



Shredded Reputation: The Cost of Audit Failure

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ABSTRACT

In this article we investigate the impact of the Enron audit failure on auditor reputation. Specifically, we examine Arthur Andersen's clients' stock market impact surrounding various dates on which Andersen's audit procedures and independence were under severe scrutiny. On the three days following Andersen's admission that a significant number of documents had been shredded, we find that Andersen's other clients experienced a statistically negative market reaction, suggesting that investors downgraded the quality of the audits performed by Andersen. We also find that audits performed by Andersen's Houston office suffered a more severe decline in abnormal returns on this date. We are not able to show that Andersen's independence was questioned by the amount of non-audit fees charged to its clients.

1. Introduction

We investigate the impact of the Enron audit failure on auditor reputation, as evidenced by its effect on the stock prices of the other clients of Enron's auditor. An auditor's reputation is directly related to the perceived and actual levels of quality reflected by the auditor's report. Choi and Jeter [1992] demonstrate a lessened stock market response to earnings reports when a qualified opinion is issued. If auditor quality is jeopardized, the audit report provides a lower level of assurance to the users of financial statements that

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the financial statements reflect the firm's business reality and a higher probability that its earnings and book values have been overstated without being flagged by its auditor. Consequently, we examine Arthur Andersen's clients' stock market impact surrounding dates on which Andersen's audit procedures and independence were under severe scrutiny as well as Andersen's clients' auditor switch dates.

In this section, we provide a brief history of events that affected both Enron and Andersen. In subsequent sections we review the literature on auditor reputation, develop our hypotheses, and describe our data, analysis, and results. Finally, we provide a conclusion.

1.1 ENRON EVENTS

At one time, Enron was the seventh largest firm in revenues in the United States and was highly touted as being an innovative marketer in natural gas and electricity. On October 16, 2001, Enron announced that third-quarter earnings would include a nonrecurring charge of \$1.01 billion after tax because of errors in accounting.¹ The next day, the Securities and Exchange Commission (SEC) began an informal inquiry into Enron's accounting. The press immediately began questioning Enron's accounting, placing emphasis on related-party transactions. On October 22, Enron acknowledged the SEC inquiry concerning possible conflicts of interest in various partnerships. Enron's stock price dropped 20%. Enron noted that its internal auditors and external auditors had reviewed the related-party arrangements. On October 31, Enron's board of directors formed a special committee, headed by William Powers, to examine the related-party transactions and to recommend actions needed to correct problems found. In addition, on this date, Enron acknowledged that the SEC changed its initial inquiry into a formal investigation.

On November 8, Enron announced that the company and its auditor had determined that certain off-balance sheet entities (primarily a special purpose entity named Chewco) should have been consolidated in accordance with generally accepted accounting principles (GAAP). As a result, Enron stated that all earnings from 1997 through 2000 should not be relied on and would be reduced by amounts ranging from a low of \$96 million in 1997 to a high of \$250 million in 1999. Also, Enron's debt had been understated by a high of \$711 million in 1997 to a low of \$628 million in 2000. Andersen had billed Enron \$80,000 for a review of the Chewco transaction in 1997.

Talks with Dynege Inc. about a potential acquisition ended on November 29. On December 2, Enron filed for Chapter 11 bankruptcy protection. On January 17, 2002, Enron discharged Andersen and began the process of locating a new auditor.

¹ At the same time Enron reaffirmed that recurring earnings would increase from \$1.80 to \$2.15 per share from 2001 to 2002.

1.2 ANDERSEN EVENTS

Andersen was the fifth largest auditing firm in the world, employing 85,000 people in 84 countries. For 2001, Andersen reported U.S. revenues of \$9.3 billion. During 2001, Andersen was fined or paid more than \$100 million to settle lawsuits for audit problems concerning two clients, Waste Management and Sunbeam. On February 5, 2001, Andersen personnel from the Houston and Chicago offices discussed concerns about Enron's accounting. Yet, at the February 12, 2001, Enron Audit Committee meeting, Andersen stated that the 2000 Enron financial statements would receive an audit report containing an unqualified opinion and that Andersen had specifically reviewed the related-party transactions and did not find any impropriety with respect to the accounting for these related-party transactions.

After Enron's October 16, 2002, third-quarter earnings announcement, Andersen's independence from Enron began to be questioned because the audit firm had provided significant non-audit services to Enron in addition to its fees associated with the Enron audit. Andersen received \$47.5 million in fees from Enron. Of this amount, \$34.2 million, or 72%, was audit related and tax work. Total fees for other services totaled \$13.3 million.² Also, Enron had outsourced some internal audit functions to Andersen.³ Andersen's Houston office came under fire.

On November 8, Andersen received a subpoena from the SEC for documents related to Enron. On December 4, 2001, Joe Berardino, Andersen's CEO, wrote an op-ed for *The Wall Street Journal* stating that Andersen would acknowledge its mistakes *if* they had been made. On December 12, 2001, Berardino testified before Congress. He made the following points.⁴

“Based on a second look—our team made an error in judgment. An honest error, but an error nonetheless.”

“Important information was not revealed to our team.”

“Andersen had notified the audit committee of the need to consider possible illegal acts by the company.”

Enron responded to Berardino's comments on December 12, 2001, stating that Andersen engaged in real-time audit procedures with Enron on *every* significant structured finance vehicle.

On January 2, 2002, Deloitte & Touche released the results of its audit quality peer review of Andersen. In conducting one of the most intensive peer reviews in Andersen's history, the report concluded that Andersen's system of accounting and audit quality provided reasonable assurance of compliance with professional standards. The peer review covered 240 audit engagements in more 30 Andersen offices (the Enron audit was not included in the peer review).

² Source: Andersen's CEO Joe Berardino testifying before Congress, December 12, 2001. Another \$4 million was paid to Accenture (formerly known as Andersen Consulting).

³ This outsourcing arrangement was reviewed by the SEC before the contract was accepted.

⁴ Source: Andersen's CEO Joe Berardino testifying before Congress, December 12, 2001.

