returns on that date. We also derive a calendar day portfolio excess return series for each equivalent trading day in the prior years, where the portfolios are based on SEC filing dates rather than certification dates. Finally, we calculate the difference between the mean certification date portfolio excess return for each trading day in August 2002 and the mean SEC filing date portfolio excess return on the equivalent day in August in the prior years. These differences reflect the additional unsigned excess return for each trading day in August 2002 relative to the same trading day in a prior period. They do not necessarily represent the same firms, however, as a firm that files on a given day in August 2002 may not file on exactly the same day in a previous year.³⁵

³⁵ The earlier tests in tables 3 through 5, though, are constructed so that the event day returns for certification filings are based on the same sample of firms as the event day returns for the other SEC filings.

Table 8 presents the results of analyzing the effects of certification on a calendar day basis. The table reports the portfolio SAERs and AERs for each trading day in August 2002 and compares this to the portfolio SAERs and AERs for the equivalent trading day averaged over the prior years 1995 through 2001. Table 8 also reports the number of certification firms in each calendar day portfolio. Whether based on all days or only those days prior to August 14, this table shows that mean certification SAER and AER are reliably greater than non-certification SAER and AER. Also, the differences tend to be greater when more certification filings occur on a given day. In addition, this table reports that the average AER for certifiers in 2002 is at least 50 percent higher than equivalent measures based on the prior years; and more specifically, that the average AER on August 14 is 72.5 percent higher than in 1995-2001.³⁶ Thus, on a calendar day basis, mean certification AER and SAER are appreciably higher than in previous years, with the strongest effects a few days before and after SEC certification due date. Finally, observe that the results in table 8 are fully consistent with tables 5 and 6 (panel C), in that the latter tables report stronger certification filing effects on day 0 relative to August 14 than on the other certification filing dates. The AER data in table 8 are also plotted in figure 3.

5 Summary and Conclusion

This study investigates the investor response to the implementation of the SEC certification requirements in July and August of 2002 that ordered the two senior officers

³⁶ The percentage change in SAER is less than 72.5% because excess return in the non-information periods in 2002 (which are used to standardize) is generally higher than in the previous years. See, also, table 2. We highlight percentage change in AER because it may be more economically interpretable—as it represents the average increase in return volatility at certification date relative to an equivalent date in a prior period. According to table 8, average return volatility on August 14 increases from 1.48% in prior years on average to 2.55% in 2002, a jump of 72.5%.

of over 900 large SEC registrants each to submit sworn statements that certify their financial statements as materially accurate and complete pursuant to the Securities Act of 1934. Given the significance of and the uncertainties introduced by certification, we hypothesize that the investor response should, at least initially, be reflected as an increase in firm-specific return volatility around the initial events that made the requirements a reality. We also hypothesize that this response should vary on the basis of the quality of a firm's financial reporting and/or expected litigation cost, which we proxy by a measure of prior securities litigation activity and settlement cost, respectively.

We identify three certification events, two of which are common calendar dates and the third is the firm-unique date of the first certification filing. The common dates are June 27, 2002 (date of the SEC order for large registrants to certify) and July 25, 2002 (passage of the Sarbanes-Oxley Act of 2002) and the firm-unique date is when the certification filing was actually made, mostly on or prior to August 14, 2002. We benchmark the investor response to certification filings in 2002, to earnings releases in 2002, and an average of otherwise equivalent earnings and SEC filing responses in the prior years. We also control for other factors known to explain variation in unsigned excess return, such as market capitalization and institutional holdings.

Our results are consistent with the view that investors did, in fact, respond to the events associated with SEC certification. Not only did investors respond precisely around those events when such response would have been anticipated (supports our first hypothesis) but also this response differs on the basis of prior litigation (supports our second hypothesis), particularly around the passage of Sarbanes-Oxley. In relative magnitude, these responses

represent about one-half to two-thirds of the average response to an earnings announcement. The litigation variables that we examine, however, are only a partial explanation of differences in response across the sample. The cost of implementation and additional auditing and a shift to more conservative accounting, for example, may further explain these differences.

We also document certification effects incremental to current and prior earnings announcements and produce results consistent with prior research earnings announcements in non-certification periods. These additional tests and controls, in our view, help assure us that the effects we document are a response to certification and not to other unknown factors, although, as in any empirical study, unspecified correlated omitted variables and measurement error may be influencing the results.

Finally, we note that if the certification requirement and Sarbanes-Oxley more generally are to have their intended effect of restoring confidence and integrity to financial reporting and accountability, then, eventually, this effect should be manifested in market prices as a reduction in excess return volatility. A natural extension of this research would, therefore, analyze the extent to which future return uncertainty is reduced as investors gain more experience and understanding of the consequences of certification and Sarbanes-Oxley. A study of this kind would be in the spirit of Simon (1989), who finds that stock price volatility decreased following the passage of the 1933 securities act.

