The Impairment of Auditor Credibility: Stock Market Evidence from the Enron-Andersen Saga

Rajib Doogar*
Theodore Sougiannis
Hong Xie

Department of Accountancy
College of Business
University of Illinois at Urbana-Champaign

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* Corresponding author. Address all correspondence to: 1206 S. Sixth Street, Champaign, IL 61820, U.S.A. e-mail: doogar@uiuc.edu, Phone: 217.244.8083, Fax: 217.244.0902.

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Abstract: We investigate potential auditor credibility impairment effects resulting from Arthur Andersen LLP's (hereafter Andersen) January 10, 2002 shredding admission as well as from other emerging news about the role of Andersen in Enron's financial collapse. Overall, the evidence suggests that the shredding admission resulted in a significant credibility impairment for Andersen and in spillovers to other auditors as well. Our results suggest that investors view auditor credibility as having a large common component across audit firms, so that impairments in the credibility of one prominent auditor generate significant spillovers to other auditors as well.

Key words: Auditor Credibility, Spillovers, Agency Costs, Financial Statement Credibility.

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1. Introduction

Auditing is a credence good.[1] Buyers (investors) can never be certain of the quality of the audit, even after they have "consumed" it, so their only assurance of quality is the seller's (auditor's) reputation. The possibility that damaging revelations about the credibility of one auditor could have either firm-wide or market-wide impact on investor confidence is a major source of concern to auditors, investors and regulators (Firth 1990, SEC 2000 and 2001).[2] In a recent study Chaney and Philipich (2002) provide important but partial evidence on this score: they document that Andersen's January 10, 2002 admission of potentially illegal destruction of Enron-related audit working papers had significant negative impact on the market values of Andersen's other clients. Whether there were spillovers to other auditors' clients or not, however, remains an open and important question.[3] If, for instance, investors' view auditor credibility as having a large common component across auditors, spillover effects could be substantial and investors, auditors and regulators would presumably evince greater interest in designing safeguards against credibility impairment spillovers. If on the other hand, investors view auditor credibility as being largely auditor-specific, these same safeguards might be an unwarranted economic burden. Our study investigates and presents further evidence on this issue.

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[1] Auditing is, in fact, merely a special case of professional services which can, in general, be viewed as credence goods (see for instance, the discussion in Ribstein 2003). Readings in the literature on credence goods that may be of interest to accounting researchers include: Darby and Karni (1973), Klein and Leffler (1981), Demski and Sappington (1987), Firth (1990) and Emons (1997).

[2] Hence the emphasis for instance on the prophylactic role of regulation of activities that might impair *perceptions* of auditor independence for example (see especially SEC 2000, Section IIB, and SEC 2001, Section IIC3 and IIIC4).

[3] In fact, Chaney and Philipich conclude their paper with the remark "Whether the decline in reputation observed for Andersen may spill over to other audit firms is yet to be determined, but clearly others are worried."

Credible auditors provide investors with both assurance and insurance against financial statement misstatements. By attesting to the credibility of financial statements, auditors provide assurance that the financial statements and, in particular, the accrual components thereof, are free of material misstatements and/or misrepresentations. The insurance value of auditing on the other hand derives from the auditor's wealth which functions as a bond that can be appropriated by investors in the event of audit-related litigation. Since auditing is a credence good, whether and to what extent the loss of one auditor's credibility leads to credibility impairments for other auditors is an interesting and important question. Whether investors perceive the credibility of auditors as deriving from relatively idiosyncratic factors or as having a large common component across auditors should influence the magnitude of the credibility impairment spillover. Thus the existence, timing and magnitude of spillovers from Andersen's shredding admission can provide insights, that would otherwise be unobservable, into investor perceptions of auditor reputation.

To investigate whether the stock market response to Andersen's shredding admission and to certain other key events in the Andersen-Enron saga is consistent with those events impairing the credibility of Andersen audits or of audits in general we proceed as follows. We hypothesize that impairments in auditor credibility will lead investors to penalize more heavily firms with lower financial statement quality or larger discretionary accruals. We also hypothesize that when the reliability of accruals is rendered questionable, investors will tend to place greater emphasis on non-accrual performance measures in valuing the firm. In such a setting, financial slack can serve as a signal of firm value for at least a couple of reasons. First, larger slack implies greater financial flexibility and possibly greater market power, both factors likely to increase the ability of the firm to sustain its business under adverse conditions (Jensen 1986). Second, firms with

larger slack are less likely to face financial distress, and thus, their investors are less likely to sue their auditors.[4] In other words, more slack-rich firms are likely to derive less value from auditor-provided insurance. Consequently, news that threatens either the auditor's credibility (i.e. the assurance value of its audits) or its financial viability (i.e. the insurance value of its audits) ought to be a less negative event for more slack-rich firms.

More specifically, our surrogate for earnings (or financial statement) quality and thus the need for auditor credibility is discretionary (abnormal) accruals. Lower earnings quality, i.e., larger magnitudes of discretionary accruals should translate to greater investor uncertainty about audit clients' financial statement reliability.[5] Our non-accrual measure of firm performance is free cash flow (net cash flow from operations plus net cash flow from investing activities). We expect the repricing of discretionary accruals to reflect credibility impairments while the repricing of free cash flows could reflect either credibility or insurance impairments or both. We also control for factors widely used in explaining stock returns (e.g. book-to-market, size and stock price momentum) and for revenue growth, a factor found in prior research to explain event window returns for Andersen clients (Chaney and Philipich 2002).

If the revelations about the Andersen-Enron relationship were to merely impair the insurance value of auditing (e.g. due to anticipated increases in the likelihood of litigation against auditors), we would expect to see investors reprice more negatively the securities of firms with

[4] Most studies control for the probability of such litigation by relying on traditional accounting metrics such as Altman-Z scores Altman (1983) or Zmijewski's (1984) probability of bankruptcy scores or on accounting measures of profitability such as ROA. Unfortunately, when the credibility of accounting numbers is impaired the reliability of all these metrics is automatically questionable. Hence it is important to use non-accrual measures of performance such as cash flows instead in settings where the credibility of accounting is questioned. Our use of both accruals and cash-flow measures to explain the cross-sectional market response can also be viewed as evidence on the market's revaluation of accruals and cash components of firm performance when auditor credibility is questioned.

[5] The magnitude of discretionary accruals is a commonly used proxy for earnings management, earnings quality and audit quality, factors likely to generate investor concern when assurance credibility is impaired. We also performed additional tests (described later) using alternative accruals-based measures of financial statement quality/credibility such as performance-matched accruals and the Dechow-Dichev (2003) measure of earnings quality.

greater likelihood of financial distress (i.e. lower financial slack). In other words, firms with lower free cash flows should be valued less highly than firms with larger free cash flows. If on the other hand, the revelations impair audit credibility as well, we would expect investors to penalize more heavily firms with lower financial statement quality, i.e. larger accruals. Thus, in effect we would expect investors to systematically revalue both the accrual and cash components disclosed in audited financial statements when the credibility of the auditor, and thus of the audited disclosures themselves is impugned.

We find that Andersen clients' free cash flows are incrementally positively valued relative to the free cash flows of non-Andersen clients during October and November 2001. However, during this period and all through to the end of December 2001, Andersen clients' accruals are incrementally positively valued relative to accruals of other auditors' clients. We interpret this pattern as being consistent with an impairment of the insurance value of Andersen's audits, but not of their assurance value. In particular, the evidence from the relationship between accruals and returns does not suggest any impairment of Andersen's assurance value till the beginning of January 2002. Starting shortly before January 10, we find a penalty for Andersen clients' accruals and a premium for their cash flows. We interpret this as evidence of assurance and insurance impairment for Andersen clients only (and not for other auditors' clients). The timing of the effects suggests a possible information leakage about Andersen's impending announcement. The effects for Andersen clients persist during a four trading-day window starting January 10, 2002 and are accompanied by a repricing of other auditors' free cash flows i.e. an insurance spillover to other auditors' clients as well. By January 17, the market penalty for accruals and the market premium for free cash flows are about the same for all auditors' clients and there is no differential penalty or premium for Andersen clients. These effects persist

in February and March with the release of the Powers report (February 04, 2002) and Andersen's criminal indictment (March 14, 2002). During these two months, the market continues to penalize accruals and reward cash flows for both Andersen and non-Andersen clients.

In sum, we find evidence consistent with significant and immediate market-wide credibility spillovers resulting from Andersen's shredding admission.[6] Moreover, we find that the credibility impairment effects persist through March 2002. Overall, our results provide evidence that concerns that the misconduct of one prominent auditor may undermine investors' confidence in audited financial statements in general (e.g. Levitt 2002: 117), are not without merit. Our results also present a highly nuanced picture of investors' response to mounting evidence about Andersen's role in the Enron debacle. Early on, investors appear to be concerned about the possibility of Andersen's deep pockets insurance being exhausted by its liability to Enron's investors. However, they do not appear to impugn the overall credibility of Andersen's professional work. The shredding admission, however, triggers immediate and serious concerns about Andersen's audit credibility, a concern that rapidly spills over to other auditors as well.

The rest of the paper is organized as follows. Section 2 reviews prior literature and presents our research questions. Section 3 describes the construction of the measures and tests. Section 4 outlines the sample selection methods and describes the sample. Section 5 reports our findings and Section 6 contains a summary and conclusions.

2. Chronology, Prior Literature and Research Questions

On October 16, 2001, Enron Corporation, then one of the largest publicly traded companies in the United States announced an unexpected one-time charge to earnings of about $1.01 billion. The next day the Securities and Exchange Commission launched an informal

inquiry into Enron's financial reporting. These events marked the beginning of a series of disclosures and revelations that resulted in Enron's financial failure and culminated in Andersen admitting that it had improperly shredded documents related to its audit of Enron's financial statements. The results of this admission were catastrophic: on March 14, 2002 Andersen was indicted for criminal obstruction of justice and by August 31, 2002, the firm had been convicted in criminal proceedings, seen its global operations effectively disbanded, and formally ceased operations as an auditor.[7] Since the demise of Andersen was a watershed event in the evolution of US audit markets, investigating the stock market response to the events surrounding the demise of Andersen offers a unique opportunity to learn how investors respond to news that potentially impairs auditor credibility i.e., the assurance that investors derive from audited financial statements.

Extant theory suggests that auditors provide both assurance and insurance to investors (DeAngelo 1981, Antle 1982 and 1984, Dye 1993). The credibility or assurance value of auditing derives from the auditor ensuring that the audited financial statements do not contain materially misleading assertions. The insurance value provided by an auditor, by contrast, derives from the auditor's wealth which serves as a bond in the event of litigation over financial statement errors. Consequently unflattering news about an auditor can cause investors to revise their beliefs either about the credibility of the auditor (i.e. about the assurance value of the audit) or about the ability of the auditor to make good future investor losses (i.e. about the insurance value of the auditor).