Perhaps the defining moment in the Enron collapse, with respect to Andersen, occurred on January 10, 2002. On this date, Andersen notified the SEC and the Department of Justice that Andersen personnel involved with the Enron engagement had disposed of a significant but undetermined number of electronic and paper documents as well as correspondence related to the Enron engagement. Five days later, Andersen dismissed the lead partner (David Duncan) and placed three other partners involved with the engagement on leave. Andersen placed a new management team in charge of the Houston office. These latter moves were an apparent attempt to distance the Chicago office of Andersen from the problems concerning Enron.

On February 2, 2002, the Powers report was released suggesting that the Chicago office of Andersen was well aware of accounting problems at Enron. The report stated that the evidence suggested that Andersen did not function as an effective check on the disclosures reported by Enron. Also, the report noted that Andersen did not express any concerns to Enron's board of directors concerning accounting problems at Enron. On February 3, 2002, Andersen announced that former Federal Reserve Board Chairman Paul Volcker agreed to chair an Independent Oversight Board (IOB). The objective of the IOB was to review all policies and procedures of the firm and to assure the quality and credibility of the firm's auditing process. The IOB had authority to mandate any changes in policies and procedures needed to assure quality.

In early March 2002, the Justice Department began pressuring Andersen with respect to its involvement with Enron and the eventual document shredding. Following a week of intense negotiations between Andersen and the Justice Department with respect to a possible criminal indictment for obstructing justice, a criminal indictment against Andersen was unsealed on March 15, 2002. On May 2, 2002, a jury trial began in Houston. On May 7, 2002, Andersen agreed to pay \$217 million to settle civil litigation over its audits of the Baptist Foundation of Arizona (the second largest settlement in history by any of the Big 5 audit firms). Finally, on June 15, 2002, the federal jury convicted Andersen of a single count of obstructing justice. Andersen was barred from conducting and reporting on the audits of SEC-registered companies after August 2002.

1.3 COST OF REPUTATION

The Enron audit was the fourth major audit failure affecting Andersen since 1999. In May 2001, Andersen paid \$110 million (without accepting or denying blame) to settle Sunbeam's shareholders' lawsuit. In June 2001, Andersen agreed to pay a \$7 million fine to the SEC in the Waste Management case. Andersen had already agreed to pay part of a \$220 million suit to settle a class action case related to Waste Management, which had overstated income by approximately \$1 billion.

In this article we investigate the impact of auditor reputation on the market prices of an auditor's clients around an audit failure. The ability of

investors to assess whether a firm's financial statements reflect business reality rests to a large degree on the reputation of its independent auditor. Clearly, Andersen's reputation was negatively affected by the events described here. No financial services firm has ever survived a criminal conviction.

2. Auditor Reputation and Brand Name

A link between auditor quality and economic value has been examined both theoretically and empirically within several contexts. This relation is the result of the agency relationships among creditors, outside shareholders, and managers. For example, Watts and Zimmerman [1983] argue that these agency relationships cause managers and entrepreneurs to submit to high-quality monitoring to reduce agency costs.

More formally, in the initial public offerings (IPO) market, several authors show that higher audit quality can lead to greater value for the offering, less underpricing, or both. Both Titman and Trueman [1986] and Datar, Feltham, and Hughes [1991] provide models in which the initial value for an IPO is an increasing function of audit quality. Feltham, Hughes, and Simunic [1991], in examining the U.S. IPO market, provide weak empirical support for the Datar, Feltham, and Hughes proposition that the initial IPO value depends on audit quality. Clarkson and Simunic [1994] reexamine this proposition within the context of the Canadian IPO market and find stronger support for the link between audit quality and the initial IPO value. Balvers, McDonald, and Miller [1988] provide a model in which IPO underpricing is a function of auditor quality. They purport that underpricing should be less severe when higher quality auditors are engaged. Both Balvers, McDonald, and Miller [1988] and Beatty [1989] report less underpricing when a Big 8 auditor is engaged as compared with the underpricing for IPOs using non-Big 8 auditors.

Several authors argue that managers and entrepreneurs are willing to pay higher audit fees to receive what are perceived to be higher quality audits. For example, Beatty [1993] reports greater compensation to Big 6 auditors than to non-Big 6 auditors in the IPO market. Numerous other audit fee studies, including Francis [1984], Francis and Simon [1987], and Craswell, Francis, and Taylor [1995], document a relationship between auditor prestige or reputation and audit fees. Craswell, Francis, and Taylor not only report an audit fee premium for the Big 8 name, but also an audit fee premium for audit specialization within the Big 8. Other authors, for example, Chaney, Jeter, and Shivakumar [2002], are unable to find a significant Big 5 audit premium. Although there is some evidence that audit fees do not contain this premium, it appears that economic agents are willing to bear some increase in cost for what are perceived to be higher quality audits.

Dye [1993] provides a model in which audit fees are a function of both the information provided by the audit and an option value, or insurance role. The insurance role is a fee against the claims misled users of the

financial statement may have against the auditor if the audit is substandard. Both Beatty [1993] and Willenborg [1999] use the IPO setting to investigate the insurance role provided by the audit process. Menon and Williams [1994] find that firms employing Laventhol & Horwath as their auditors experienced a significantly negative stock market reaction to Laventhol & Horwath's bankruptcy announcement. They attribute this negative price reaction to the inability of Laventhol & Horwath to provide future "insurance" to these firms' stakeholders. Willenborg [1999] also finds weak support for the informational role of the audit process. Teoh and Wong [1993] find that the market's response to unexpected earnings, the earnings response coefficient, is greater for firms with Big 8 auditors than it is for firms using non-Big 8 auditors. Thus, it appears that not only are audit fees a function of the perceived option and informational value of the audit process, but that stock market participants may also adjust market values accordingly when either the option value or the informational value of the audit changes.

In summary, it appears that economic agents do, in fact, take into account the quality of the audit (usually operationalized in research studies as a Big 5 or Big 8 dummy variable) and adjust real economic payments for differing levels of audit quality. This is shown for audit fees and IPO underpricing and to a lesser extent for IPO and stock market valuations. Yet, little research demonstrates how market participants react to events that may be damaging to an auditor's reputation. That is the purpose of this article.