References

- Asthana, S., and S. Balsam, 2001, The Effect of EDGAR on the Market Reaction to 10-K Filings, *Journal of Accounting and Public Policy* 20, 349-372.
- Bajaj, M., S. Mazumdar and A. Sarin, 2000, *Securities Class Action Settlements: An Empirical Analysis*, LECG LLC, November.
- Basu, S., 1997, The Conservatism Principle and the Asymmetric Timeliness of Earnings, *Journal of Accounting and Economics*, 24, 3-37.
- Beaver, W. H., 1968, The Information Content of Annual Earnings Announcements, *Journal of Accounting Research* 6, 67-100.
- Bhattacharya, U., P. Groznik, and B. Haslem, 2002, Is CEO Certification of Earnings Numbers Value-Relevant? Unpublished working paper, Indiana University, September.
- Binder, J. J., 1985, Measuring the Effects of Regulation With Stock Price Data, *Rand Journal of Economics* 16, 167-183.
- Brennan, M., N. Jegadeesh, and B. Swaminathan, 1993. Investment Analysis and the Adjustment of Stock prices to Common Information, *Review of Financial Studies* 6, 799–824.
- Brennan, M., and A. Subramanyam, 1995, Investment Analysis and Price Formation in Securities Markets, *Journal of Financial Economics* 38, 361-381.
- Cready, W. M., and P. G. Mynatt, 1991, The Information Content of Annual Reports: A Price and Trading Response Analysis, *The Accounting Review* 66, 291-312.
- El-Gazzar, S. M., 1988, Predisclosure Information and Institutional Ownership: A Cross-sectional Examination of Market Revaluations During Earnings Announcement Periods, *The Accounting Review* 73, 119-129.
- Griffin, P. A., 2003, Got Information? Investor Response to Form 10-K and Form 10-Q EDGAR Filings, *Review of Accounting Studies*, forthcoming.
- Hughes, J. S., and W. E. Ricks, 1984, Accounting for Retail Land Sales: Analysis of a Mandated Change, *Journal of Accounting and Economics* 6, 101-132.
- Huron Consulting Group, 2003, An Analysis of Restatement Matters: Rules, Errors, Ethics For the Five Years Ended December 31, 2002, Abstract and Summary, January.
- Johnson, M. F., R. Kasznik, and K. K. Nelson, 2000, Shareholder Wealth Effects of Private Securities Litigation Reform of 1995, Research Paper, *Review of Accounting Studies* 5, 217-233.

- Landsman, W. R., and E. L. Maydew, 2002, Has the Information Content of Quarterly Earnings Announcements Declined in the Past Three Decades? *Journal of Accounting Research* 40, 797-808.
- Lang, M., and R. Lundholm, 1996, Corporate Disclosure Policy and Analyst Behavior, *The Accounting Review* 71, 467-492.
- May, R. G., 1971, The Influence of Quarterly Earnings Announcements on Investor Decisions as Reflected in Common Stock Price Changes, *Journal of Accounting Research* 9 (Supplement), 119-163.
- McKinnon, J. D., and K. K. Spors, 2002, Following the SEC Deadline: Some Still Haven't Certified Earnings. While Others Wait for SEC's Approval, *Wall Street Journal*, August 16.
- Newman, J., 2002, "New Law Paves Way for Increased Funds for Injured Investors: The Sarbanes-Oxley Act Opens the Door for More Settlements and New SEC Restitution" *Securities Class Action Alert*, Institutional Investor Services, September.
- Noreen, E.W., and J. M. F. Lacey, 1981, Intra-Industry Information Transfers Associated With Earnings Releases, *Journal of Accounting and Economics* 3, 201-232.
- Perino, M. A., 2002, Enron's Legislative Aftermath: Some Reflections on the Deterrence Aspects of the Sarbanes-Oxley Act of 2002, Working Paper No. 212 Center for Law and Economic Studies, Columbia Law School, October.
- Porter, E., 2002, Certification Deadline Reveals Mostly Simple Account Errors, *Wall Street Journal*, August 15.
- Qi, D., W. Wu, and I. Haw, 2000, The Incremental Information Content of SEC 10-K Reports Filed under the EDGAR System, *Journal of Accounting, Auditing and Finance* 15, 25-46.
- Rohrbach, K., and R. Chandra, 1989, The Power of Beaver's U against a Variance Increase in Market Model Residuals, *Journal of Accounting Research* 27, 145-155.
- Schipper, K., and R. Thompson, 1983, The Impact of Merger-Related Regulations on the Shareholder of Acquiring Firms, *Journal of Accounting Research* 21, 184-221
- Simon, C. J., 1989, The Effect of the 1933 Securities Act on Investor Information and the Performance of New Issues, *American Economic Review* 79, 295-318.
- Securities and Exchange Commission, 2002a, File No. 4-460: Order Requiring the Filing of Sworn Statements Pursuant to Section 21(a)(1) of the Securities Exchange Act of 1934, June 27.
- Securities and Exchange Commission, 2002b, Final Rule: Certification of Disclosure in Companies' Quarterly and Annual Reports, August 29.

Smith, R. T., M. Bradley, and G. Jarrell, 1986, Studying Firm-Specific Effects of Regulation with Stock Market Data: An Application to Oil Price Regulation, *Rand Journal of Economics* 17, 467-489.

Wild, J.J., and K. F. Ramesh, 1989, Managers' Earnings Forecasts and Intra-Industry Information Transfers, *Journal of Accounting and Economics* 11, 3-34.

Zellner, A., 1962, An Efficient Method of Estimating Seemingly Unrelated Regressions and Tests for Aggregation Bias, *Journal of the American Statistical Association* 57, 348-368.