More specifically, bad news about an auditor can result in one of four classes of outcomes. First, given a noisy litigation system, auditors may sometimes be held liable for

[6] As we discuss later, a number of concurrent studies have looked for such a spillover effect but found inconclusive or weak evidence (Asthana et al. 2003, Callen and Morel 2002).

financial damages even when the audit was not flawed (i.e., a case of client business failure without a corresponding audit failure). Hence, news that a client suffered financial failure (a common trigger for lawsuits against auditors) could impair the insurance value of an auditor's brand to investors without impairing that auditor's credibility. Second, if the expected financial damages (from one or more lawsuits resulting from client business failures) are substantial enough, the auditor may face financial failure. However there may still be no impairment of the assurance value provided by that auditor.[8] Note that in either of these two cases, there is no concern about the quality of the audit itself.

Third, either perceptions or credible evidence of audit failure on an individual client (or a group of clients) could impugn the credibility of that auditor's audits either for the affected client(s) , or, in more extreme cases, for all its clients. The extent of the consequent litigation may also be large enough to threaten the financial viability of the auditor.[9] Alternatively, there could be systematic failures that affect the auditor's professional or business credibility without affecting its financial viability (e.g. the failure by audit firm partners to divest stocks that might constitute potential conflicts of interest, the sale of aggressive tax planning schemes or failures to account appropriately for reimbursable costs such as travel expenses). In other words, perceptions or evidence of auditor misconduct can in principle (but need not always), trigger both assurance and insurance impairments for either a subset of, or, the entire practice of an auditor.[10] Finally, if the conduct of one auditor is perceived to be so extreme as to raise

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[7] Chicago Tribune, "A Final Accounting" (4 part series, front page, September 1-4, 2002).
[8] As discussed below, this appears to have been the case with Laventhol and Horwath's demise.
[9] The distinction between the second and third cases can be put another way: case two comprises of insurance impairments that result in auditor financial failure without any assurance impairment whereas case three comprises of sufficiently massive assurance impairment that will also most likely trigger insurance impairment and possibly auditor financial failure.
[10] Firth (1990) finds that criticisms of an U.K. auditor's work by government inspectors results in attrition in that auditor's market share in future periods and that "criticism of an auditor in a DoT report will likely increase its probability of being sued and being successfully sued" (Firth 1990: 379).

questions about the credibility of audits in general, news that casts the auditor in an unflattering light can potentially cause market-wide credibility (and consequently insurance) spillovers to other auditors' practices as well. The magnitude of the spillover will, as discussed earlier, depend on the extent to which the credibility of different auditors is perceived to be idiosyncratic or homogeneous.

Menon and Williams (1994) and Baber, Kumar and Verghese (1995) document insurance impairment effects resulting from the failure of Laventhol and Horwath in 1990. However, since Laventhol's bankruptcy was known to be unrelated to audit quality problems, the bankruptcy announcement did not impair the credibility of the firm's audits (Menon and Williams, 1994: 331). Andersen's conduct as Enron's auditor, by contrast, did impugn the credibility of Andersen's professional work (thereby raising concerns about either the third or fourth class of outcomes described in the previous paragraph). The shredding admission triggered immediate concerns and commentary about Andersen losing its ability to retain major clients and remain a viable audit firm.[11] These reports, published in prominent sources such as the *New York Times* and the *Financial Times* raised immediate questions about Andersen's survival. In addition, by raising the specter of possible criminal charges and investigations against a major audit firm, the admission may have adversely affected investors' beliefs in the credibility of not just Andersen's audits but of audits in general (Firth 1990, SEC 2001).[12]

[11] On January 11, 2002 the day after the shredding announcement, the Floyd Norris, a correspondent for the *New York Times* questioned Andersen's viability and concluded "Is that what happened here? If it turns out that is the case, then Andersen, once the most respected accounting firm in the world, may not survive the Enron debacle" (Norris, 2002). Similar questions were raised in an report in the *Financial Times (London)*, January 10, 2002: "Andersen was fighting yesterday to stop its largest audit clients from deserting it following revelations that it destroyed large numbers of Enron documents." (Michaels et al. 2002)

[12] Andersen admitted the shredding on January 10, 2002. One day prior to the admission, i.e. on January 9, 2002, the Justice Department disclosed a criminal investigation into the collapse of Enron (*Financial Times USA Edition 2*, January 10, 2002).

As discussed in the introduction and at greater length below, we focus our analysis on the pattern of the market's repricing of discretionary accruals and free cash flows around the shredding admission and other related events. More specifically, we investigate whether these repricing patterns are consistent with either insurance and/or assurance impairment effects for Andersen clients and spillovers to non-Andersen clients. We also investigate the timing and persistence of these effects for both Andersen and non-Andersen clients.

Chaney and Philipich (2002) document a negative market response for Andersen clients around the shredding admission but leave open the question of whether there were spillovers to other auditors as well. Our study extends the analysis in Cheney and Philipich along three key dimensions. First, we investigate potential explanations for the cross-sectional variation in Andersen clients' security price responses to the shredding admission. Second, we investigate spillovers to other auditors resulting from the shredding admission itself. Third, by considering a longer sequence of events, we provide evidence on the market response to the early revelations about Andersen's conduct as Enron's auditor as well as Andersen's shredding admission and its aftermath. These additional lines of inquiry provide a deeper understanding of (1) when and how investors responded to adverse information about Andersen's credibility, (2) whether the magnitudes of the responses were related to investors' demand for auditor-provided assurance and insurance and (3) whether investors viewed auditors as providing relatively homogeneous services or whether auditor identities were sufficiently distinct in the minds of investors that loss of Andersen's credibility did not have a significant affect on other auditors' clients financial statement credibility (and thus their stock prices).

Three other concurrent studies examine the market response to Andersen's shredding announcement and related events. In a study of Andersen clients, Krishnamurthy, Zhou and

Zhou (2002) find that market returns around the date of Andersen's criminal indictment appear to be negatively correlated with the extent to which the auditor provides non-audit services to the client. Our study, by contrast, investigates investors' responses to various disclosures regarding Andersen's conduct, a topic they do not address. Using a portfolio approach, Callen and Morel (2002) find that the evidence "weakly suggests that the Enron affair had a spillover effect onto non-Andersen Big Five Audit clients." Similarly, Asthana, Balsam and Krishnan (2003) also find that the magnitudes of non-Andersen clients' returns "seem less related to the assurance and insurance factors than those of Andersen clients." Thus the evidence for market-wide spillovers in these studies is weak at best. By contrast, using a combination of accrual and cash measures, we find clear and strong evidence consistent with a market-wide assurance and insurance impairment resulting from Andersen's shredding admission. We also find that in both short and long windows after the admission date, these market-wide assurance and insurance effects remain strong all through to the end of March 2002.

3. Measures and Methods.

Our research design involves (a) examining portfolio returns after partitioning the sample on values of the two treatment variables (abnormal or discretionary accruals and free cash flows) and (b) regressing measures of the market response (cumulative abnormal returns during different windows) on treatment and control variables. In the remainder of this section we discuss, in turn, the measurement of the variables and the research methods in more detail. Section 3.1 discusses the measurement of treatment variables and Section 3.2 that of the market response variables. Section 3.4 describes the research methods in greater detail.

3.1 Measurement of Treatment Variables

Discretionary Accruals

The value of assurance and insurance provided by the auditor depends on the magnitude of investors' uncertainty about the firm's future cash flows and the likelihood that they will be able to recover investment losses from the auditor. We use the magnitude (i.e., the absolute value) of a firm's discretionary accruals as a surrogate for investors' need for credible assurance from the auditor.[13] Discretionary accruals are commonly used in the accounting literature to measure earnings management, audit quality and earnings quality. For example, Kothari (2001:161) points out that "discretionary accruals and earnings management are used synonymously in the literature." Becker et al. (1998: 7) use the magnitude of a firm's discretionary accruals as a proxy for the "accounting flexibility that the auditor has allowed" while Warfield, Wild and Wild (1995: 63) use the magnitudes of discretionary accruals as a proxy for managers' incentives to "mitigate contractual restrictions." More recently, Francis et al. (2002:2) use the "*unsigned* abnormal accrual" as an inverse indicator of earnings quality (emphasis in the original). If the magnitude of discretionary accruals captures investors' need for assurance, then an impairment of the assurance value of auditing should be manifested in a more severe penalty for firms with larger discretionary accruals. In other words, we would expect a more negative pricing of discretionary accruals if allegation or disclosures about auditor conduct impair the auditor's credibility.

We use the Jones (1991) model, as modified by Dechow Sloan and Sweeney (1995), to estimate discretionary accruals. Our approach is similar to that of Xie (2001) and Francis et al.

(2002). Specifically, we initially estimate for each industry-year combination the following cross-sectional model (firm subscripts omitted for ease of exposition).

$$ACCR_t/ATA_t = a_1[1/ATA_t] + a_2[\Delta REV_t/ATA_t] + a_3[PPE_t/ATA_t] + e_t, \quad (2)$$

where $ACCR_t$ is total accruals for a firm in year t (Compustat #123 – Compustat #308) calculated from the statement of cash flows as suggested in Hribar and Collins (2002), ATA_t is the average total assets (Compustat #6) in year t, ΔREV_t is the change in sales revenues (Compustat item #12) in year t, and PPE_t is gross property, plant, and equipment (Compustat item #7) in year t.

We estimate equation (2) in the cross section using all firms on the 2003 Compustat Industrial and Full Coverage files in 2000 and 2001. Specifically, we estimate equation (2) in year 2000 and 2001, separately, for each 2-digit SIC code with at least 20 firms. Following the prior literature (e.g., Francis et al. 2002), we winsorize all variables in equation (2), including $1/ATA_{t-1}$, at their respective 1st and 99th percentiles.

The coefficient estimates from equation (2) are used to estimate non-discretionary accruals (NDA) using Dechow, Sloan and Sweeney's (1995) modification of the Jones (1991) model:

$$NDA_t = \hat{a}_1[1/ATA_t] + \hat{a}_2[(\Delta REV_t - \Delta AR_t)/ATA_t] + \hat{a}_3[PPE_t/ATA_t],$$

where ΔAR_t is the change in accounts receivable (Compustat #2). Discretionary accruals (DA_t) are simply the difference between total accruals and normal accruals, $DA_t = ACCR_t/ATA_t - NDA_t$. Consistent with prior literature, we assume that investors' need for auditor-provided assurance increases with the absolute value of discretionary accruals, $|DA_t|$.

[13] We also used performance-matched accruals (Kothari Leone and Wasley, 2002) as well as Dechow and Dichev's (2003) measure of earnings quality. Both performance matched accruals and the Dechow-Dichev measure provide qualitatively similar results which we omit for brevity. Results are available from the authors on request.