3. Motivation and Hypotheses

We examine the market reaction for Andersen's clients on various dates when information about either the integrity or quality of Andersen's audit of Enron was questioned. Since Enron's ill-fated accounting practices were uncovered, *The Wall Street Journal* has reported, almost daily, articles about questionable accounting issues. The major question became: Are there more Enrons out there, with overstated financials that have not been flagged by their auditors? Analysts and reporters started perusing the notes to the financial statements and paying more attention to who audited the firm. Questions surfaced about Andersen's independence in light of the extensive internal audit and consulting services that the firm provided some clients.

This increased scrutiny led to other notable Andersen clients' financial statements being questioned. Qwest Communications International came under criminal investigation by the Justice Department over its accounting for fiber-optic capacity swaps. The company defended itself by referring to a "white paper" issued by Andersen. Peregrine Systems replaced Andersen with KPMG as its auditor in April 2002. Subsequently, KPMG determined that Peregrine's revenues may have been overstated by \$100 million, or 8% of its combined 2001 and 2002 revenues. On June 26, 2002, WorldCom, another former Andersen client, announced a major restatement of earnings. Approximately \$3.8 billion of normally recurring operating expenses had been treated as capital expenditures, thus significantly overstating cash

flows from operations and earnings before interest, taxes, depreciation, and amortization (EBITDA).

In this article we examine the market reaction around the four events we believe to have had the greatest potential impact on Andersen's reputation. If Andersen's reputation for providing quality audits was impaired by these events, their clients' reported financial statements may be viewed as being less reliable—there is a higher probability that their earnings and book values have been overstated without being flagged by their auditor—and a negative stock market reaction to these events would be expected.

The four events we chose are: (1) November 8, 2001, when Enron announced further restatements and Andersen was subpoenaed by Congress to turn over documents related to Enron; (2) December 12, 2001, when Andersen's CEO, Joe Berardino, announced before Congress that the audit team had made an error in judgment; (3) January 10, 2002, when Andersen announced that a significant number of Enron audit documents were shredded; and (4) February 4, 2002, the first trading day following the Sunday, February 3, 2002, announcement by Andersen that it was creating the IOB headed by Volcker.

With regard to the fourth event, some ambiguity might be argued as to the direction of the impact. The market might have viewed the creation of the IOB as a positive step toward improving Andersen's audit process and have responded with positive returns for Andersen's other audit clients. However, because this announcement by Andersen came one day after the release of the Powers report (released Saturday, February 2, 2002), which was extremely critical of the role played by Andersen, Andersen's other audit clients may have experienced negative returns at this time. We refer to the fourth event as the Volcker/Powers event date.

3.1 AVERAGE REACTION TO THE ADMISSION OF SHREDDING

Our primary focus is the market reaction for Andersen's clients around the third event, January 10, 2002, when Andersen admitted to shredding documents. This announcement was unexpected and was met with shock in the business community. Usually, when audit firms pay damages to lawsuit claimants or penalties to the SEC, they are careful not to admit guilt. The admission of document shredding could certainly, at a minimum, be viewed as showing a lack of due professional care and thus, a potential violation of generally accepted auditing standards (GAAS). For our first two hypotheses, we make separate subhypotheses for the shredding date and the other dates. Our primary hypotheses are:

H1a: Andersen's clients, other than Enron, experienced a negative market reaction to the news that Andersen shredded documents related to the Enron audit.

H1b: Andersen's clients, other than Enron, experienced a negative market reaction to news that reflects negatively on the quality of Andersen's Enron audit.

If Andersen's audit problems were restricted to the Houston office, clients audited by other Andersen offices may not have been affected. Because one of Andersen's other audit failures, Waste Management, was also a Houston client, the market might have perceived that systemic audit problems existed only at Andersen's Houston office. Clients audited by other offices of Andersen might not have been affected, or they might have been affected to a lesser extent.

H2a: Andersen's Houston clients, other than Enron, experienced a more negative market reaction to the news that Andersen shredded documents related to the Enron audit than other non-Houston clients.

H2b: Andersen's Houston clients, other than Enron, experienced a more negative market reaction to news that reflects negatively on the quality of Andersen's Enron audit than other non-Houston clients.

3.2 CROSS-SECTIONAL DETERMINANTS OF MARKET REACTIONS

Firms with both the ability and incentive to manage earnings might attempt to take advantage of their auditors. In addition, if an auditor's independence, in fact or appearance, is threatened by the extent of non-audit services provided to an audit client, the financial statements are arguably less transparent. As our primary test of auditor independence, we examine the effect of non-audit fees on market prices of Andersen's clients.

H3: *Ceteris paribus*, Andersen's clients with larger ratios of non-audit fees to total assets experienced more negative market reactions to the news that Andersen shredded documents related to the Enron audit.

3.3 AUDITOR SWITCHING DATES

The removal of Andersen and the appointment of a new auditor posed several issues. If the switch date merely signaled that the firm was about to incur switching costs, a negative cumulative abnormal return (CAR) might be observed. However, if the firm's reputation and stock price had been adversely affected by its relation with Andersen, the firm might be able to improve its reputation and reassure investors that it had not been overstating earnings and book values, by switching to another Big 5 auditor. In this case, a positive CAR might be expected.

Determining the switch date and measuring the market's reaction are complicated by several factors. First, determining the switch date is complicated by news stories about firms seeking bids for the audit job. In most cases, these news stories appeared weeks before the firm actually switched auditors. For example, the first news stories concerning Delta Airlines seeking a new auditor appeared in *The Wall Street Journal* in January, yet the firm did not formally replace Andersen until March. Second, because 71% of the

firms in our sample are December year-end firms, the decision to switch auditors may have been deferred until after the year-end results for 2001 were reported. Finally, many firms announced earnings and dividends on the same date as the auditor change. Thus, we are unable to make a directional prediction. Our final hypothesis stated in the null form is:

H4: Ceteris paribus, Andersen's clients that switched auditors did not experience a market reaction on the auditor switch date.

4. Research Design and Results

4.1 SAMPLE

Our sample consists of 284 of the 287 Andersen clients included in the S&P 1500. Security prices were obtained from Datastream. Audit and non-audit fees, for 208 of the 284 firms, were obtained from Compustat for the year 2000. The most recently completed 10-Ks, 8-Ks, and annual reports were examined to determine whether the Houston office provided the audit and to identify the company's auditor. Descriptive data are provided in tables 1 and 2.