Table 1
Summary Certification Sample Statistics

	Total	1995	1996	1997	1998	1999	2000	2001	2002
<u>Market Capitalization, in \$000s</u>									
Mean	10,530	6,154	6,414	8,846	10,447	12,989	14,490	13,301	9,364
Median	2,766	2,231	2,161	2,891	2,841	3,169	3,103	3,398	2,561
Standard Dev.	29,533	12,345	14,372	20,976	26,791	36,414	42,380	36,352	24,958
No. of Obs.	4702	422	527	564	592	621	642	632	798
<u>Market-to-Book Ratio</u>									
Mean	3.90	3.36	4.02	4.23	3.82	5.43	3.53	2.85	na
Median	2.47	2.33	2.38	2.91	2.73	2.51	2.18	2.21	na
Standard Dev.	21.91	5.01	10.27	6.59	8.06	52.04	11.78	5.90	na
No. of Obs.	3919	420	517	548	580	608	628	618	na
<u>Institutional Holdings, in %s</u>									
Mean	0.58	0.52	0.51	0.50	0.52	0.53	0.56	0.63	0.64
Median	0.60	0.54	0.53	0.54	0.56	0.55	0.58	0.65	0.65
Standard Dev.	0.21	0.20	0.20	0.23	0.22	0.21	0.19	0.19	0.20
No. of Obs.	2973	186	244	288	306	329	339	579	807
<u>Event Date less Release Date, in days</u>									
Mean	19.4	18.9	20.5	19.5	20.0	19.4	17.8	17.8	20.00
Median	20.0	20.0	21.0	21.0	21.0	20.0	19.0	19.0	20.00
Standard Dev.	8.0	7.8	8.1	8.4	7.9	7.9	8.0	8.1	12.80
No. of Obs.	3869	374	473	507	529	572	595	588	601
<u>Primary Earnings Per Share, in \$0s</u>									
Mean	3.28	2.14	2.11	1.85	1.93	5.50	3.48	5.18	na
Median	1.71	1.98	1.83	1.77	1.75	1.53	1.64	1.63	na
Standard Dev.	52.87	2.66	3.33	4.96	3.68	91.72	40.92	87.87	na
No. of Obs.	3921	421	518	548	580	608	628	618	na
<u>Total Assets, in \$000s</u>									
Mean	6,514.9	5,678.8	5,383.9	5,554.0	6,024.4	6,535.9	7,428.3	8,392.9	na
Median	2,331.0	1,919.5	1,761.2	1,998.0	2,018.4	2,297.3	2,757.7	3,224.9	na
Standard Dev.	15,147.5	13,712.3	13,473.4	13,475.2	14,137.8	14,213.3	16,422.8	18,685.4	na
Skewness	7.18	6.74	7.44	7.51	7.30	6.62	6.84	6.93	na
No. of Obs.	3919	420	517	548	580	608	628	618	na
<u>Standard Dev. of Absolute Excess Return in Non-Event Period</u>									
Mean	1.40%	1.00%	1.10%	1.20%	1.50%	1.50%	2.00%	1.60%	1.60%
Median	1.20%	0.90%	0.90%	1.00%	1.30%	1.30%	1.70%	1.20%	1.20%
Standard Dev.	0.90%	0.50%	0.60%	0.60%	0.80%	0.80%	1.00%	1.10%	1.40%
Skewness	4.02	1.94	2.94	1.83	3.82	4.35	3.56	3.95	4.37
No. of Obs.	4648	422	527	564	592	621	641	632	641

This table presents summary statistics for the SEC certification sample by year. na = not available. Source: Compustat, CRSP.

Table 2
Distribution of Certification, SEC Filing, and Earnings Release Dates

Date (mdd)	SEC Date		Earnings Release Date	
	2002	1995-2001	2002	1995-2001
<715	0.4%	0.4%	12.1%	6.8%
715	0.4%	0.4%	14.5%	9.8%
716	0.4%	0.5%	19.4%	13.8%
717	0.4%	0.7%	26.1%	19.1%
718	0.4%	0.8%	36.0%	24.8%
719	0.4%	1.0%	37.8%	29.8%
720	0.4%	1.1%	37.8%	36.0%
721	0.4%	1.2%	37.9%	41.6%
722	0.4%	1.4%	41.6%	47.3%
723	0.4%	1.5%	51.2%	52.4%
724	0.4%	2.0%	59.7%	58.4%
725	0.4%	2.4%	68.9%	63.0%
726	0.4%	2.9%	70.2%	68.4%
727	0.4%	3.5%	70.2%	72.8%
728	0.4%	4.0%	70.2%	75.2%
729	0.4%	4.4%	72.6%	77.5%
730	1.3%	5.2%	76.4%	79.4%
731	2.6%	6.2%	80.2%	81.2%
801	4.3%	6.9%	83.0%	82.6%
802	6.8%	7.7%	83.3%	83.8%
803	6.8%	8.9%	83.3%	85.1%
804	6.8%	10.1%	83.3%	85.9%
805	8.4%	10.7%	84.1%	86.9%
806	10.9%	12.3%	85.9%	87.6%
807	15.6%	14.4%	87.6%	88.9%
808	20.7%	17.3%	88.7%	90.0%
809	28.8%	20.8%	88.7%	90.7%
810	28.8%	26.4%	88.7%	91.5%
811	28.8%	34.7%	88.7%	92.2%
812	38.8%	41.1%	89.4%	92.7%
813	59.6%	54.6%	91.6%	93.4%
814	88.0%	83.4%	93.7%	94.4%
815	89.9%	85.2%	95.0%	95.1%
816	91.2%	89.4%	95.1%	95.5%
817	91.2%	90.1%	95.1%	95.9%
818	91.2%	90.7%	95.1%	96.2%
819	92.2%	91.0%	95.8%	96.4%
820	92.6%	91.1%	96.9%	96.6%
> 820	100.0%	100.0%	100.0%	100.0%
Totals	691	4278	813	3638

This table reports the cumulative distribution of the dates of SEC certification, prior equivalent SEC filing in 1995-2001, and earnings release for the SEC certification sample. Source: SEC Edgar header files, Compustat, and CRSP.

Table 3
Short Window Tests of Investor Response Around Certification Filing Date

From Day To Day	Change in SAER			Paired t test probabilities (2 tailed)		
	-1	0	1	-1	0	1
<u>Certification Filing Date 2002 (n=641)</u>						
0	0.224			0.002		
1	0.123	-0.100		0.061	0.154	
2	0.114	-0.109	-0.007	0.185	0.209	0.930
<u>SEC Filing Date 1995-2001 (n=4,642)</u>						
0	0.099			0.001		
1	0.052	-0.047		0.072	0.120	
2	0.011	-0.088	-0.041	0.702	0.004	0.154
<u>Certification Filing Date 2002: High Institutional Holdings (n=373)</u>						
0	0.250			0.079		
1	0.073	-0.180		0.572	0.203	
2	0.170	-0.080	0.101	0.237	0.557	0.471
<u>Certification Filing Date 2002: Low Institutional Holdings (n=236)</u>						
0	0.240			0.040		
1	0.323	0.089		0.022	0.563	
2	0.262	0.024	-0.055	0.035	0.869	0.725
<u>Certification Filing Date 2002: August 14, 2002 (n=196)</u>						
0	0.528			0.001		
1	0.406	-0.122		0.002	0.434	
2	0.285	-0.244	-0.114	0.021	0.132	0.338
<u>Certification Filing Date 2002: Non-August 14, 2002 (n=445)</u>						
0	0.110			0.202		
1	-0.002	-0.111		0.974	0.165	
2	0.040	-0.069	0.042	0.713	0.513	0.688
<u>Certification Filing Date 2002: High Event Date less Release Date (n=303)</u>						
0	0.279			0.037		
1	0.238	-0.041		0.066	0.761	
2	0.229	-0.050	-0.009	0.182	0.790	0.953
<u>Certification Filing Date 2002: Low Event Date less Release Date (n=274)</u>						
0	0.476			0.069		
1	-0.073	-0.549		0.699	0.065	
2	0.163	-0.312	0.236	0.538	0.184	0.405