Free Cash Flow

We also use a non-accruals based measure, namely free cash flow, as an additional gauge of investors' response to bad news about the auditor's credibility. When auditor credibility is impugned, investors may discount the information content of accruals and place greater emphasis on cash flow measures of performance. Jensen (1986) argues that firms with larger free cash flows are more likely to enjoy greater market power and thus greater ability to generate sustainable rents or quasi-rents. Consequently, when accruals are perceived to be uninformative (or less informative than before), investors may weight the cash component of firm performance more heavily.[14] Moreover, since firms with large free cash flows are also less likely to face financial distress, larger free cash flows can act as a surrogate for (lower) risk of auditor litigation.[15] In other words, since the insurance provided by the auditor is more likely to be valuable to investors in financially distressed firms, investors' concerns about insurance value impairment should translate into a more unfavorable response for firms with lower free cash flows.[16] Consequently, we would expect a more positive pricing of free cash flows if the disclosures impair either the auditor's credibility or its financial viability.

[14] Managers can manipulate free cash flows by manipulating investment cash flows as well (e.g., by transactions involving marketable securities, cf. Mulford and Comiskey, 2002). However such manipulations are more likely the result of operating decisions and thus less likely to be constrained by the auditor's review. For this reason, manipulations of free cash flows are less likely to reflect adversely on the auditor's credibility.

[15] There are two potential effects at work here. First, auditor litigation risk is often associated with client financial failure or distress (Stice 1991, Pratt and Stice 1994, Palmrose 1997, Shu 2000). Palmrose (1997) analyzes determinants of auditor litigation. "Does auditor litigation tend to involve bankrupt or financially distressed clients? The answer is yes. Research based on the large sample of lawsuits against auditors found that between 30% and 40% of suits were filed on clients about to be or already in bankruptcy." As discussed in note 4 above, using traditional accruals-based measures of bankruptcy is problematic in our setting. Second, firms with larger free cash flows are also be less likely to manipulate accruals in order to present a favorable earnings picture (which could in turn, lead to auditor litigation).

[16] This hypothesis is consistent with the maxim "Accruals are fiction, cash is real."

3.2 Measurement of the Market Response Variables

We measure the market response using market-model abnormal returns over short and long windows around key dates in the Andersen-Enron chronology. Daily abnormal returns are calculated using parameters estimated from the market model as follows. We first estimate, for each firm *i*, α_i and β_i from the market model regression:

$$R_{it} = \alpha_i + \beta_i R_{mt} + u_i, \qquad (1)$$

where R_{it} is the daily stock return for firm *i* in day *t* and R_{mt} is the daily value-weighted NYSE/AMEX market index return for day *t*. We estimate equation (1) for each stock in the 2003 CRSP universe over a rolling 12-month period ending in the month immediately before the window we examine.[17] Daily abnormal returns in any window we examine are then calculated as follows:

$$AR_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i R_{mt},$$

where R_{it} and R_{mt} are daily stock returns and value-weighted NYSE/AMEX market index returns on day *t* during the window of interest, and $\hat{\alpha}_i$ and $\hat{\beta}_i$ are the parameters estimated from the market model over a rolling 12-month period ending in the month immediately before the window of interest.[18] We then calculate cumulative abnormal returns over various windows of interest as follows:

$$\text{CAR} = \prod_{t=0}^{T} (AR_{it} + 1) - 1$$

[17] For example, when examining the market response during October 1-October 31, 2001, we estimate equation (1) using daily returns from October 1, 2000 to September 30, 2001. On the other hand, when examining the market response during January 10-15, 2002, we estimate equation (1) using daily returns from January 1, 2001, to December 31, 2001.

[18] To reduce the undue influence of extreme values, we winsorize $\hat{\alpha}_i$ and $\hat{\beta}_i$ at their respective 1st and 99th percentiles.

where T is the length of the window of interest in trading days.[19] Table 1 contains a summary of the definitions of cumulative abnormal returns and other variables used in this study.

<Insert Table 1 about here>

3.3 Methods

Our central hypothesis is that the cross-sectional variation in the market's response to disclosures about Andersen's role in the Enron debacle ought to reflect differences in the value of assurance and insurance impairment across securities. Accordingly, we first examine whether Andersen clients differed significantly from other auditors' clients in returns, risk, treatment and control variables. Second, we classify firms into portfolios based on the magnitude of both discretionary accruals and free cash flows and examine whether portfolio returns resulting from this bivariate classification differ as expected under the hypothesis that our variables proxy for assurance and insurance impairment. Finally, we investigate, using multiple regression, whether the cross-sectional variation in the market response during various windows is consistent with assurance and/or insurance impairment.

Our regression analysis starts by investigating a series of short windows around the shredding admission date which provides a natural focal point for the entire Enron-Andersen saga. In particular, we examine the market reaction to the shredding news over a number of short (four-day) windows: (1) a pre-event window (PRE) spanning January 3, 2002 to January 8, 2002, i.e., days [-5, -2] relative to the shredding admission date (day 0), (2) an event window (EW) spanning days [0,+3], i.e., January 10 to January 15, 2002 and (3) a post-event window (POST) spanning days [+5,+8], i.e., January 17 to January 23, 2002.[20] Comparing coefficients on accruals and free cash flows across the PRE, EW and POST windows should allow us to infer

[19] T ranges from four trading days for all short windows to 19-23 trading days for long (monthly) windows.
[20] Monday, January 21, 2002 was Martin Luther King Day, a trading holiday.

how the market repriced accruals and free cash flows and whether the pattern of repricing was consistent with market-wide auditor credibility spillovers.

To investigate whether other events, either before or after January 10, 2002, affected Andersen's audit credibility or generated spillovers to other auditors, we also examine a series of pre-event and post-event short (4-day) windows during October, November and December 2001 and during February and March 2002. Like Callen and Morel (2002), we do not find strong and consistent results during these short windows.[21] We do, however, find that longer (monthly) windows for the period before and after January 2002 provide useful evidence on the credibility impairment process. Accordingly we also investigate the market's pricing of accruals and free cash flows during five monthly windows: October, November and December 2001 and February and March 2002.

We use the following regression equation (or variants thereof, discussed in more detail later) to examine the market responses during the short and long windows described above:

$$\begin{aligned} CAR = a &+ b_1*(|DA|) + b_{1AA}*(|DA|*AA) + b_2*(FCF) + b_{2AA}*(FCF*AA) \\ &+ b_3*(Lnbtm) + b_4*(Size) + b_5*(Momentum) \\ &+ b_6*(Revgrow) + u \end{aligned} \qquad (3)$$

where all variables are as defined in Table 1. We also include in the regression model measures of the client's book-to-market ratio (*Lnbtm*), market capitalization (*Size*), stock price momentum (*Momentum*) (e.g., Fama and French 1992, Jegadeesh and Titman 1993) to control for the effects

[21] The details of the short-window regressions (except the January 2002 short windows) are omitted in the interests of parsimony but are available upon request. Broadly speaking, we find very little statistical significance for either accruals or free cash flows in the pre-event short windows. The post-event short window results are qualitatively similar to the EW and POST windows in the sense that as in the POST, accruals continue to be penalized and free cash flows rewarded during various short windows in February and March.

of factors commonly known to influence stock returns. For comparability with prior research, we also include revenue growth (*Revgrow*) in our model.[22]

We expect the coefficients on |DA| and |DA|*AA to become more negative (or less positive) after disclosures that taint auditor credibility than they were before such disclosures. Likewise we expect the coefficients on FCF and FCF*AA to become more positive (or less negative) after disclosures that impugn either auditor credibility or auditor financial viability than they were before such disclosures. To examine the stability of our conclusions, we also tried a number of alternative specifications of equation (3). We defer the discussion of the various sensitivity analyses to Section 5.

4. Sample Selection and Data Description

We obtain data needed for this study from the 2003 Compustat annual Industrial and Full Coverage files and the 2003 CRSP daily files. Our sample includes all firms existing in 2001 on the Compustat Industrial and Full Coverage files that have enough information to estimate discretionary accruals using equation (2). To be included in our sample, cumulative abnormal returns (CAR) during the event window (January 10-15, 2002) and accounting data for other variables in equation (2) must also be available.

To ensure that we use only accounting information likely to have been available to market participants before the January 10, 2002, shredding admission, we use the following procedure. For firms whose fiscal year-end month is between January and May 2001, or between November and December 2001, we use Compustat fiscal year 2000 data.[23] For firms whose

[22] Chaney and Philipich (2002: 1241-3) find that in their sample revenue growth is negatively related to shredding window returns, suggesting that the market uses revenue growth as a proxy for aggressive reporting and thus an indicator of unsustainable performance.

[23] Recall that Compustat reports the results of the January to May 2001 fiscal year end as fiscal year 2000 data. The fiscal year 2001 data for the November and December year-end firms, on the other hand, would not be available to

fiscal year-end month is between June and October 2001, we use Compustat fiscal year 2001 data to calculate variables in equation (3). This selection process yields a sample of 4,198 firms, of which 3,365 firms' accounting information is taken from fiscal year 2000 data and 833 firms' accounting information from their fiscal year 2001 data.[24]

Table 2 reports descriptive statistics for variables used in the analysis. Panel A provides descriptive statistics for raw, market index and risk-adjusted returns (*RRet*, *MRet* and *CAR*), the market model parameters (*Alpha* and *Beta*) and the stock price momentum (*Momentum*) for each of the windows described in Section 3.3. Both raw and risk-adjusted returns have positive means (and medians in almost all cases) during the pre-event period. Starting with the shredding admission window, mean and median raw and risk-adjusted returns turn negative and stay negative through the end of February 2002. In March 2002, the means and medians of both return measures turn positive again. On average the entire sample appears to have performed poorly during the shredding admission window and its aftermath, all the way till the end of February 2002. During the shredding admission window itself, the market return is also negative, suggesting that the market as a whole lost some value (about 1%) around the time of the shredding announcement. Mean betas for the sample are close to one while the medians are consistently smaller, suggesting that the sample may consist of firms with below-average riskiness.

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the market by January 10, 2002. Using Compustat fiscal year 2000 data for both groups thus ensures that in each case, we use the last available fiscal year data available before Jan 10, 2002.

[24] To investigate the possibility that delayed reporting by some firms may introduce a perfect-foresight bias in our results, we replicated all analyses after excluding the fiscal year ending June to October 2001 firms. The problem we are worried about is this: suppose a July 31, 2001, year-end firm releases its annual report on November 21, 2001 (a random date). Since our test windows span the period August 2001 through March 2002, using Compustat fiscal year 2001 data for this particular firm would mean that we use in our regressions information market participants may not have had during part of the period under study. Restricting the analysis to only the sample of 3365 firms with fiscal 2000 financial statement data avoids this bias. The results (available upon request) for the fiscal year 2000 sub-sample are very similar to those for the full sample of 4198 firms, indicating that any potential hindsight bias is most likely small. Consequently, we discuss only the results for the full sample in the rest of this study.