In our sample, Andersen's clients represent 52 industries using the Global Industry Classification Standard (GICS). Panel A of table 1 reveals that the industries represented by the greatest number of Andersen clients are the Commercial Services & Supplies industry (28 firms), the Oil & Gas industry (17 firms), and the Machinery and Electrical Utilities industries (16 firms each). Panel B of table 1 identifies the 10 industries represented by the sample firms audited by Andersen's Houston office. In panel C of table 1, for the S&P 1500 firms we provide a comparison of the percentages of our sample of Andersen clients within each segment of the S&P 1500 with the percentages of firms remaining with available data. In our sample, 29% of Andersen's clients are in the S&P 500, 26% of the firms are in the Mid Cap index, and 45% of firms are in the Small Cap index. Similar numbers are found for Andersen's Houston office.

The average asset size for our sample of Andersen's clients is \$8,133 million, and the mean stock market capitalization is \$4,985 million. The average return on assets (ROA) is 4%. Audit fees are available for 208 of the 284 firms. The total audit fee consists of three components, the audit fee, the information systems fee (IS fee), and other fees. Other fees include tax-related services, due diligence of potential acquisitions, SEC filings, and audit-related services. The average total fee was \$3.56 million, with the audit component averaging \$1.2 million. IS fees averaged \$0.307 million and other fees averaged \$2 million. The majority of the IS fees and other fees resulted from services provided to Andersen's S&P 500 clients. The audit fees charged by the Houston office were slightly larger than the average fee charged by non-Houston offices, but the non-audit fees were smaller.

TABLE 1
Industry and Market Classifications

Industries	Auditor ^b					
	AA	E&Y	D&T	KPMG	PWC	Other
Airlines	3	2	2	3	0	0
Banks	12	21	9	31	13	1
Biotechnology	3	10	1	1	8	0
Building Products	5	1	2	1	2	0
Chemicals	6	7	4	10	15	1
Commercial Services & Supplies	28	14	14	10	19	1
Communications Equipment	7	7	12	6	18	0
Construction & Engineering	5	2	1	0	4	0
Containers & Packaging	3	2	0	1	6	0
Diversified Financials	7	6	7	7	10	1
Divers. Telecommunication Services	3	3	0	3	3	0
Electrical Utilities	16	0	14	2	22	0
Electrical Equipment	5	9	5	4	4	1
Electronic Equipment & Instruments	6	15	5	7	10	1
Energy Equipment & Services	9	12	3	2	8	0
Food & Drug Retailing	3	2	5	6	1	0
Food Products	5	8	4	4	7	1
Gas Utilities	9	1	6	1	6	0
Health Care Equipment & Supplies	8	10	3	7	14	2
Health Care Providers & Services	7	19	5	9	11	1
Hotels Restaurants & Leisure	7	16	7	8	8	0
Household Durables	8	12	6	5	9	3
Leisure Equipment & Products	3	4	0	3	4	2
Machinery	16	14	7	3	13	0
Media	6	9	3	5	9	2
Metals & Mining	3	9	5	1	12	0
Multi-Utilities	6	2	4	0	1	0
Multi-line Retail	4	3	7	3	5	0
Oil & Gas	17	6	1	7	10	1
Paper & Forest Products	7	1	2	4	2	0
Pharmaceuticals	4	2	3	3	7	2
Road & Rail	5	4	1	7	1	0
Semiconductor Equipment & Products	5	22	7	9	25	0
Software	13	11	10	12	20	0
Specialty Retail	5	14	16	7	14	1
Textiles & Apparel	5	7	3	1	4	3
Others	23	59	45	29	65	2
Total Firms	287	346	229	222	390	26

4.2 TEST OF OVERALL MARKET REACTION

The first hypothesis is tested by examining the market's reaction to news events that potentially affected Andersen's reputation, as experienced by Andersen's other audit clients. Determining the market reaction involves measuring daily abnormal returns (the difference between actual and expected returns). To control for the effects of marketwide fluctuations, the market model is used to measure abnormal returns:

TABLE 1—continued

Panel B: Industries Represented by Andersen's Houston Clients						
Industries	<i>n</i>					
Commercial Services & Supplies	2					
Construction & Engineering	1					
Energy Equipment & Services	4					
Food & Drug Retailing	1					
Hotels Restaurants & Leisure	1					
Machinery	1					
Multi-Utilities	1					
Oil & Gas	6					
Software	1					
Specialty Retail	1					
Total	19					
Panel C: Market Index Classification						
	Andersen's Clients		Other Auditors' Clients		Totals	
	Number	Percentage	Number	Percentage	Number	Percentage
S&P 500	83	29%	417	34%	500	33%
Mid Cap	76	26%	324	27%	400	27%
Small Cap 600	128	45%	472	39%	600	40%
Total	287		1,213		1,500	
Andersen's Clients						
	Non-Houston Clients		Houston Clients		Totals	
	Number	Percentage	Number	Percentage	Number	Percentage
S&P 500	77	28%	6	32%	83	29%
Mid Cap	72	27%	4	21%	76	26%
Small Cap 600	119	45%	9	47%	128	45%
Total	268		19		287	

^a Using Global Industry Classification Standard (GICS) sectors. Using 4-digit SIC codes, only two industries (1311 and 4911) contained more than 10 firms. Only three 4-digit SIC codes (2834, 4931, and 7372) contained between 5 and 10 firms.