This table reports t tests of the difference between the SAER around certification filing date and the SAER around an earlier, equivalent SEC filing date. Results are also shown for three partitions of the certification sample: High versus low institutional holdings; Filings on August 14, 2002 versus other certification filings; and Filings further away from an earnings release date (high event date less release date) versus filings closer to an earnings release date (low event date less release date).

Table 4
Short Window Tests of Investor Response Around Earnings Release Date

From Day To Day	Change in SAER			Paired t test probabilities (2 tailed)		
	-1	0	1	-1	0	1
<u>Earnings Release Date 2002 (n=776)</u>						
0	0.862			<.0001		
1	0.235	-0.888		0.007	<.0001	
2	-0.261	-0.627	0.162	0.085	<.0001	<.0001
<u>Earnings Release Date 1995-2001 (n=3610)</u>						
0	0.345			<.0001		
1	-0.090	-0.617		0.003	<.0001	
2	-0.181	-0.436	0.055	<.0001	<.0001	0.440
<u>Earnings Release Date 2002: High Institutional Holdings (n=470)</u>						
0	1.202			<.0001		
1	0.845	-0.356		<.0001	0.070	
2	0.106	-1.096	-0.740	0.320	<.0001	<.0001
<u>Earnings Release Date 2002: Low Institutional Holdings (n=300)</u>						
0	1.001			<.0001		
1	0.896	-0.105		<.0001	0.663	
2	0.442	-0.559	-0.454	0.003	0.006	0.025
<u>Earnings Release Date 2002: August 14, 2002 (n=17)</u>						
0	0.046			0.900		
1	0.289	0.242		0.675	0.651	
2	-0.541	-0.588	-0.830	0.206	0.111	0.152
<u>Earnings Release Date 2002: Non-August 14, 2002 (n=760)</u>						
0	1.145			<.0001		
1	0.874	-0.272		<.0001	0.078	
2	0.251	-0.894	-0.622	0.004	<.0001	<.0001
<u>Earnings Release Date 2002: High Event Date less Release Date (n=303)</u>						
0	1.164			<.0001		
1	1.146	-0.018		<.0001	0.947	
2	0.415	-0.749	-0.731	0.004	0.000	0.001
<u>Earnings Release Date 2002: Low Event Date less Release Date (n=274)</u>						
0	1.111			<.0001		
1	0.611	-0.500		0.000	0.035	
2	-0.035	-1.146	-0.646	0.810	<.0001	0.000

This table reports t tests of the difference between the SAER around 2002 earnings release date and the SAER around an earlier, equivalent earnings release date. Results are also shown for three partitions of the certification sample: High versus low institutional holdings; Filings on August 14, 2002 versus other Filings; and Filings further away from an earnings release date (high event date less release date) versus filings closer to an earnings release date (low event date less release date).

Table 5
Multiple Regression Tests of Investor Response to Certification

Estimation Method	Intercept	Earnings Release Date: ERD	2002 ERD vs. Other	June 27, 2002: CCD ₁	July 25, 2002: CCD ₂	SEC Filing Date: UFD ₁	August 14, 2002: UFD ₂	2002 vs. Other: CON ₁	Market Cap.: CON ₂	Instit. Holdings: CON ₃	CCD ₁ x LIT	CCD ₂ x LIT	UFD ₂ x LIT	F Statistic	Adjusted R ²	No. of Obs.
	α	β_{11}	β_{12}	β_{21}	β_{22}	β_{31}	β_{32}	β_{41}	β_{42}	β_{43}	β_{51}	β_{52}	β_{53}			
Sign	+/-	+	+/-	+	+	+	+	+/-	-	-	+	+	+			
<u>Panel A: Prior ERD for 1995-2001</u>																
1 REML	1.034	0.386	0.039	0.065	0.287	-0.061	0.074	-0.186	-0.185	-0.005	0.034	0.117	0.183	185.8	1.97%	110371
Signif.	***	<***	ns	*	<***	<***	ns	<***	<***	ns	ns	*	ns	***		
2 OLS	1.034	0.386	0.038	0.088	0.295	-0.065	0.132	-0.188	-0.185	-0.005	0.013	0.111	0.130	186.3	1.97%	110371
Signif.	***	<***	ns	*	<***	<***	ns	<***	<***	ns	ns	ns	ns	***		
3 REML	1.011	0.369	0.030	0.074	0.280	-0.062	0.158	-0.179	-0.189		-0.035	0.164	0.124	402.3	1.92%	225261
Signif.	***	<***	ns	*	<***	<***	**	<***	***		ns	***	ns	***		
4 REML	0.920	0.365	0.046	0.067	0.285	-0.066	0.155	-0.190			-0.035	0.169	0.190	250.1	1.00%	247390
Signif.	***	<***	*	*	<***	<***	**	<***			ns	***	*	***		
5 REML	1.036	0.385	0.043	0.080	0.332	-0.062	0.148	-0.188	-0.185	-0.006				248.2	1.97%	110812
Signif.	***	<***	ns	*	<***	<***	*	<***	<***	ns				***		
<u>Panel B: Prior ERD for 2001 only</u>																
1 REML	0.981	0.387	0.147	0.074	0.285	-0.122	0.141	-0.107	-0.175	-0.070	0.027	0.122	0.184	65.7	2.44%	31229
Signif.	***	<***	***	*	<***	***	**	<***	<***	<***	ns	*	ns	<***		
2 OLS	0.981	0.390	0.145	0.094	0.293	-0.137	0.168	-0.110	-0.175	-0.070	0.008	0.116	0.174	66.1	2.44%	31229
Signif.	***	<***	***	*	<***	<***	**	<***	<***	<***	ns	*	ns	<***		
3 REML	0.949	0.322	0.178	0.076	0.277	-0.127	0.120	-0.108	-0.209		-0.035	0.168	0.222	130.9	2.30%	60985
Signif.	***	<***	<***	*	<***	<***	**	<***	<***		ns	***	*	<***		
4 REML	0.834	0.306	0.212	0.069	0.281	-0.121	0.101	-0.104			-0.035	0.173	0.296	85.1	1.29%	64776
Signif.	***	<***	<***	*	<***	<***	**	<***			ns	***	***	<***		
5 REML	0.982	0.384	0.152	0.085	0.332	-0.125	0.166	-0.108	-0.177	-0.070				87.4	2.44%	31307
Signif.	***	<***	***	**	<***	<***	***	<***	<***	<***				<***		