<Insert Table 2 about here>

Panel B of Table 2 presents descriptive statistics for the distribution of treatment and control variables except for *Momentum* (which varies by the window of interest and hence is reported in Panel A). The mean and median values of absolute discretionary accruals, $|DA|$, are 9% and 5.2% of total assets, respectively. Both of these values are significantly different from zero and close to values reported in prior studies. The mean of free cash flow to total assets, *FCF*, is -7.4%. However, its median is 0.4% indicating that most of the sample firms have positive free cash flows. The distributions of book-to-market (*BtM*) and market capitalization (*MVE*) indicate that the sample mainly consists of glamour firms with a median market capitalization of about $221.448 million. The median revenue growth (*Revgrow*) for the sample is fairly high at 13.7% with a few extreme observations that increase the mean for the sample to 58.5%.

Panel C of Table 2 reports correlations among our regression variables. Pearson correlations are reported above the diagonal and Spearman correlations are reported below the diagonal. Accruals are negatively correlated with 4-day event window cumulative abnormal returns while free cash flows are positively correlated. These correlations suggest that, during the event window, accruals are penalized and free cash flows rewarded. Correlations among the treatment and control variables are high in some cases. While these high correlations might raise some econometric concerns, we did not detect multicollinearity effects in our regressions.[25]

[25] Low values for both condition indices (always below 10) and variance-inflation factors (always below 3) suggest that collinearity is unlikely to be a significant source of concern in our data.

5. Results

We report the results of univariate tests and bivariate portfolio analysis in Section 5.1. Results of the multiple regression analyses are presented in Section 5.2. Section 5.3 reports the results of sensitivity analyses and additional tests.

5.1 Univariate and Bivariate Portfolio Analysis

Univariate Analysis

Table 3 Panel A reports univariate sub-sample comparisons between Andersen and non-Andersen clients. Andersen clients have significantly lower accruals, larger size and lower beta risk than the non-Andersen sub-sample. Andersen clients also appear to have somewhat lower event window returns, less negative free cash flows and higher revenue growth than non-Andersen clients, but these differences are not statistically significant. In other words, Andersen clients' financial statement quality and free cash flows do not appear to be worse than those of non-Andersen clients, nor do Andersen clients appear to be riskier than non-Andersen clients.[26]

<Insert Table 3 about here>

In Table 3, Panel B, the comparison of the non-negative and negative reaction sub-samples presents a very different picture. The CAR4 variable is significantly higher by construction for the non-negative sub-sample. The negative reaction sub-sample has larger absolute discretionary accruals, lower free cash flows, higher betas, larger momentum and higher revenue growth. The overall pattern of differences between the two sub-samples suggests that the cross-sectional

[26] Restricting the non-Andersen clients to clients of other Big Five firms only does not change this conclusion. Andersen clients' *CAR*s, accruals and cash flows are statistically indistinguishable from those of non-Andersen Big Five clients. Among the control variables, non-Andersen Big Five clients' sizes are significantly larger (mean size: 5.785) and riskier (mean Beta: 1.053) than Andersen clients.

variation in the market reaction to the shredding admission seems to be related to our treatment variables.

Table 3, Panel C, reports means and, in parentheses, medians, of key variables for each of 10 equal-sized portfolios formed by ranking the sample firms on free cash flow (*FCF*). Each portfolio consists of about 420 firms. Portfolio 1 consists of firms in the lowest decile of free cash flows while portfolio 10 consists of firms in the highest decile of free cash flows. It is worth noting that the relation between free cash flows and discretionary accruals is non-monotonic: both absolute and signed accruals are more extreme for the portfolios with the more extreme free cash flows. Conversely, both absolute and signed discretionary accruals are closer to zero for portfolios with middling levels of free cash flows. Thus, there is a non-linear relationship between the two treatment variables. However, *Beta* and *FCF* are negatively related: Beta decreases almost monotonically as *FCF* increases. Event window *CAR4* are most negative for the low *FCF* portfolios but they are also negative for the high *FCF* portfolio. The low *FCF* portfolio consists of smaller size and book-to-market firms than the high *FCF* portfolio. Mean and median differences between the high and low *FCF* portfolios are highly significant for all variables reported (untabulated).

Bivariate Analysis

Table 4, Panel A, reports deciles of the distributions of discretionary accruals and free cash flows for the extreme market response portfolios. We rank all sample firms into three equal-sized sub-samples based on event window returns (*CAR4*). We then report deciles of the distribution of |*DA*| and *FCF* separately for the high and low *CAR4* sub-samples. The deciles show that the distribution of |*DA*| for the low *CAR4* sub-sample is right-shifted relative to the high *CAR4* sub-sample: for any value of |*DA*|, a larger fraction of the high *CAR4* sub-sample is

likely to lie below that value than of the low *CAR4* sub-sample.[27] In other words, low *CAR4* firms have systematically bigger discretionary accruals over the entire range of the distribution of discretionary accruals. If |*DA*| measures financial statement quality, then the low *CAR4* sub-sample appears to have had significantly worse financial statement quality than the high *CAR4* sub-sample. The distribution of *FCF* also displays a qualitatively similar picture in that high *CAR4* firms also have systematically larger free cash flows.

<Insert Table 4 about here>

Next, we partition the sample on both treatment variables and examine whether the market response differs systematically across partitions. We compare cumulative abnormal returns at the event window (January 10-15, 2002) across four portfolios created as follows. First we rank firms by discretionary accruals into three groups, high, medium and low. Then, within each accrual portfolio, we rank firms into three free cash flow portfolios. This yields a total of nine portfolios from which we select the four extreme portfolios. Portfolio 1 consists of firms with high discretionary accruals and high cash flows. Portfolio 2 consists of firms with high discretionary accruals and low cash flows. Portfolio 3 consists of firms with low discretionary accruals and high cash flows. Portfolio 4 consists of firms with low discretionary accruals and low cash flows. If these variables surrogate for assurance and insurance effects as hypothesized, then, during the event window, Portfolio 3 should outperform all others. Portfolio 2 should be the most highly penalized and the relative rank of portfolios 1 and 4 will depend on whether investors prefer low accruals to high cash flows or vice versa.

Table 4, Panel B, shows results broadly consistent with these expectations. Portfolio 2, predicted to be the worst performer, has a CAR4 of -3.3% (t=-7.97) while Portfolio 3, predicted

[27] More precisely, the distribution of |DA| for the low CAR sample first-order stochastically dominates the distribution of |DA| for the high CAR sample.

to be the best performer, has a CAR4 of -1.4% (t=-5.40). The difference between these two portfolios is significant (t=-3.78). Portfolio 1 and Portfolio 4 have about the same performance as Portfolio 3, indicating no significant penalty for high accruals conditional on high FCF and no significant penalty for low cash flow conditional on low |DA|. In contrast, Portfolio 1 and Portfolio 4 both outperform Portfolio 2, suggesting a significant penalty for firms with low cash flow *and* high |DA|. Overall, the results in Table 4 are suggestive of both assurance and insurance effects being reflected in the market response to the shredding admission.

5.2 Multiple Regression Analysis

Panel A of Table 5 reports results from the estimation of the regression model described in equation (3) over three different four-trading-day windows. The return metric is cumulative abnormal return (*CAR4*). The *PRE* and *POST* windows correspond to the immediate 4-day pre- and post-event windows while the *EW* window corresponds to the four day event window starting from day 0, i.e., January 10, 2002, and extending to day +3, i.e. January 15, 2002.[28] Since our central hypothesis is that accruals and free cash flows are repriced conditional on news about auditor credibility, the pattern of coefficients across the three windows should reveal how Andersen's admission alters the credibility of accruals and the attractiveness of free cash flows.

<Insert Table 5 about here>

The first column of Panel A, Table 5, shows that both the |*DA*| coefficient (0.0995, t=4.003) and the |*DA*|**AA* coefficient (-0.0676, t=-1.967) are significant during the *PRE* period.[29] The negative differential pricing of Andersen clients' accruals suggests that investors are more

[28] To check for possible contamination due to other announcements during the event and pre- and post-windows, we searched the Wall Street Journal news archive for earnings announcements. We found only 32 announcements in the index for the period from January 1 to January 15,2002). Thus our CAR4 is unlikely to be significantly affected by other information events.

[29] Diagnostic tests suggest considerable heteroscedasticity in our sample, so all t-statistics (and the corresponding p-values) are based on White's (1980) heteroscedasticity consistent standard errors. Further diagnostic tests such as

concerned about the accruals of Andersen clients than they are about the accruals of non-Andersen clients. While there is a relative penalty for Andersen clients' accruals, note that on average, Andersen clients' accruals are positively priced (the net coefficient of |*DA*| plus |*DA*|**AA* in the *PRE* window is 0.0319). The negative incremental coefficient on Andersen clients' accruals raises the possibility that Andersen's credibility may have been impaired even before the shredding admission.[30]

The *FCF* coefficient (-0.0269, *t*=-2.738), on the other hand, is negative and highly significant while the *FCF***AA* coefficient (0.0282, t=1.855) is positive and significant. In other words, while everyone else's cash flows are negatively priced, Andersen clients' cash flows are priced close to zero (the net coefficient of *FCF* plus *FCF***AA* in the *PRE* window is 0.013). The negative *FCF* coefficient is consistent with Jensen's (1986: 323) free-cash-flow hypothesis that "conflicts between managers and shareholders … are especially severe when the organization generates substantial free cash flows." The positive incremental coefficient on Andersen clients' free cash flows is consistent with our hypothesis that when the credibility of accounting numbers is impaired investors tend to view free cash flow more favorably. The existence of this effect in a window prior to the shredding admission once again suggests the possibility that Andersen's insurance value may have been impaired by ongoing prior events. The coefficients for the control variables (*Lnbtm*, *Size* and *Momentum*) are all significant as well. However, revenue growth (*Revgrow*) is not significant. Overall, the *PRE* window evidence is consistent with both assurance and insurance impairment for Andersen clients and neither assurance nor insurance impairment for non-Andersen clients.

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added variable plots and Hadi plots (cf. Chatterjee, Hadi and Price 2000) revealed no evidence of non-linear relationships between the treatment variables and the dependent variable.

[30] We investigate this possibility further in tests reported in Table 6.