^b AA = Arthur Andersen, EY = Ernst & Young, DT = Deloitte & Touche, KPMG = Peat Marwick, and PW = Price Waterhouse.

$$R_{it} = \alpha_i + \beta_i R_{mt} + u_{it}$$

where:

R_{it} = return for client i on day t

α_i = intercept

β_i = beta for firm i

R_{mt} = return on the value-weighted Russell 3000 index on day t

u_{it} = error term

As presented next, the abnormal return on day t is the difference between the actual return and the expected return derived from the market model:

$$AR_{it} = R_{it} - (\hat{\alpha}_i + \hat{\beta}_i R_{mt})$$

Market reaction is defined as the CAR:

TABLE 2
Descriptive Statistics for Arthur Andersen's Clients

Panel A: Size and Earning Variables (\$ millions)^a						
	Obs.	Mean	Lower Quartile	Median	Upper Quartile	
Total assets	287	8,132.88	456.50	1,308.48	4,813.96	
Market value of equity	287	4,985.21	558.84	1,297.91	3,912.02	
Earnings before extra.	287	215.68	21.26	58.69	168.30	
Return on assets	287	0.04	0.02	0.05	0.09	
Panel B: Audit Fees by Industry Index (\$ thousands)						
<i>SP500</i> ^b	Variable	<i>N</i>	Mean	Lower Quartile	Median	Upper Quartile
0	Audit fee	144	434.31	181.25	300.00	475.98
	IS fee	144	54.21	0.00	0.00	0.00
	Other fee	144	822.60	170.51	329.84	877.00
	Total	144	1,311.12	369.20	716.59	1,468.39
1	Audit fee	64	2,946.63	976.00	1,522.95	3,304.25
	IS fee	64	877.46	0.00	0.00	196.50
	Other fee	64	4,807.35	1,550.06	3,308.73	6,607.00
	Total	64	8,631.44	2,961.50	6,170.75	9,807.50
Total	Audit fee	208	1,207.33	229.50	437.80	1103.50
	IS fee	208	307.52	0.00	0.00	0.00
	Other fee	208	2,048.68	206.80	721.28	2,309.30
	Total fee	208	3,563.53	505.55	1,208.50	3,987.00

^a All amounts are measured at fiscal year-end 2000, except for market value of equity, which is measured using current shares from Datastream and the firm's stock price on January 9, 2002.

^b *SP500* = 1 if the firm is included in the S&P 500, 0 otherwise.

$$CAR = \sum_{t=0}^T AR_{it}$$

We test the significance of the abnormal returns using a corrected version of the *Z*-test based on Mikkelson and Partch [1988]. The corrected test accounts for the fact that within the window, the abnormal returns are serially correlated. Applications using the corrected test can be found in Cowen, Nayar, and Singh [1990], Mann and Sicherman [1991], and Lee [1992]. In addition, we provide a generalized sign test that examines the null hypothesis that the fraction of positive returns is the same proportion as in the estimation period. The test applies a normal approximation of the binomial distribution, (Cowan [1992]).

Because the event period is contemporaneous for all firms in our sample, we also group our sample firms into industry portfolios. Industry portfolio returns are computed and used to estimate the market model coefficients. This resulted in 51 industry portfolios. Using this approach, abnormal returns are computed as the difference between the actual portfolio return and the expected return.⁵

⁵ We also employed a time-series portfolio approach (see Schipper and Thompson [1983]) with similar results.

Four alternative market return measures are used in estimating the market model. These include: (1) the Russell 3000 index, (2) the Russell 1000 index, (3) an equally weighted index of the S&P 1500 firms, and (4) a value-weighted S&P 500 index.⁶ Because all market returns provide qualitatively similar results, we present only the results using the Russell 3000 index. We chose this index based on the relative sizes of the average market capitalization because the average (median) market capitalization for our sample was \$5.4 billion (\$1.3 billion) and the average (median) market capitalization for the Russell 3000 was \$4.6 million (\$0.73 billion). The Russell 1000 has an average (median) market capitalization of \$13 billion (\$3.8 billion).

4.3 CROSS-SECTIONAL ANALYSIS

Cross-sectional analysis is used to test the second and third hypotheses. The following multivariate model is used to examine the cross-sectional relation between firm-specific market reactions and firm specific variables.

$$\begin{aligned} CAR_{it} = & \beta_1 + \beta_2 Houston_{it} + \beta_3 Salesgrow_{it} + \beta_4 Afee_{it} + \beta_5 NAfee_{it} \\ & + \beta_6 Lev_{it} + \beta_7 SP500_{it} + \beta_8 ComSer_{it} + \beta_9 OilGas_{it} + \beta_{10} EUUtil_{it} \\ & + \beta_{11} Mach_{it} + \beta_{12} Jan10_{it} + \mu_{it} \end{aligned}$$

where:

- CAR_{it} = cumulative mean abnormal return (two- or three-day windows)
- $Houston_{it}$ = 1 if the client is audited by Andersen's Houston office, 0 otherwise
- $Salesgrow_{it}$ = the percentage growth in sales from 1999 to 2000
- $Afee_{it}$ = total audit fee deflated by assets
- $NAfee_{it}$ = total non-audit fees (IS fee + other fee) deflated by assets
- Lev_{it} = long-term debt divided by total assets
- $SP500_{it}$ = 1 if the firm is a member of the S&P 500, 0 otherwise
- $ComSer_{it}$ = 1 if the firm is a member of the Commercial Services & Supplies industry, 0 otherwise
- $OilGas_{it}$ = 1 if the firm is a member of the Oil & Gas industry, 0 otherwise
- $EUUtil_{it}$ = 1 if the firm is a member of the Electrical Utilities industry, 0 otherwise
- $Mach_{it}$ = 1 if the firm is a member of the Machinery industry, 0 otherwise
- $Jan10_{it}$ = 1 if the event date CAR is from the January 10, 2002, event date, 0 otherwise

⁶ The Russell 3000 index includes the top 3,000 Nasdaq, NYSE, and AMEX U.S. domiciled firms ranked by market capitalization. The index is composed of 79.3% NYSE, 0.4% AMEX, and 20.3% Nasdaq firms. The Russell 1000 includes the top 1,000 Russell 3000 firms. The index is composed of 81.8% NYSE, 0.2% AMEX, and 17.9% Nasdaq firms.

One hypothesis we examine is whether the quality of the Houston office audits is perceived to be lower after various announcements. To test for this in the cross-section, we included a Houston dummy variable, where *Houston* equals 1 if the Houston office performed the audit, and 0 otherwise. Based on H^2 , we predict the estimated coefficient on *Houston* to be negative. The Houston office audited two of the major audit failures of Andersen. Andersen, realizing there may be a significant problem in the Houston office, made major personnel changes with respect to the Houston office's management team.