This table summarizes the results of five different specifications of regression model (2). The dependent variable is SAER. The estimation procedure is REML (residual maximum likelihood) or OLS (ordinary least squares). The independent variables are: ERD=1 if earnings release date, 0 otherwise (panel A only) or ERD= 1 if earnings release date in 2001, 0 otherwise (panel B only); ERD x 2002=1 if 2002 ERD, 0 otherwise; CCD₁=1 if June 27, 2002, 0 otherwise; CCD₂=1 if July 25, 2002, 0 otherwise; UFD₁=1 if SEC or certification filing date, 0 otherwise; UFD₂=1 if certification filing date is August 14, 2002, 0 otherwise; CON₁=1 if excess return year=2002, 0 otherwise; CON₂=1 if market capitalization > median in year, 0 otherwise; CON₃=1 if institutional holdings > median in year, 0 otherwise; and LIT=1 if a federal securities class action is filed in 1995-2001, otherwise 0. Tests of significance of coefficients: <***=less than .0001; *** =less than .001, **=less than .01, * =less than .1, and ns=not significant. Tests are relative to a zero regression coefficient. Class Action Filing Dates from Institutional Shareholder Services, Inc.

Table 6
Event Study Analysis of SEC Order, Sarbanes-Oxley, and Certification Filing Dates

Dependent Variable	Paired t test	Regression of Dependent Variable on Market Cap., Institutional Holdings, and Litigation Cost										
		Mean	prob.	#	Intercept Coeff. Sig.	Market Cap. Coeff. Sig.	Instit. Hlgs. Coeff. Sig.	Earnings Rel. Coeff. Sig.	Litig. Cost Coeff. Sig.	F Sig.	Adjusted R Square	No. of Obs.
<u>Panel A: SEC Order Date (June 27)</u>												
AER (0)	0.0243	<.0001	1	0.0190<***	-0.0020ns	0.0020ns	-0.0070ns	0.0110**	*	1.40%	454	
			2	0.0210<***		-0.0005ns	-0.0100ns	0.0120<***	**	2.00%	621	
SAER (0)	1.7662	<.0001	3	1.7930<***	-0.2900*	0.3210*	-0.1570ns	-0.1800ns	*	0.90%	454	
			4	1.6950<***		0.1620ns	-0.2040ns	-0.0350ns	ns	0.02%	621	
Change in AER (-2, 0): High Litig. Cost	0.0091	0.0388									159	
Change in AER (-2, 0): Low Litig. Cost	0.0037	0.0027									494	
Difference	0.0054	0.1407										
<u>Panel B: Passage of Sarbanes-Oxley (July 25)</u>												
AER (0)	0.0403	<.0001	5	0.0360<***	-0.0050ns	-0.0050ns	0.0280<***	0.0130**	<***	7.00%	455	
			6	0.0360<***		-0.0090**	0.0250<***	0.0160***	<***	5.70%	622	
SAER (0)	2.5942	<.0001	7	2.9820<***	0.1280ns	-0.7410**	2.0480<***	-0.3080ns	<***	5.60%	455	
			8	2.7420<***		-0.6560**	1.8010<***	-0.1290ns	<***	4.70%	622	
Change in AER (-2, 0): High Litig. Cost	0.0187	0.0036									157	
Change in AER (-2, 0): Low Litig. Cost	0.0126	<.0001									493	
Difference	0.0061	0.282										
<u>Panel C: Certification Filing Date (Varies)</u>												
AER (0)	0.0226	<.0001	9	0.0180<***	-0.0010ns	0.0020ns	0.0120ns	0.0040ns	ns	0.20%	392	
			10	0.0190<***		0.0010ns	0.0070ns	0.0060*	*	0.90%	528	
AER (0) Aug. 14: High Litig. Costs	0.0377	<.0001									39	
AER (0) Aug. 14: Low Litig. Costs	0.0238	<.0001									106	
AER (0) Non-Aug. 14: High Litig. Costs	0.0242	<.0001									88	
AER (0) Non-Aug. 14: Low Litig. Costs	0.0198	<.0001									313	
SAER (0)			11	1.6240<***	-0.0670ns	0.0320ns	0.7240ns	-0.2080ns	ns	0.50%	392	
			12	1.4560<***		0.0990ns	0.4700ns	-0.1730ns	ns	0.40%	528	
Change in 8/14 AER (-2, 0): High Litig. Cost	0.0078	0.3259									39	
Change in 8/14 AER (-2, 0): Low Litig. Cost	0.0025	0.4583									105	
Difference	0.0053	0.4592										

Notes to Table 6

This table summarizes event-study tests of the investor response around the dates of the SEC order (June 27) (panel A), Sarbanes-Oxley (July 25) (panel B), and the first certification filing (dates vary) (panel C). The dependent variables are absolute excess return (AER_0) or standardized absolute excess return ($SAER_0$). The independent variables are zero-one variables for market capitalization as of December 31, 2001 (MCP) (higher=1, lower=0); institutional holdings (INS) (higher=1, lower=0); earnings release date (ERD) (on event date =1, otherwise 0); and a proxy for expected litigation cost (LTC) (higher =1, lower =0), based on the dollar amount of the most recent prior securities class action settlement for a certifier company, if any, as reported by Institutional Shareholder Services, Inc. in their securities class action database. For MCP, INS, and LTC, a one is assigned if the variable exceeds the cross-sectional median, zero otherwise. The table also reports t tests of the difference (AER_0 minus AER_{-2}) for higher and lower LTC firms and whether the difference (AER_0 minus AER_{-2}) for higher LTC firms is greater than the difference (AER_0 minus AER_{-2}) for lower LTC firms. All test probabilities assume a two-tailed test.