During the event window, the |*DA*| coefficient (-0.0193, *t*=-1.603, p-value= 0.109) changes relative to the *PRE* window and is negative and marginally significant suggesting an emerging market wide concern about the credibility of accruals in general. The |*DA*|**AA* coefficient (-0.0564, *t*=-1.893) continues to be negative and significant, suggesting an increasing (and incremental) concern about Andersen clients' accruals. It is interesting to note that while in the *PRE* window Andersen clients' accruals were on average positively priced, these accruals are negatively priced in the event window (the net coefficient of |*DA*| plus |*DA*|**AA* in the *EW* window is -0.0757). The *FCF* coefficient (0.0169, *t*=3.078) also switches sign, turning positive and significant suggesting a market wide reversal in the valuation of free cash flows. In other words, during the event window, free cash flow appears to be a source of comfort to investors in all stocks. It is interesting to note that the coefficient of revenue growth is not significant, suggesting that in the presence of accruals and free cash flows revenue growth does not provide a great deal of incremental explanatory power. Overall, the event window results show that the valuation of both accruals and free cash flows for non-Andersen clients reverses sign. Moreover, the pattern of reversals is consistent with the existence of a market wide assurance (from positive to negative for |*DA*|) and insurance (from negative to positive for *FCF*) impairment spillovers.

The results for the *POST* window show that starting four trading days after the shredding announcement the coefficient on |*DA*| remains negative (-0.0327, t=-2.84) but it is now highly significant. Interestingly, the coefficient on |*DA*|**AA* is not significantly different from zero, suggesting that investors did not perceive Andersen clients' accruals to be any more or less credible from those of other auditors' clients. A similar interpretation holds for the *FCF* and *FCF***AA* coefficients as well. Once again revenue growth does not appear to add significant explanatory power to the model. In short, all clients' accruals are penalized whereas their free

cash flows are rewarded within four days immediately after the shredding announcement. Untabulated Chow tests confirm that coefficient differences across the three windows are significant at the 1% level or better.

Overall, the market's response to Andersen's shredding admission appears to be a significant decrease in the valuation of accruals and corresponding increase in the valuation of free cash flows. In other words, the results in Table 5 provide strong evidence of market wide assurance and insurance spillovers resulting from Andersen's shredding admission.[31] However, both accruals and free cash flows of Andersen clients appear to be differentially priced in the *PRE* window. This suggests that assurance and insurance impairment for Andersen clients may have happened somewhat before the formal shredding admission date.

Panel B of Table 5 shows that the results for both positive and negative discretionary accruals are qualitatively similar. The new variables, *DAPOS* (resp. *DANEG*) are equal to the absolute values of positive (resp. negative) discretionary accruals when discretionary accruals are positive (resp. negative) and zero otherwise. The other two variables, *DAPOS*AA* and *DANEG*AA* are obtained by multiplying *DAPOS* and *DANEG* by the indicator variable *AA*. Thus positive coefficients on all four variables can be interpreted as a "reward" (and negative coefficients as a "penalty") for larger values of those (signed) discretionary accruals. During the *PRE* window, both positive and negative discretionary accruals of non-Andersen clients are rewarded. Andersen clients' positive discretionary accruals, however, are incrementally penalized (but not their negative accruals). During the event window, all accruals are negatively repriced, albeit not significantly and Andersen clients' negative accruals, which had not been

[31] Firm-by-firm regressions (untabulated) for each of the Big Five auditors confirm the same overall pattern: increasingly less positive (or negative) coefficients for discretionary accruals and increasingly less negative (or positive) coefficients for free cash flows. This pattern of firm-by-firm reactions holds for the results for February and March 2002 reported in Table 6 as well.

penalized during the *PRE* window are now incrementally penalized. By the *POST* window, accruals are on average negatively priced with all clients' negative accruals being significantly penalized. In sum, Panel B confirms the main thrust of the credibility impairment effect, namely, downward repricing of accruals and the upward repricing of free cash flows. In addition it also confirms the spillover effects documented in Panel A.

Table 6 investigates the market response during the three months before and the two months after January 2002. We find that the |*DA*| coefficient is significantly positive in October (0.2587, t=4.139) but is insignificantly different from zero in November and December.[32] In contrast, the coefficient on |*DA*|**AA* is insignificantly different from zero in October and December but is marginally significantly positive (0.1486, t=1.613, p-value=0.106) in November. Turning to *FCF*, we find that the *FCF* coefficients are negative in the three months before January 2002 and significantly so in October 2001. On the other hand, the coefficient on *FCF***AA* is marginally positive in October (0.0926, t=1.605, p-value=0.108) and is significantly positive in November (0.0614, t=1.979), suggesting a possible insurance impairment for Andersen clients as early as October 2001, the time when concerns about Enron's accounting first surfaced.

During the two months following January 2002, by contrast, the coefficients on |*DA*| are negative and significant and those on *FCF* are positive and significant, suggesting that the assurance and insurance spillovers documented in Table 5 persisted throughout February and into March 2002 (see also note 32 above). Note also that there is no differential pricing for Andersen clients' accruals and free cash flows as compared to those of non-Andersen clients.

[32] Additional analyses (not reported but available upon request) show that neither the accruals nor the free cash flows of Andersen clients are differentially priced during August or September 2001.

5.3 Additional Tests and Sensitivity Analyses

Restricting the regression analyses to Big Five clients only, we find no evidence of any pre-event differential pricing of Andersen clients' accruals. However, the premium for Andersen clients' free cash flows is preserved (the coefficient on *FCF*AA* becomes significantly positive at the 0.05 level for October and remains significantly positive at better than 0.05 level for November). The event window results are essentially identical to the results using the full sample. The results for the post-event windows are qualitatively identical to those reported in Table 6 except that the coefficient on *FCF* is no longer significantly positive at the 0.1 level in March 2002.

To examine the sensitivity of the results to outliers in the treatment variables (|*DA*| and *FCF*), we identified outliers in the treatment variable space using Hadi's (1992, 1994) multivariate outlier identification technique. Following Chaterjee, Hadi and Price (2000: 108), we fit the model "without the offending points" and examine the resulting coefficients. The procedure flagged 90 (123) observations as outliers at 1% (5%) level of significance. The results are qualitatively similar to those reported above with the exception that the outliers are the ones whose accruals are penalized most during the event window. Furthermore, we re-estimate equation (3) after adding quadratic terms in both treatment variables and find no significant improvement in model fit. This analysis, coupled with the analysis of added variable plots (see note 19) suggests no evidence of non-linear relationship between the dependent variable and the treatment variables.

Besides running the regression analyses using signed discretionary accruals, we also used as measures of financial statement quality performance matched discretionary accruals and

the Dechow-Dichev (2003) measure of earnings quality.[33] We obtain qualitatively similar results (untabulated, available upon request), i.e., an insurance impairment for Andersen as early as October 2001 and insurance and assurance impairments for all auditors starting around the event window and persisting through the end of March 2002. We also investigated the sensitivity of the conclusions to an alternative decomposition comprising of $|DA|$, NDA, cash flow from operations and cash flow from investment activities and found an almost identical repricing pattern of accruals and cash flows.

To investigate whether the pattern of results reported in Table 5 could reflect recurring seasonal factors, we replicate the analysis in that table using three corresponding four-day windows in January 2001.[34] The results, tabulated in Table 7, show (1) positive valuation of accruals and a negative or not-significantly-different-from-zero valuation of free cash flow, (2) no differential effects for Andersen clients, and (3) unlike Table 5, no evidence of a negative repricing of accruals or a positive repricing of cash flows around January 10, 2001. Overall, Table 7 suggests that results in table 5 are most likely driven by the information contained in Andersen's January 2002 shredding admission rather than by recurring seasonal effects.

Controlling directly for client bankruptcy risk by adding the Altman z-score to the basic model in equation (3) leaves the overall findings of a penalty for accruals and a premium for cash flows unchanged.[35] We also attempted to isolate industry effects by adding indicator variables for two-digit SIC codes to the basic model. The overall pattern of results once again

[33] We follow Francis et al. (2002) in measuring performance matched discretionary accruals and the Dechow-Dichev measure of earnings quality. Specifically, our two measures correspond to two of their earnings quality measures, EQ3 and EQ5.

[34] The three four-day windows are: January 3-8, January 10-16 and January 17-22, 2001. Selection procedures analogous to those used to select the sample for 2002 yield a sample of 3,814 firms for 2001, of which 3,008 firms' accounting information is from fiscal year 1999 and 806 firms' accounting information from their fiscal year 2000.

[35] Untabulated results show adding the z-score to the model adds little explanatory power. Interestingly, the coefficient for the z-score is negative and significant in both February and March 2002 while the coefficient for the z-score*AA is positive and significant, suggesting some persistent concerns about Andersen clients' financial health.

confirms the main results and also yields strong evidence consistent with a market-wide reaction to the shredding admission.[36] Adding controls for client industry regulation, litigiousness and technology intensity using measures developed in prior research (Hogan and Jeter 1999, Kaznick and Lev 1995) to the basic model leaves the tenor of our results unchanged as well.[37] As an alternative to using industry indicators, we also tried adding measures of key industry characteristics such as the Herfindahl-Hirschman Index (HHI) of client-industry concentration, client industry profiability (1999 2-digit SIC ROA), client-industry operating cycle length (average days inventory+average days receviables) and client-industry fixed asset intensity (fixed assets/total assets). (Motivation for using these particular variables?) Adding these variables did not change the main findings but does provide some support for the hypothesis that in the aftermath of the shredding admission, the market tended to value "hard" assets such as cash and fixed assets more highly.[38]

Finally, some recent studies indicate that the proportion of non-audit fees to total fees earned from a client could be a proxy for threats to auditor independence and therefore, in our context, an alternative proxy for financial statement credibility (e.g. Frankel et al 2002,

[36] Untabulated results show that in the PRE window out of the 49 industry indicator variables, 13 were negative and significant with only one coefficient being significant at the 1% level or better. In the EW all except 3 industry indicators are negative with 18 being negative and significant (15 at 5% or better, 5 at 1% or better). In the POST window, the pattern reverts back to the overall tenor of the PRE window: only 3 industry indicator coefficients are negative and significant.

[37] Results (again untabulated) show that in the short windows used in Table 5, the coefficient on the indicator variable for client industry regulation (1 if regulated, 0 if not) is always negative but it is positive in the months of February and March 2002. The coefficient on the indicator variable for client industry litigiousness (1 if litigious, 0 if not) is positive and significant in the PRE window, negative but not significant during the EW and negative and significant during the POST and February windows. The coefficient on an indicator variable for whether the industry is technology intensive or not (1 if it is, 0 if not), is negative and significant in both PRE and POST windows and in February 2002. It is, however, not significant in the EW.

[38] In general, these variables added no significant explanatory power in the short windows. In February 2002, the client-industry HHI, operating cycle length and fixed asset intensity measures were positive and significant while past client-industry profitability was not significant. In other words, the market seemed to value positively firms in highly concentrated industries and industries with long operating cycles and high fixed asset intensity. In March 2002, client-industry HHI is no longer significant, but cycle length and fixed asset intensity continue to be positive and significant and past client-industry profitability is negative and marginally significant.