In predicting the market reaction to various announcements, we include variables that might be related to manager's incentives to manipulate the financial statements. Large firms are often viewed as having the ability and the incentive to manage earnings. If larger firms have reports that are more complex and less transparent, the market may discount the quality of these reports. We include a dummy variable representing the S&P 500 index as a proxy for firm size. We predict this variable to be negative. Firms with high levels of debt might be more likely to use "off-balance-sheet" financing. We predict a negative relation for leverage.

Sales growth between 1999 and 2000 is used to capture potential aggressive revenue recognition procedures by firms. Enron reported sales increases of 151% between 1999 and 2000 and 28% growth from 1998 to 1999. Aggressive revenue recognition was one area that the Powers report was critical of Enron's reporting. However, by recognizing revenues as soon as possible, more creative strategies needed to be employed to keep revenues increasing. We use the growth in revenue between 1999 and 2000 as a control for potential aggressive revenue recognition policies.

The four industry dummy variables are included to control for Andersen's audit expertise within these industries. Additionally, these variables may proxy for the potential auditor switching costs that these firms may experience because of their need to replace Andersen with an auditor with less expertise within their industry.

Finally, in addition to the client firm variables, we include variables to indicate that Andersen's independence with its clients might be threatened. Because Andersen's independence might be questioned as more non-audit services are provided to its clients, we expect a negative relation between non-audit fees and the CARs.⁷ The more complex the audit, the more auditor quality assures users about the quality of the underlying reports. As a robustness check, we also include several audit complexity variables, but because none of these coefficients is significant, we do not report the regressions including these variables.

⁷ We also include levels of audit fees and non-audit fees because these might proxy for how important the client was to Andersen. Similar results to those reported were obtained.

5. Results

5.1 CAR ANALYSIS

Four event dates are tested for market reaction. The CARs for various windows are presented in table 3. For illustrative purposes, we provide a plot of the long-window CAR in figure 1 to demonstrate the movement of prices over the event period. Each of our event dates is marked in the figure by a vertical line. On November 8, 2001, two events occurred. Enron announced that it would have to restate previous years' reports (and that the previously released numbers should not be relied on) and the SEC requested documents from Andersen. Then, on December 12, 2001, Andersen's CEO admitted before Congress that Andersen had indeed made an error in the Enron audit. The CARs on these dates were not significant. In addition, the percentages of positive and negative CARs for these two dates were approximately equal and the generalized sign Z-test indicated insignificance.

Perhaps the most startling event in the Enron case for Andersen occurred on January 10, 2002, when Andersen announced that audit documents had been shredded. This announcement was unexpected. In the days following

TABLE 3
Mean Cumulative Abnormal Returns for Arthur Andersen's Clients

Window	CAR	Pos/Neg	Z	Generalized Sign Z
Panel A: November 8, 2001: Enron Announces Restatements				
(0, +1)	0.11%	129/155	-0.05	-1.001
(0, +2)	0.12%	121/163	-0.156	-1.951
(0, +3)	0.40%	133/151	0.774	-0.526
(-1, +3)	0.94%	143/141	1.61	0.661
Panel B: December 12, 2001: Andersen's CEO Admits Andersen Made an Error				
(0, +1)	-0.39%	135/149	-1.750	-0.307
(0, +2)	-0.46%	144/140	-1.092	0.762
(0, +3)	-0.29%	146/138	-0.264	0.999
(-1, +3)	-0.32%	139/145	-0.937	0.168
Panel C: January 10, 2002: Andersen Announces Documents Were Shredded				
(0, +1)	-1.17%	93/191	-4.453***	-5.250***
(0, +2)	-2.03%	85/199	-6.423***	-6.200***
(0, +3)	-2.05%	86/198	-5.440***	-6.081***
(-1, +3)	-2.10%	89/195	-5.027***	-5.725***
Panel D: February 3, 2002: Andersen Hires Paul Volcker to Head the IOB and the Powers Report Is Released on February 2, 2002				
(0, +1)	-0.24%	127/158	-1.345	-1.296
(0, +2)	-0.97%	109/176	-3.318***	-3.429***
(0, +3)	-1.28%	99/186	-3.579***	-4.615***
(-1, +3)	-1.53%	87/198	-3.877***	-6.037***

*** Significant at the 0.1% level, using a one-tail test.

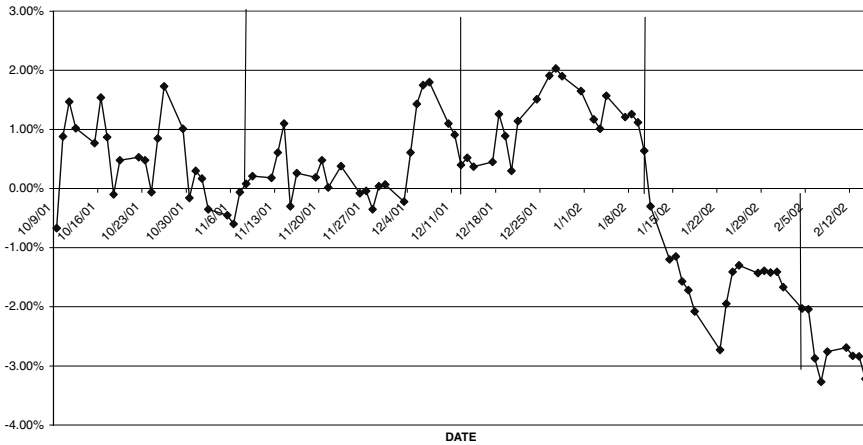


FIG. 1.—Cumulative Abnormal Returns for Arthur Andersen Clients from October 9, 2001, to February 14, 2002.

this announcement, the CARs ranged from -1.17% to -2.10% . The number of firms with negative CARs ranged from 191 to 199 firm (of 284 total firms). Both the corrected Z -test and the generalized sign Z -test indicate statistical significance. In table 4, descriptive statistics regarding the abnormal returns are presented. In general, the negative abnormal returns persisted up to two days following the announcement. Further tests concerning this event date are presented in the following section in this article.