Table 7
Mean Portfolio Excess Return: By Calendar Day

Date in 2002	Metric	No of obs.	Mean	t value	Signif. (2-tailed)
August 7	Ex. Ret 0	33 (33)	-0.00153	-0.212	0.830
	Cum Ex. Ret 0,1	33 (33)	0.00663	0.639	0.530
August 8	Ex. Ret 0	35 (42)	0.01893	3.370	0.000
	Cum Ex. Ret 0,1	35 (42)	0.02038	2.832	0.010
August 9	Ex. Ret 0	56 (69)	-0.00033	-0.111	0.910
	Cum Ex. Ret 0,1	56 (69)	-0.01005	-1.752	0.090
August 12	Ex. Ret 0	69 (86)	-0.00579	-2.087	0.040
	Cum Ex. Ret 0,1	69 (86)	-0.01570	-2.270	0.030
August 13	Ex. Ret 0	144 (194)	-0.00529	-2.638	0.010
	Cum Ex. Ret 0,1	144 (194)	0.00749	2.434	0.020
August 14	Ex. Ret 0	196 (205)	0.00951	2.748	0.010
	Cum Ex. Ret 0,1	196 (205)	0.01989	3.866	0.000

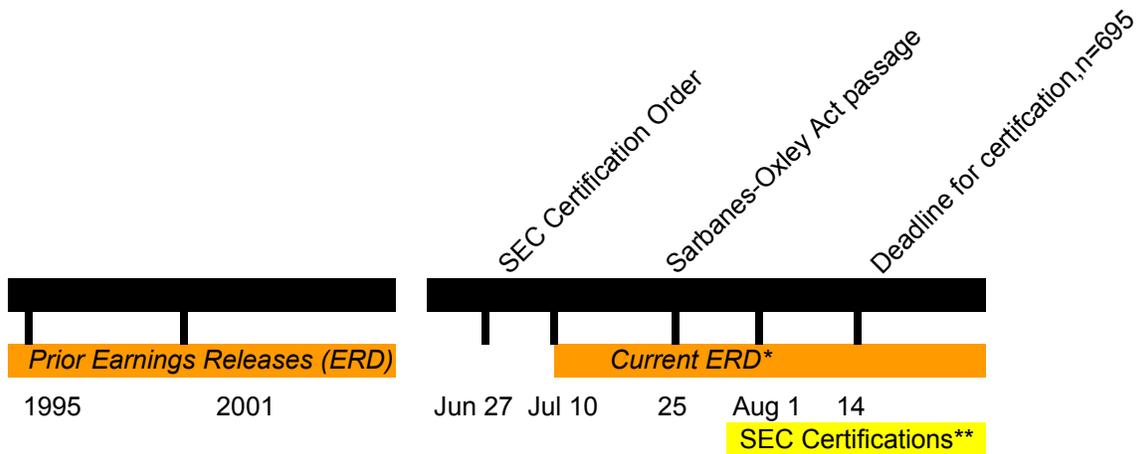
This table reports the mean (signed) portfolio excess return for the six certification filing days as shown in Bhattacharya et al. (2002)(BGH), table 3, for event day 0 (Ex. Ret 0) and event days 0 and 1 (Cum Ex. Ret 0,1). The t values test the hypothesis that the mean portfolio excess return is zero versus the alternative that it is non-zero. The number of observations in parentheses is from BGH table 3.

Table 8
Mean Portfolio Standardized Absolute Excess Return
and Absolute Excess Return: By Calendar Day

Calendar Day	SAER 2002	SAER 1995-2001	SAER Difference	Percentage Difference	AER 2002	AER 1995-2001	AER Difference	Percentage Difference	Obs. 2002
8/1/02	1.010	1.435	-0.425	-0.296	0.0131	0.0206	-0.0075	-0.365	12
8/2/02	1.259	0.960	0.299	0.312	0.0181	0.0144	0.0037	0.255	17
8/5/02	1.366	1.333	0.034	0.025	0.0198	0.0166	0.0033	0.197	11
8/6/02	1.381	1.406	-0.025	-0.018	0.0198	0.0165	0.0033	0.199	17
8/7/02	1.380	1.077	0.304	0.282	0.0216	0.0140	0.0076	0.544	33
8/8/02	1.618	0.907	0.711	0.785	0.0197	0.0114	0.0083	0.724	35
8/9/02	1.149	0.990	0.158	0.160	0.0200	0.0134	0.0066	0.495	56
8/12/02	1.271	1.248	0.023	0.019	0.0226	0.0149	0.0077	0.516	69
8/13/02	1.259	1.128	0.132	0.117	0.0186	0.0141	0.0046	0.324	144
8/14/02	1.406	1.046	0.360	0.344	0.0255	0.0148	0.0107	0.725	196
8/15/02	1.191	1.026	0.165	0.161	0.0249	0.0142	0.0107	0.751	13
8/16/02	1.075	1.229	-0.154	-0.126	0.0286	0.0236	0.0050	0.214	9
8/19/02	1.317	1.116	0.201	0.180	0.0420	0.0186	0.0233	1.251	7
8/20/02	1.835	0.996	0.838	0.842	0.0273	0.0209	0.0064	0.309	3
8/21/02	0.921	1.803	-0.883	-0.489	0.0211	0.0300	-0.0089	-0.296	4
8/22/02	1.187	1.466	-0.280	-0.191	0.0312	0.0107	0.0205	1.917	3
8/23/02	1.735	0.880	0.855	0.973	0.0246	0.0123	0.0123	0.995	3
8/26/02	1.735	1.066	0.669	0.627	0.0224	0.0196	0.0028	0.144	1
8/27/02	2.427	1.151	1.276	1.108	0.0370	0.0157	0.0213	1.360	3
8/28/02	1.024	1.506	-0.483	-0.320	0.0131	0.0181	-0.0050	-0.275	1
8/29/02	1.904	1.141	0.763	0.668	0.0241	0.0141	0.0100	0.705	2
8/30/02	0.805	0.741	0.063	0.085	0.0222	0.0099	0.0123	1.245	2
Mean	1.3752	1.1660	0.2092	23.9%	0.0235	0.0163	0.0072	54.2%	
Median	1.2941	1.1217	0.1618	16.0%	0.0223	0.0148	0.0071	50.6%	
t-test prob. (all days)			<0.0001				<0.0001		
t-test prob. (to 8/14)			0.0016				0.0638		