Ashbaugh et al 2003, Chung and Kallapur 2003). To investigate the explanatory power of this alternative proxy we also estimated an expanded version of the model in equation (3). More specifically we add to the basic model the ratio of non-audit fees to total fees (*NASRatio)* as a treatment variable and allow for an incremental effect for Andersen clients (*NASRatio*AA*). [39] Fee data were obtained from Compustat and adding the fee ratio terms reduces the sample size to 2730 firms (2054 firms using fiscal 2000 data and the rest using fiscal 2001 data). Untabulated results show that this smaller sample resembles quite closely the full sample (of 4,198 firms) in terms of descriptive statistics. The mean (median) *NASRatio* is 0.516 (0.536) with a standard deviation of 0.226 and the 5^{th} and 95^{th} percentiles are 0.124 and 0.848. The correlation of the *NASRatio* with |*DA*| and *FCF* is 0.017 and -0.097, respectively. The positive correlation with |*DA*| is consistent with the arguments in Frankel et al (2000). The negative correlation with *FCF* is consistent with the notion that clients with greater managerial slack buy fewer non-audit services from their auditors.

The short-window results reported in Table 8 as well as untabulated long window results (available upon request) basically bear out the inferences derived from Tables 5 and 6. As in Table 5, Table 8 shows evidence consistent with a negative repricing of accruals and a positive repricing of free cash flows for all firms around January 10. However, unlike the results in Table 5, there is weak evidence of credibility impairment for Andersen clients during the PRE window: the incremental effects for Andersen clients in Table 8 are not statistically significant, but the coefficients do have the "correct" signs (negative for accruals and positive for free cash flows). On the other hand, during the POST window, unlike Table 5, Table 8 shows a negative and significant incremental penalty for Andersen clients' accruals. These differences between Tables 5 and 8 are not attributable to multi-collinearity among the explanatory variables: running the

[39] The non-audit fee ratio (*NASRatio*) was defined as 1 – (audit fees/total fees).

base model in equation (3), i.e., without the fee ratio, on the restricted sample of 2730 firms yields results similar to those reported in Table 8 for the treatment variables (|DA| and FCF). Finally, note that the fee ratio is negative and significant for all firms during the event window and there appears to be no incremental penalty for Andersen clients' fee ratios. To the extent that the fee ratio is a valid proxy for investor concerns about auditor independence and financial statement credibility, this result is consistent with a market-wide credibility impairment (rather than an Andersen-specific credibility impairment).

6. Summary and Conclusions

We investigate whether the disclosures about Andersen's conduct as Enron's auditor and its role in the demise of Enron led to an impairment of the assurance and insurance value of auditing to investors. We find strong evidence that an insurance impairment for Andersen clients may have occurred as early as October 2001, when concerns about Andersen's role in Enron's collapse first emerged. The shredding admission, on the other hand, appears to have impaired not only Andersen's credibility but also that of all other auditors. In particular, around the shredding admission date, the market reaction strongly suggests that discretionary accruals are penalized while free cash flows are rewarded. These results are the opposite of the valuations placed on accruals and free cash flows prior to the shredding admission. Accruals continue to be penalized, and free cash flows rewarded, through the end of March 2002.

Overall, our results are consistent with Andersen's shredding admission initiating a period of considerable investor uncertainty and turmoil during which the value of all audits was impaired and investors fled to the safety provided by cash flows. We conclude that (1) there were significant market-wide auditor credibility spillovers resulting from Andersen's shredding admission, (2) the market responded to emerging news about the Andersen-Enron saga, by

revaluing not only accruals-based measures of financial statement/auditor credibility but also the cash flow components of firm performance and (3) future research may consider using, in addition to traditional accruals-based measures such as abnormal accruals or ROA or bankruptcy scores, non-accruals based measures such as cash flows in order to detect more fully the market's response to bad news about financial statement/auditor credibility.

Our results are also interesting in that they corroborate, using data on short-window market responses to events that can be reasonably construed as impairing the credibility of accounting numbers, past findings that abnormal accruals reflect value-relevant information. Moreover, the fact that prior to the impairment of accruals cash flows are on average negatively priced, but after accrual impairment they are positively priced also suggests that accrual information contains value relevant components that are incrementally valuable relative to cash-flow measures of firm performance. However, we should note that our results do not speak to the extent to which discretionary or abnormal accruals reflect underlying financial reporting quality vs. auditor quality. In general, the pattern of reactions we document seems to suggest that Andersen is not viewed, either ex-ante or ex-post, as an auditor with lower quality than any of the other firms in the sample.

Finally, our results are consistent with investors viewing auditor credibility as having a significant correlated component. Had auditor reputations been "compartmentalized" in investors' minds, one would expect to find differentially more powerful impairment effects for Andersen. The fact that even four days after the shredding admission, we do not find evidence of significant differential reactions for Andersen clients suggests that this is not likely the case. Our results are consistent with prior research and commentary that suggests that audit firms are viewed by the market as producers of an undifferentiated product (see e.g. Novak 1998) and

concerns that mistakes by one producer can imperil the entire market for auditing (Firth 1990, SEC 2000 & 2001, Doogar 2003). The evolution of auditing (and of Generally Accepted Auditing Standards) in the United States over the past forty years has tended to favor standardization of procedures to limit auditor discretion. Our findings highlight one potential cost of this strategy, namely that the advantages of blurring product differentiation by standardizing audit procedures and audit representations (e.g. improved liability avoidance for audit firms) come with the downside risk of market-wide runs on auditor credibility.

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TABLE 1
Variable Definitions

Dependent Variable

RRet	is the raw returns compounded over a short window (four trading days) or a long monthly window (19-23 trading days) as described in Section 3.1.
MRet	is the value-weighted NYSE/AMEX market index returns compounded over a short window (four trading days) or a long monthly window (19-23 trading days).
Alpha, Beta	is estimated for each firm in the 2003 CRSP universe using the market model, over a rolling 12-month period ending in the month immediately before a window of interest. For example, if the window of interest is January 10-15, 2002, alpha and beta are estimated over a 12-month period from January 1, 2001 to December 31, 2001. Alpha and Beta are winsorized at the 1st and 99th percentiles.
CAR	is the cumulative abnormal returns accumulated from daily abnormal returns over a short window (four trading days) or a long monthly window (19-23 trading days). Daily abnormal returns are calculated as the differences between daily stock returns and expected returns using the market model where model parameters, Alpha and Beta, are estimated using daily stock returns and the value-weighted NYSE/AMEX market index returns over a rolling 12-month period ending in the month immediately before a window of interest.

Treatment Variables

|DA|	is the absolute value of discretionary accruals estimated in the cross-section using the modified Jones (1991) model as described in Section 3.1.
FCF	is free cash flow calculated as [net cash flow from operating activities (Compustat item #308) + interest paid (#315) + net cash flow from investing activities (#311) – capitalized interest (#147)], scaled by total assets (#6). If interest paid is missing but interest expense (Compustat #15) is not, then interest expense is used in lieu of interest paid. When both interest paid and interest expense are missing, interest paid is set to zero. Capitalized interest is set to zero when missing. (Penman and Sougiannis, 1998).
AA	Equal to 1 when the auditor is Andersen, 0 otherwise.

Control Variables

BtM	is the book-to-market ratio: [book value of equity (#60)/market value of equity (#25*#199)].
Lnbtm	is the natural logarithm of BtM.
MVE	is market value of equity (#25*#199)
Size	is the natural logarithm of market value of equity, ln(#25*#199).
Momentum	is stock price momentum, measured as annual buy and hold returns over the same rolling 12-month period over which Alpha and Beta are estimated.
Revgrow	is sales growth rate, calculated as the changes in sales (#12) between the current and prior year divided by sales in the prior year.

TABLE 2
Sample Description

Panel A: Descriptive Statistics for Return Metrics and Market Model Parameters

Variable	*Return Window*	*October 2001*	*November 2001*	*December 2001*	*Jan3-8 2002*	*Jan10-15 2002*	*Jan17-23 2002*	*February 2002*	*March 2002*
RRet	Mean	0.099	0.097	0.068	0.032	-0.017	-0.002[†]	-0.041	0.089
	StdDev	0.272	0.221	0.204	0.100	0.077	0.076	0.166	0.187
	Median	0.049	0.064	0.044	0.015	-0.016	0.000	-0.028	0.067
MRet		0.006	0.063	0.020	-0.001	-0.008	0.004	0.000	0.039
Alpha	Mean	0.000	0.001	0.001	0.002	0.002	0.002	0.001	0.001
	StdDev	0.003	0.003	0.003	0.003	0.003	0.003	0.002	0.002
	Median	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Beta	Mean	1.020	1.026	0.996	0.967	0.967	0.967	0.944	0.931
	StdDev	0.816	0.830	0.810	0.779	0.779	0.779	0.735	0.728
	Median	0.855	0.868	0.840	0.829	0.829	0.829	0.820	0.817
CAR	Mean	0.091	0.012	0.023	0.026	-0.016	-0.012	-0.059	0.032
	StdDev	0.309	0.213	0.210	0.100	0.076	0.075	0.165	0.189
	Median	0.032	-0.016	0.003	0.010	-0.016	-0.009	-0.047	0.014
Momentum	Mean	-0.176	-0.073	0.108	0.203	0.203	0.203	0.031	0.063
	StdDev	0.597	0.725	0.863	1.068	1.068	1.068	0.784	0.749
	Median	-0.236	-0.157	-0.026	0.005	0.005	0.005	-0.070	-0.029
	N	4,197	4,198	4,198	4,198	4,198	4,198	4,195	4,187

Panel B: Descriptive Statistics for Treatment and Control Variables

Variable	*N*	*Mean*	*Std Dev*	*Q1*	*Median*	*Q3*
|DA|	4,198	0.090	0.132	0.020	0.052	0.107
FCF	4,198	-0.074	0.298	-0.120	0.004	0.073
BtM	4,198	0.934	1.287	0.306	0.572	1.100
Lnbtm	4,198	-0.574	1.023	-1.185	-0.558	0.095
MVE	4,198	3,427.270	16,448.380	41.333	221.448	1,095.090
Size	4,198	5.468	2.302	3.722	5.400	6.999
Revgrow	4,198	0.585	3.414	0.006	0.137	0.416

continued …

[†] Not significant at 10% or better. All other mean and medians for *RRet*, *Alpha*, *Beta* and *CAR* are significant at 1% or better.

Variables are defined in Table 1. The sample consists of all audit clients for which select financial statement data described in the text are available in Compustat and for which securities returns are available in the CRSP Securities Returns database. Momentum is annual stock return during the twelve calendar months immediately preceding the month of the return accumulation period. Beta is estimated by regressing daily stock returns on the daily NYSE and AMEX value-weighted market returns during the twelve calendar months immediately preceding the month of the return accumulation period.