On February 2, 2002, the highly critical Powers report was released and on February 3, 2002, Andersen appointed Volcker to chair an IOB. These events may offset each other, or one may dominate. The Powers report indicated

TABLE 4
Abnormal Returns for Arthur Andersen's Clients Event Date: January 10, 2002—Shredding Announcement Date

January 10, 2002	Mean	Lower Quartile	Median	Upper Quartile	Pos/Neg	Z	Generalized Sign Z
Day -1 abnormal return	-0.05%	-0.012	-0.002	0.010	130/154	-0.387	-0.856
Day 0 abnormal return	-0.39%	-0.014	-0.002	0.007	123/161	-1.992*	-1.687*
Day +1 abnormal return	-0.78%	-0.016	-0.005	0.003	93/191	-4.290***	-5.250***
Day +2 abnormal return	-0.86%	-0.020	-0.008	0.003	92/192	-4.842***	-5.369***
Day +3 abnormal return	-0.02%	-0.012	-0.001	0.012	137/147	0.230	-0.025

* Significant at the 5% level, using a one-tail test.

** Significant at the 1% level, using a one-tail test.

*** Significant at the 0.1% level, using a one-tail test.

TABLE 5

Mean Cumulative Abnormal Returns Event Date: January 10, 2002—Shredding Announcement Date
Individual Firm Estimation

Window	Obs.	CAR	Pos/Neg	Z	Generalized Sign Z
Panel A: All Andersen's Clients					
(0, +1)	284	-1.17%	93/191	-4.453***	-5.250***
(0, +2)	284	-2.03%	85/199	-6.423***	-6.200***
(0, +3)	284	-2.05%	86/198	-5.440***	-6.081***
(-1, +3)	284	-2.10%	89/195	-5.027***	-5.725***
Panel B: Andersen's Houston Clients					
(0, +1)	19	-3.16%	3/16	-2.966**	-2.829**
(0, +2)	19	-4.85%	1/18	-3.767***	-3.747***
(0, +3)	19	-4.41%	2/17	-2.855**	-3.288***
(-1, +3)	19	-4.00%	3/16	-2.380**	-2.829**
Panel C: Andersen's Non-Houston Clients					
(0, +1)	265	-1.03%	90/175	-3.815***	-4.677***
(0, +2)	265	-1.83%	84/181	-5.640***	-5.415***
(0, +3)	265	-1.88%	84/181	-4.867***	-5.415***
(-1, +3)	265	-1.96%	86/179	-4.567***	-5.169***

** Significant at the 1% level, using a one-tail test.

*** Significant at the 0.1% level, using a one-tail test.

that Andersen's main office in Chicago was aware of problems at Enron. The IOB might be viewed by the market as the vehicle needed to restore Andersen's quality and reputation. Volcker summarized his appointment best in *The New York Times*: "The reason I got involved is that Andersen is in big trouble and they were looking for someone to sprinkle some holy water on them."⁸ The CARs reported in table 3 indicate a negative market reaction. The size of the five-day CAR (-1, +3) is -1.53%, suggesting that Andersen's reputation suffered additional erosion because of the information released in the Powers report. The Powers report described numerous structured finance transactions in which Andersen was involved.

5.2 "HOUSTON, WE HAVE A PROBLEM!"

The negative average reaction on the shredding date reported in table 3 might be significantly influenced by the tarnished quality of the audits performed by the Houston office. In table 5, the sample is subdivided into three categories: all Andersen clients, Andersen's Houston clients, and Andersen's non-Houston clients. In table 5, the market reaction in the days following the shredding announcement for the Houston clients was negative and significant (-4.85% for the (0, +2) window). The largest negative reaction occurred with the Houston office clients. The non-Houston clients also have negative CARs but to a lesser extent (-1.83% for the (0, +2)

⁸ *The New York Times*, February 4, 2001, p. 2, col. 6.

TABLE 6

Mean Cumulative Abnormal Returns Event Date: January 10, 2002—Shredding Announcement Date
Industry Portfolio Estimation

Window	Industry Portfolios	CAR	Pos/Neg	Z	Generalized Sign Z
Panel A: All Andersen Clients					
(0, +1)	52	-0.82%	19/33	-2.248*	-1.843*
(0, +2)	52	-1.62%	14/38	-3.487***	-3.230***
(0, +3)	52	-1.63%	14/38	-3.006**	-3.230***
(-1, +3)	52	-1.81%	12/40	-2.865**	-3.784***
Panel B: Andersen's Houston Clients					
(0, +1)	10	-2.32%	2/8	-1.715*	-1.821*
(0, +2)	10	-3.64%	1/9	-2.240*	-2.454**
(0, +3)	10	-3.96%	1/9	-1.995*	-2.454**
(-1, +3)	10	-2.70%	3/7	-1.318	-1.188
Panel C: Andersen's Non-Houston Clients					
(0, +1)	52	-0.78%	19/33	-2.129*	-1.831*
(0, +2)	52	-1.57%	15/37	-3.331***	-2.940**
(0, +3)	52	-1.57%	14/38	-2.844**	-3.218***
(-1, +3)	52	-1.78%	12/40	-2.783**	-3.772***

* Significant at the 5% level, using a one-tail test.

** Significant at the 1% level, using a one-tail test.

*** Significant at the 0.1% level, using a one-tail test.

window). This suggests that the market was concerned about the quality of Andersen's Houston office audits, and to a lesser degree, the non-Houston audits.

In table 6, we repeat the analysis using portfolio returns in the market model. Fifty-two industry portfolios are created for all of the sample firms and 10 industry portfolios are formed for the Houston clients. The portfolio approach should help control for industry and should alleviate issues related to the cross-sectional correlation of the error terms. The significance of the CARs is similar to the significance levels reported in table 5. In general, the magnitude of the CARs is smaller using the portfolio approach. For instance, for the total Andersen client sample estimated on an individual firm basis, the CAR is -2.03% using the (0, +2) window, but using the industry portfolio approach the CAR is -1.62%. The Houston office CAR is significant and negative using windows beginning on January 10, 2002, but not statistically significant for the longest event period reported (-1, +3). The non-Houston client CARs are similar to the total Andersen client sample. This is not surprising because the portfolios in each of these samples contain primarily the same firms.