This table reports the mean portfolio SAER and AER for certification filings in August 2002 and the mean portfolio SAER and AER for equivalent calendar days in 1995-2001. AER is absolute excess return and SAER is standardized AER, where AER is standardized by dividing by the standard deviation of AER over the non-report period over days -10, ..., -6, 6, ..., 10 relative to a certification date (in 2002) or an SEC filing date (in 1995-2001).

Figure 1
Time-line of Key Events and Dates



Time-line not to scale, outliers not shown

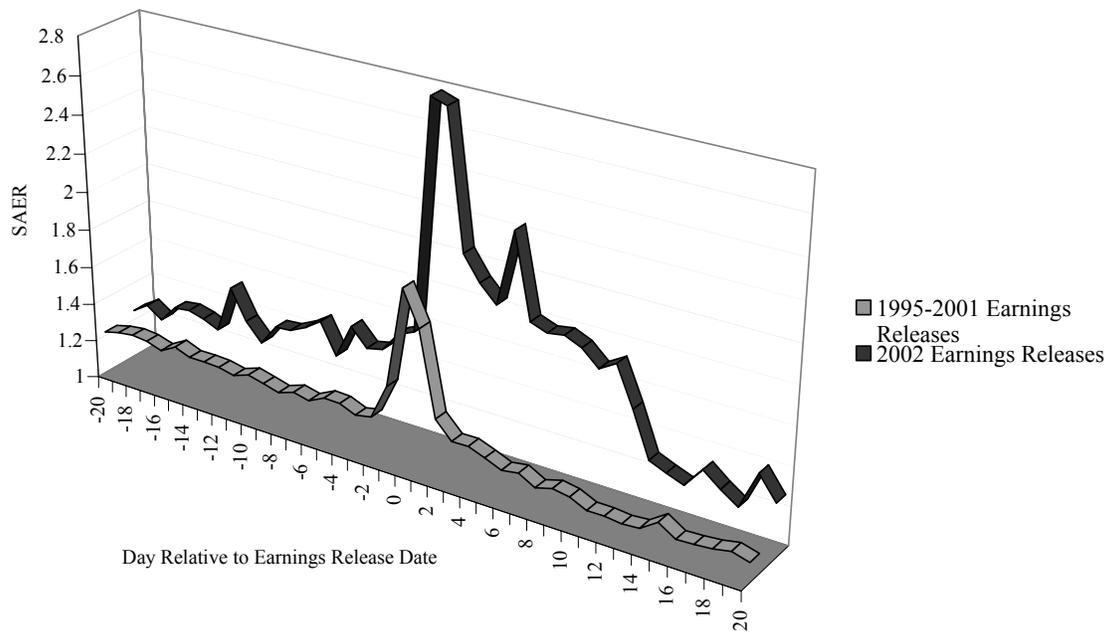
* 72.6% of earnings releases were made before 7/30/02