TABLE 2
Sample Description (Continued) …

Panel C: Pearson and Spearman Correlations at Event Window (Jan10-15, 2002)[a,b]

	CAR4	*|DA|*	*FCF*	*LnBtM*	*Size*	*Momentum*	*Revgrow*	*Beta*
CAR4		-0.051***	0.065***	0.025	-0.026*	-0.030**	-0.003	-0.129***
|DA|	-0.049***		-0.208***	-0.034**	-0.173***	-0.003	0.108***	0.152***
FCF	0.077***	-0.199***		0.144***	0.079***	0.124***	-0.209***	-0.214***
Lnbtm	0.017	-0.023	0.102***		-0.510***	0.156***	-0.015	-0.315***
Size	-0.001	-0.219***	0.076***	-0.531***		-0.186***	0.000	0.358***
Momentum	-0.015	-0.066***	0.239***	0.178***	-0.135***		-0.044***	-0.139***
Revgrow	-0.064***	0.078***	-0.286***	-0.245***	0.197***	-0.184***		0.072***
Beta	-0.176***	0.123***	-0.223***	-0.332***	0.387***	-0.212***	0.251***	

[a] *, **, and *** denote significance level at 0.1, 0.05 and 0.01, respectively.
[b] In Panel C, *CAR4* is computed over the event window (January 10-15, 2002) and *Momentum* and *Beta* are computed using stock returns during January 1-December 31, 2001. See Table 1 for variable definitions.

TABLE 3
Univariate Sub-sample Comparison

Panel A: Comparison between Non-Andersen vs. Arthur Andersen Clients

	Non-Andersen Clients				Andersen Clients				Differences in Means[a]	
Variable[b]	*N*	*Mean*	*StdDev*	*Median*	*N*	*Mean*	*StdDev*	*Median*	*T*	*Z*
CAR4	3,451	-0.015	0.076	-0.015	747	-0.020	0.074	-0.017	1.33	1.00
|DA|	3,451	0.092	0.134	0.052	747	0.082	0.122	0.051	1.83*	1.75*
FCF	3,451	-0.077	0.301	0.003	747	-0.061	0.285	0.009	-1.35	-1.49
Lnbtm	3,451	-0.573	1.029	-0.554	747	-0.575	0.997	-0.563	0.05	0.15
Size	3,451	5.435	2.336	5.377	747	5.618	2.137	5.520	-1.97**	-2.17**
Momentum	3,451	0.201	1.046	0.005	747	0.214	1.165	0.006	-0.30	-0.38
Revgrow	3,451	0.571	3.376	0.139	747	0.648	3.588	0.124	-0.56	0.28
Beta	3,451	0.979	0.790	0.835	747	0.915	0.724	0.790	2.03**	1.49

Panel B. Comparisons between positive and negative CAR4 firms

	CAR4 ≥0					*CAR4* < 0					Differences in Means[a]	
Variable	N	Mean	StdDev	p(05)	p(95)	N	Mean	StdDev	p(05)	p(95)	*t*	Z
CAR4	1,504	0.048	0.069	0.002	0.161	2,694	-0.052	0.052	-0.147	-0.003	-48.89***	-53.8***
|DA|	1,504	0.085	0.121	0.004	0.288	2,694	0.093	0.137	0.004	0.313	2.06**	1.87*
FCF	1,504	-0.060	0.282	-0.625	0.206	2,694	-0.082	0.307	-0.686	0.206	-2.34**	-2.14**
Beta	1,504	0.844	0.732	-0.029	2.286	2,694	1.036	0.796	-0.004	2.603	7.89***	8.44***
Logbtm	1,504	-0.571	1.033	-2.332	1.071	2,694	-0.575	1.018	-2.259	1.075	-0.15	-0.71
Size	1,504	5.465	2.416	1.977	9.614	2,694	5.470	2.237	1.891	9.344	0.07	0.94
Momentum	1,504	0.150	1.133	-0.705	1.249	2,694	0.232	1.029	-0.701	1.763	2.32**	2.52**
Revgrow	1,504	0.476	2.647	-0.291	1.611	2,694	0.645	3.775	-0.282	2.221	1.7*	2.92***

Continued …

TABLE 3
Univariate Sub-sample Comparison (continued) …

Panel C: Mean and median values of variables of interest for 10 equally-sized portfolios formed by ranking the sample firms on free cash flow

FCF Portfolio	*FCF*	*|DA|*	*DA*	*Beta*	*CAR4*	*Size*	*BtM*
1 (Low)	-0.774	0.160	-0.081	1.417	-0.028	4.988	0.614
	(-0.668)	(0.100)	(-0.043)	(1.320)	(-0.032)	(4.927)	(0.315)
2	-0.280	0.129	-0.026	1.247	-0.028	5.079	0.786
	(-0.268)	(0.082)	(-0.003)	(1.084)	(-0.028)	(5.048)	(0.475)
3	-0.123	0.106	-0.004	1.022	-0.015	5.189	0.870
	(-0.120)	(0.065)	(0.026)	(0.886)	(-0.016)	(5.066)	(0.563)
4	-0.055	0.094	-0.009	0.942	-0.015	5.419	0.933
	(-0.054)	(0.056)	(0.019)	(0.848)	(-0.012)	(5.311)	0.621)
5	-0.012	0.071	0.011	0.930	-0.014	5.609	1.102
	(-0.010)	(0.048)	(0.017)	(0.781)	(-0.013)	(5.472)	(0.659)
6	0.018	0.068	-0.005	0.849	-0.008	5.954	1.060
	(0.017)	(0.035)	(0.011)	(0.729)	(-0.009)	(6.040)	(0.662)
7	0.044	0.058	-0.003	0.850	-0.012	5.754	1.011
	(0.044)	(0.035)	(0.004)	(0.722)	(-0.015)	(5.969)	(0.676)
8	0.073	0.055	-0.005	0.821	-0.013	5.751	1.063
	(0.073)	(0.037)	(0.004)	(0.732)	(-0.016)	(5.787)	(0.617)
9	0.115	0.062	-0.021	0.778	-0.015	5.629	0.966
	(0.114)	(0.037)	(-0.015)	(0.661)	(-0.012)	(5.487)	(0.621)
10 (High)	0.254	0.100	-0.036	0.817	-0.012	5.307	0.932
	(0.206)	(0.061)	(-0.023)	(0.644)	(-0.013)	(5.208)	(0.547)

* and ** denote significant at the 0.1 and 0.05 levels, respectively, based on two-tailed tests.

[a] T is the two-tailed t-statistic for the test of equality of sub-sample means (columns 2 and 6) in each panel. Z is the two-tailed Wilcoxon z-statistic for the Wilcoxon-Mann-Whitney rank-sum test of distributional equivalence of the two subsamples being compared (*Non-Andersen* vs. *Andersen*).

[b] *CAR4* is measured at Event Window, January 10-15, 2002. *Momentum* is annual stock return during January 1-December 31, 2001. *Beta* is estimated by regressing daily stock returns on the daily NYSE and AMEX value-weighted market returns during January 1-December 31, 2001. See Table 1 for variable definitions.

TABLE 4

Distribution of |DA| and FCF for the extreme CAR Sub-samples and Cumulative Abnormal Returns (CAR) for |*DA*| and *FCF* Portfolios

Panel A: Percentiles of the Distribution of |DA| and FCF for the Extreme CAR4 Sub-samples[a]

	Distribution of |DA|										
	Min	*10%*	*20%*	*30%*	*40%*	*Median*	*60%*	*70%*	*80%*	*90%*	*Max*
High *CAR4*	0.000	0.008	0.015	0.024	0.037	0.051	0.065	0.085	0.118	0.197	1.231
Low *CAR4*	0.000	0.009	0.018	0.029	0.042	0.057	0.079	0.106	0.147	0.218	1.303

	Distribution of FCF										
	Min	*10%*	*20%*	*30%*	*40%*	*Median*	*60%*	*70%*	*80%*	*90%*	*Max*
High *CAR4*	-1.742	-0.370	-0.136	-0.066	-0.024	0.010	0.032	0.057	0.093	0.143	1.077
Low *CAR4*	-2.628	-0.539	-0.269	-0.138	-0.062	-0.013	0.016	0.046	0.080	0.135	1.076

Panel B: Mean Cumulative Abnormal Returns (CAR4) for |DA| and FCF Portfolios[b]

		FCF		Test of Diff. (*t*-statistic)
		High	*Low*	
|*DA*|	High	Portfolio 1 -0.017 (*t* = -4.52)	Portfolio 2 -0.033 (*t* = -7.97)	Portfolio 1 vs. 2 (*t* = 2.98)
	Low	Portfolio 3 -0.014 (*t* = -5.40)	Portfolio 4 -0.014 (*t* = -4.42)	Portfolio 3 vs. 4 (*t* = -0.01)
Test of Diff. (t-statistic)	Portfolio 2 vs. 3 (*t* = -3.78)	Portfolio 1 vs. 3 (*t* = -0.48)	Portfolio 2 vs. 4 (*t* = -3.54)	Portfolio 1 vs. 4 (*t* = -0.45)

[a] The extreme *CAR4* sub-samples in Panel A consist of the firms in the top and bottom third of the distribution of *CAR4* for the entire sample during the event window (January 10-15, 2002). Beta is computed using daily securities returns during January 1-December 31, 2001. |*DA*| is the absolute value of discretionary accruals estimated using the cross-sectional modified Jones model for each year and two-digit SIC code combinations with at least six firms and firms with at least six observations. *FCF* is free cash flows. All variables are defined in more detail in Table 1.

[b] The portfolios in Panel B are formed by ranking firms on |*DA*| into three groups (high, medium and low) and then ranking firms within each |*DA*| group on *FCF*. Portfolio 1 consists of high |*DA*| firms with high *FCF* , Portfolio 2 of high |*DA*| firms with low *FCF*, Portfolio 3 of low |*DA*| firms with high *FCF* and Portfolio 4 of low |*DA*| firms with low *FCF*. There are, on average, 466 firms in each portfolio.