** 85.7% of certifications were made between 7/30/02 and 8/14/02.

59.2% of certifications were made between 8/12/02 and 8/14/02

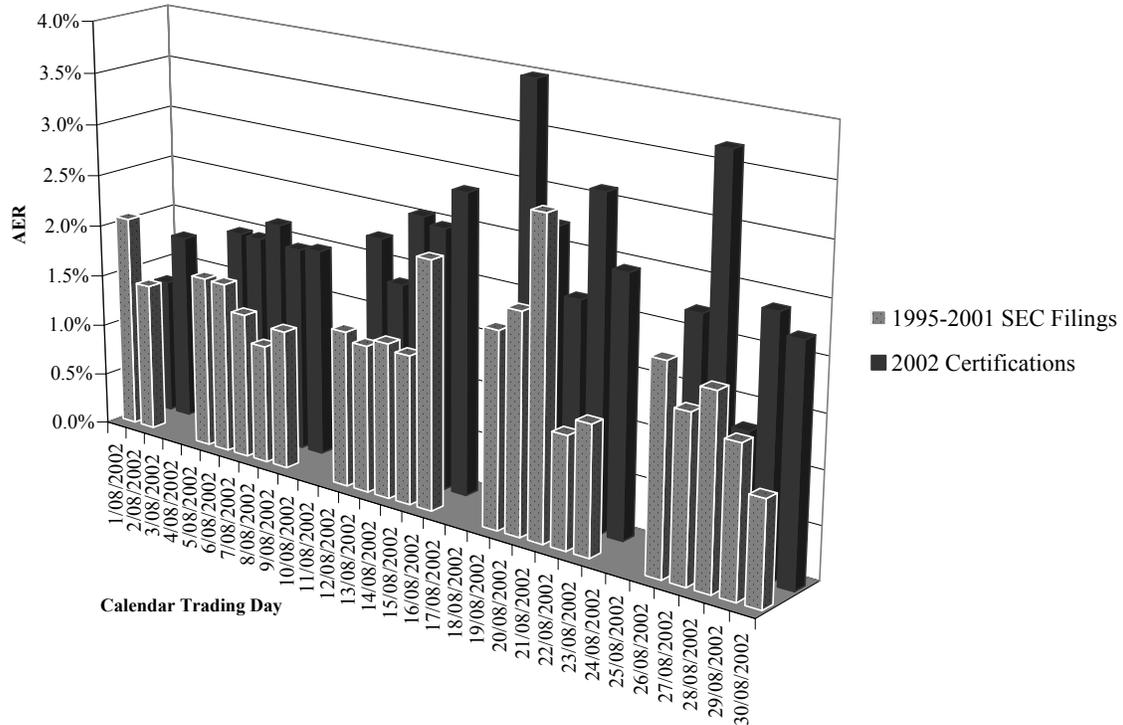
See table 2 for further details

Figure 2
Standardized Abnormal Excess Return
Around Earnings Release Date Prior to Certification



This figure plots the mean SAER from 20 days before to 20 days after the first earnings release date prior to certification for the certifier sample partitioned by SAER for the second quarter of 1995-2001 and SAER for the second quarter of 2002. (Table 2 shows the distribution of release dates across calendar time.) Source: Compustat, CRSP.

Figure 3
Calendar Trading Day Portfolio Absolute Excess Return:
2002 Certification Versus 1995-2001 SEC Filings



This figure plots the mean calendar trading day portfolio AER from August 1, 2002 to August 30, 2002 for the certifier sample partitioned by AER for August SEC filings in 1995-2001 and AER for August 2002 certifications in 2002. Source: Compustat, CRSP.

Appendix A
Chronology of SEC, WSJ, NYT, and LAT Headlines: April 2002-August 2002

Headline	Source	Date
Tyco announces the resignation of CEO Dennis Kozlowski.	WSJ	04/06
The Fed leaves rates at a 40-year low	WSJ	05/08
Kmart posts a \$2.42 billion fiscal-year loss and restates its quarterly results.	WSJ	05/16
SEC Proposes Requiring Certification of Quarterly and Annual Reports; Proposes New Form 8-K Disclosures and Filing Deadlines	SEC	06/12
SEC Statement Regarding Andersen Case Conviction	SEC	06/15
Three former Rite Aid executives are charged with masterminding an illegal accounting scheme.	WSJ	06/24
WorldCom's audit panel uncovers \$3.8 billion in expenses improperly booked as capital expenditures.	WSJ	06/26
Adelphia files for bankruptcy	WSJ	06/26
SEC Publishes List of Companies Whose Officers Are Ordered To Certify Accuracy and Completeness of Recent Annual Reports	SEC	06/28
SEC Lists Firms to Certify Data; Accounting	LAT	06/29
Xerox overstated its pretax income by 36%, or \$1.4 billion, in the past five years.	WSJ	07/01
SEC order: executives to swear under oath that their companies' financial reports are accurate.	WSJ	07/05
Accounting-overhaul plans draw skepticism. Scot J. Paltrow.	WSJ	07/08
Bill overhauling audit regulation passes in Senate. Shailagh Murray.	WSJ	07/16
PricewaterhouseCoopers Settles SEC Auditor Independence Case	SEC	07/17
Auditors find no allies in Congress as clock ticks on accounting bills.	WSJ	07/19
Lawyers question order that CEOs take oath over results. Kathryn Kranhold.	WSJ	07/22
WorldCom files for Chapter 11 protection in the largest bankruptcy case in U.S. history; Dow suffers worst drop since 1987.	WSJ	07/22
SEC Charges Adelphia and Rigas Family With Massive Financial Fraud	SEC	07/24
Corporate-oversight bill passes, eases path for investor lawsuits. (Statistical Data Included) Richard B. Schmitt, Michael Schroeder, Shailagh Murray, Kemba Dunham, Jeanne Cummings.	WSJ	07/26
Governance bill has major consequences for many. Shailagh Murray, Michael Schroeder.	WSJ	07/26
SEC Web Site Provides Link to CEO, CFO Certifications of Financial Statements of 947 Companies	SEC	07/29
CEOs face the music for irrational exuberance. George Melloan.	WSJ	07/30
SEC Prepares to Implement Sarbanes-Oxley Act Requirement for CEO And CFO Certification	SEC	08/02
Companies certify data today; some seem quite confused. (corporate financial statements signed by CEOs and CFOs) Jonathan D. Glater.	NYT	08/14
Interpublic restates five years of earnings after uncovering \$68.5 million in charges that hadn't been properly expensed.	WSJ	08/14
Top executives scrambled to meet a SEC deadline to swear that their financial results are accurate.	WSJ	08/15
Certification Deadline Reveals Mostly Simple Account Errors. M. Porter	WSJ	08/15
Under the Gun From the SEC, Firms Divulge Accounting Issues Bristol-Myers, Household International Are Among the Companies Coming Clean. Michael Schroeder.	WSJ	08/15
SEC Awash in Deluge of Certifications. (Business) Debora Vrana.	LAT	08/16
Firms rush to meet deadline by SEC to certify statements. John D. McKinnon, Kelly K. Spors.	WSJ	08/16
SEC boosts tally of firms failing to certify results. John D. McKinnon.	WSJ	08/19
SEC Staff Completes Processing of CEO, CFO Statements	SEC	08/20
Just 16 of 691 firms have yet to certify results with SEC. (financial statements)	WSJ	08/21
Europe's CEOs bite Sarbanes bullet	WSJ	08/22
Commission Approves Rules Implementing Provisions of SO Act, Accelerating Periodic Filings, and Other Measures	SEC	08/27
SEC gives broad interpretation of rules for accounting statute (SO) Michael Schroeder.	WSJ	08/28

Source: Gale Group's *Infotrac National Newspaper Index* (WSJ = The Wall Street Journal, NYT = The New York Times, and LAT = Los Angeles Times) and SEC Press Releases (www.sec.gov).