TABLE 5

Regression Results for Short Windows Surrounding the Andersen Shredding Admission Event

Panel A: Regressions using absolute value of accruals.

$$CAR4 = a + b_1*(|DA|) + b_{1AA}*(|DA|*AA) + b_2*(FCF) + b_{2AA}*(FCF*AA)+b_3*(Lnbtm)+b_4*(Size) +b_5*(Revgrow)+b_6*(Momentum) + u$$

	3-Jan (PRE)		10-Jan (EW)		17-Jan (POST)	
	b	t	b	t	b	t
Constant	0.0292***	5.526	-0.0029	-0.668	-0.012***	-2.742
|DA|	0.0995***	4.003	-0.0193	-1.603	-0.0327***	-2.840
*|DA|*AA*	-0.0676**	-1.967	-0.0564*	-1.893	0.0195	0.654
FCF	-0.0269***	-2.738	0.0169***	3.078	0.0227***	4.029
*FCF*AA*	0.0282*	1.855	0.0051	0.423	-0.001	-0.077
Lnbtm	0.005**	2.392	-0.0004	-0.257	0.0007	0.450
Size	-0.0013*	-1.669	-0.0017***	-2.566	0.0011	1.638
Revgrow	-0.0003	-0.675	0.0003	0.946	-0.0001	-0.191
Momentum	-0.0118***	-5.684	-0.0034**	-2.182	-0.0049***	-2.753
N	4198		4198		4198	
R^2	0.0443		0.0116		0.0191	

Panel B: Regressions using signed accruals.

$$CAR4 = a + b_{1P}*(DAPOS) + b_{1PAA}*(DAPOS*AA) + b_{1N}*(DANEG) + b_{1NAA}*(DANEG*AA) + b_2*(FCF) + b_{2AA}*(FCF*AA)+b_3*(Lnbtm)+b_4*(Size) +b_5*(Revgrow)+b_6*(Momentum) + u$$

	3-Jan (PRE)		10-Jan (EW)		17-Jan (POST)	
	b	t	b	t	b	t
Constant	0.0295***	5.585	-0.0039	-0.87	-0.0121***	-2.695
DAPOS	0.1081***	3.137	-0.0019	-0.087	-0.0335	-1.399
*DAPOS*AA*	-0.1799***	-3.945	-0.0294	-0.694	0.0428	0.981
DANEG	0.0962***	3.57	-0.0211*	-1.654	-0.0321***	-2.701
*DANEG*AA*	0.0557	1.602	-0.0835**	-2.498	-0.0182	-0.519
FCF	-0.0267***	-2.712	0.0169***	3.076	0.0226***	4.02
*FCF*AA*	0.0251	1.632	0.0062	0.522	-0.0004	-0.027
Lnbtm	0.0049**	2.379	-0.0003	-0.18	0.0007	0.462
Size	-0.0013*	-1.699	-0.0016**	-2.437	0.0011	1.638
Revgrow	-0.0003	-0.703	0.0004	0.995	-0.0001	-0.18
Momentum	-0.0118***	-5.711	-0.0034**	-2.204	-0.0048***	-2.755
N	4198		4198		4198	
R^2	0.0453		0.0121		0.0191	

*, **, and *** denote significance level at 0.1, 0.05 and 0.01, respectively, using White's (1980) heteroscedasticity-consistent standard errors (two-tailed).

Variables are defined in Table 1. The sample is described in Table 2. *CAR4* is the 4 day cumulative abnormal return accumulated over trading days [0,+3] where day 0 is January 3, 2002 for the *PRE* window, January 10, 2002 for the *EW* window, January 17, 2002 for the *POST* window. Beta used to compute the abnormal returns is computed from *CRSP* daily securities returns during the twelve calendar months immediately preceding the month of accumulation using the CRSP Value Weighted NYSE/AMEX index as the market index. See Table 1 for definitions of other variables.

TABLE 6

Regression Results for Monthly Windows before and after January 2002

$$CAR = a + b_1*(|DA|) + b_{1AA}*(|DA|*AA) + b_2*(FCF) + b_{2AA}*(FCF*AA) + b_3*(Lnbtm) + b_4*(Size) + b_5*(Revgrow) + b_6*(Momentum) + u$$

	October 2001		November 2001		December 2001		February 2002		March 2002	
	b	t	b	t	b	t	b	t	b	t
Constant	-0.0059	-0.42	-0.0313***	-2.84	0.0337***	2.78	-0.0578***	-6.929	0.0602***	6.132
|DA|	0.2587***	4.139	0.0334	0.651	-0.0297	-0.856	-0.1568***	-6.636	-0.0563*	-1.951
*|DA|*AA*	0.0282	0.201	0.1486	1.613	0.0421	0.646	-0.0391	-0.726	-0.0765	-1.555
FCF	-0.0884***	-3.47	-0.0228	-1.505	-0.0327	-1.42	0.072***	6.442	0.0203*	1.65
*FCF*AA*	0.0926	1.605	0.0614**	1.979	-0.0478	-1.134	0.001	0.027	0.0162	0.576
Lnbtm	-0.0115*	-1.831	0.0181***	4.526	0.0031	0.758	0.0122***	3.758	0.0117***	2.907
Size	0.0064***	2.832	0.0076***	4.735	-0.0008	-0.427	0.0049***	3.738	-0.0019	-1.269
Revgrow	0.002	1.327	0.0003	0.157	-0.0003	-0.308	0.0005	0.368	-0.0002	-0.193
Momentum	-0.1401***	-12.864	-0.0774***	-10.432	-0.0535***	-10.714	-0.0228***	-6.175	-0.0572***	-8.357
N	4197		4198		4198		4195		4187	
R^2	0.1239		0.0812		0.0553		0.0575		0.0528	

*, **, and *** denote significance level at 0.1, 0.05 and 0.01, respectively, using White's (1980) heteroscedasticity-consistent standard errors (two-tailed).

Variables are defined in Table 1. The sample is described in Table 2. *CAR* is the cumulative abnormal return accumulated over the calendar month. *Momentum* is annual stock return during the twelve calendar months immediately preceding the month of the return accumulation period. *Beta* is estimated by regressing daily stock returns on the daily NYSE and AMEX value-weighted market returns during the twelve calendar months immediately preceding the month of the return accumulation period.

TABLE 7

Regression Results for Short Windows in January 2001 corresponding to the PRE, EW and POST Windows Surrounding the Andersen Shredding Admission Event in January 2002.

$CAR4 = a + b_1*(|DA|) + b_{1AA}*(|DA|*AA) + b_2*(FCF) + b_{2AA}*(FCF*AA)+b_3*(Lnbtm)+b_4*(Size) +b_5*(Revgrow)+b_6*(Momentum) + u$

	Jan 3-8, 2001		Jan 10-16, 2001		Jan 17-22, 2001	
	b	t	B	t	b	t
Constant	0.0712***	8.166	0.0806***	7.978	0.0372***	5.415
|DA|	0.0484	1.243	0.1945***	3.384	0.0792**	2.268
*|DA|*AA*	-0.0320	-0.513	-0.0665	-0.740	0.0305	0.412
FCF	-0.0062	-0.467	-0.0758***	-4.108	0.0013	0.140
*FCF*AA*	-0.0375	-1.125	0.0053	0.129	-0.0349	-1.112
Lnbtm	-0.0006	-0.192	-0.0343***	-7.060	-0.0107***	-4.270
Size	-0.0054***	-4.088	-0.0106***	-5.695	-0.0047***	-4.569
Revgrow	-0.0003	-0.940	0.0026	1.441	0.0001	0.455
Momentum	-0.0789***	-18.107	-0.0597***	-10.136	-0.0459***	-13.149
N	4132		4132		4132	
R^2	0.1152		0.1213		0.0811	

*, **, and *** denote significance level at 0.1, 0.05 and 0.01, respectively, using White's (1980) heteroscedasticity-consistent standard errors (two-tailed).

The sample includes all firms existing in 2000 on the 2003 Compustat Industrial and Full Coverage files that have enough information to estimate discretionary accruals using equation (2) and other variables in equation (3). For firms whose fiscal year-end month is between June and October, fiscal year 2000 data is used to calculate variables in equation (3). For firms whose fiscal year-end month is between January and May or between November and December, fiscal year 1999 data is used. This selection process yields a sample of 4,132 firms, of which 3,265 firms' accounting information is taken from fiscal year 1999 data and 867 firms' accounting information from their fiscal year 2000 data. *CAR4* is the 4-day cumulative abnormal return accumulated over January 3-8, January 10-16, and January 17-22, 2001, respectively. Beta used to compute the abnormal returns is computed from *CRSP* daily securities returns during the twelve calendar months immediately preceding the month of accumulation (i.e., January 1-December 31, 2000) using the CRSP Value Weighted NYSE/AMEX index as the market index. See Table 1 for definitions of other variables.

TABLE 8

Expanded Model Regression Results for Short Windows Surrounding January 10, 2002.

The expanded model is obtained by adding terms for the non-audit service fee ratio to the basic model in equation (3). The full model is:

$$CAR4 = a + b_1*(|DA|) + b_{1AA}*(|DA|*AA) + b_2*(FCF) + b_{2AA}*(FCF*AA)+b_3*NASRatio + b_{3AA}*(NASRatio*AA) + b_4*(Lnbtm)+b_5*(Size) +b_6*(Revgrow)+b_7*(Momentum) + u$$

	3-Jan, 2001 (PRE)		10-Jan, 2001 (EW)		17-Jan, 2001 (POST)	
	b	t	B	t	b	t
Constant	0.0475***	6.511	0.002	0.322	-0.0071	-1.135
|DA|	0.0931***	4.184	-0.0122	-0.743	-0.0293*	-1.935
*|DA|*AA*	-0.0063	-0.254	-0.0624**	-2.017	-0.0443*	-1.799
FCF	-0.0212	-1.516	0.0169**	2.303	0.0264***	3.378
*FCF*AA*	0.0184	1.028	0.0019	0.126	-0.0084	-0.577
NASRatio	0.0096	1.037	-0.0131*	-1.93	-0.0104	-1.566
*NASRatio*AA*	-0.0055	-0.781	0.002	0.293	-0.0015	-0.255
Lnbtm	0.0056**	2.316	-0.0012	-0.705	-0.0002	-0.134
Size	-0.0043***	-3.732	-0.0017*	-1.806	0.0013	1.379
Revgrow	-0.0006	-0.651	0.0007	1.162	-0.0006	-1.004
Momentum	-0.0099***	-3.378	-0.0036*	-1.755	-0.0047**	-2.456
N	2730		2730		2730	
R^2	0.0487		0.0115		0.0245	

*, **, and *** denote significance level at 0.1, 0.05 and 0.01, respectively, using White's (1980) heteroscedasticity-consistent standard errors (two-tailed).

NASRatio = 1 – (audit fees/total fees). *NASRatio*AA = NASRatio* for Andersen clients and 0 otherwise. Other variables are defined in Table 1. The sample is described in Table 2. *CAR4* is the 4 day cumulative abnormal return accumulated over trading days [0,+3] where day 0 is January 3, 2002, January 10, 2002 and January 17, 2002 for the three windows. Beta used to compute the abnormal returns is computed from *CRSP* daily securities returns during the twelve calendar months immediately preceding the month of accumulation using the CRSP Value Weighted NYSE/AMEX index as the market index.