5.3 BUY-AND-HOLD ABNORMAL RETURNS

In an effort to determine whether the shredding date effect was specific to Andersen, we compare the mean buy-and-hold abnormal returns (BHARs)

TABLE 7

Tests for Differences Between Andersen's Buy-and-Hold Abnormal Returns (BHAR) and the BHARs of the Other Big 5 Auditing Firms on the January 10, 2002, Shredding Announcement and the Days Following

Panel A: Russell 3000 as the Market Index						
	Buy & Hold	AA	E&Y	PWC	D&T	KPMG
BHAR (0, +1):	Mean	-0.012	-0.005	-0.007	-0.007	-0.006
	<i>t</i> -value		-2.20	-1.81	-1.47	-1.80
	Prob > <i>t</i>		0.03	0.07	0.14	0.07
	Median	-0.010	-0.006	-0.004	-0.003	-0.005
	<i>Z</i> -value		-2.08	-2.97	-3.38	-2.46
	Prob > <i>Z</i>		0.02	0.01	0.01	0.01
BHAR (0, +2):	Mean	-0.020	-0.013	-0.015	-0.016	-0.011
	<i>t</i> -value		-1.88	-1.43	-0.88	-2.42
	Prob > <i>t</i>		0.06	0.15	0.38	0.02
	Median	-0.019	-0.011	-0.010	-0.007	-0.009
	<i>Z</i> -value		-2.56	-2.65	-2.84	-2.46
	Prob > <i>Z</i>		0.01	0.01	0.02	0.02
Panel B: Equally Weighted S&P 1500 as the Market Index						
BHAR (0, +1):	Mean	-0.004	0.003	0.002	0.003	0.001
	<i>t</i> -value		-2.56	-2.13	-1.66	-2.02
	Prob > <i>t</i>		0.01	0.03	0.10	0.05
	Median	-0.004	0.003	0.002	0.003	0.001
	<i>Z</i> -value		-2.72	-2.50	-2.84	-1.92
	Prob > <i>Z</i>		0.01	0.01	0.01	0.06
BHAR (0, +2):	Mean	-0.003	0.005	0.003	0.004	0.005
	<i>t</i> -value		-2.46	-1.96	-1.19	-2.73
	Prob > <i>t</i>		0.02	0.05	0.24	0.01
	Median	-0.003	0.005	0.003	0.004	0.005
	<i>Z</i> -value		-2.40	-2.03	-2.49	-2.28
	Prob > <i>Z</i>		0.02	0.04	0.01	0.02

BHARs are computed by compounding the firm's abnormal return and subtracting the compounded market return.

for the two-day (0, +1) and three-day (0, +2) holding period after the shredding announcement with the mean BHAR for each of the other Big 5 auditing firms in our sample. We compute BHARs using both the Russell 3000 index and using an equally weighted index of our S&P 1500 sample firms. Both a *t*-test and a median test are used to test for differences in means and medians between Andersen's BHAR and each of the other Big 5 auditor's BHAR. These results are reported in table 7.

In general, we find a negative BHAR when using the Russell 3000 index for all auditors and mostly positive BHARs when using the equally weighted index. An overall negative auditor BHAR would be consistent with a marketwide effect for all Big 5 audit firms. For instance, market participants might perceive that if there is a significant quality problem with Andersen's audits, perhaps a similar, yet undetected, quality problem exists for all of the

TABLE 8

Estimated Loss in Market Value (\$ thousands) Over the Days Following the Announcement of Document Shredding

Variable	Mean	Lower Quartile	Median	Upper Quartile
Market value of equity on 1/9/2002 (\$ thousands)	\$4,985,214	\$558,840	\$1,297,909	\$3,912,018
CAR (0, +1)	-0.0117	-0.0265	-0.0104	0.0026
CAR (0, +2)	-0.0203	-0.0437	-0.0193	0.0029
Two-day gain (loss)	(\$31,564)	(\$36,746)	(\$8,584)	\$3,672
Three-day gain (loss)	(\$37,115)	(\$64,169)	(\$20,759)	\$2,502

Big 5 audit firms. The BHAR for Andersen's audit clients is more negative and, in most cases, statistically different from the BHAR for the other Big 5 auditors regardless of the market index used. This provides further support for our contention that the announcement that Andersen's shredded audit documents had a significant impact on the perceived quality of Andersen's audits and that Andersen's clients lost value. We suggest this lost value is attributable to a decline in Andersen's reputation.

In table 8, we report the impact on market value of Andersen's clients. Using the two- or three-day BHAR, Andersen's clients lost, on average, \$31.6 million and \$37.1 million over the two and three days following the shredding announcement, respectively. The median firm lost \$8.6 million and \$20.7 million over the same period. It should be noted that some Andersen clients gained market value, as evidenced by the upper quartile results presented in table 8.

5.4 SWITCHING AND INDICTMENT DATES

Another potential date concerning the loss of reputation of Andersen is the indictment date. The primary issue is whether the news of the indictment provided any additional information not impounded in prices, for example, on the shredding announcement date. The indictment did provide a strong indication that the shredding event may have been more severe than originally believed. The indictment referred to tons of documents being shredded and dozens of large trucks filled with Enron documents being sent to the main Houston office for shredding. Furthermore, instructions were given to shred documents at the Andersen offices in Portland, Oregon, Chicago, Illinois, and London.

To examine the impact on Andersen's remaining clients on the indictment date, March 15, 2002, we compute the CARs for various windows. The CARs are generally positive and statistically insignificant. For example, the CAR (0, +2) is 0.38% and insignificant, whereas the CAR (-5, +2) is 0.45% and insignificant. The percentages of positive and negative CARs are approximately equal. These results indicate that the market did not

consider the indictment of Andersen as providing any additional information concerning the remaining clients of Andersen.

Most of Andersen's S&P 1500 clients remained with Andersen until after the indictment. Only 13 clients in our sample left Andersen before the indictment date. Approximately 71% of our sample reports on a December year-end basis. It is unlikely that these firms would switch auditors in the middle of a year-end audit. As previously stated, several companies said they preferred to stay with Andersen to save the potential cost of switching auditors. MGM Inc.'s CFO, on the indictment date, stated that because educating a new auditor would be a significant drain on company resources, the company planned to wait to see the outcome of the indictment. It was only after the indictment date that firms began to switch auditors, as the probability that Andersen would survive decreased.

We use the Dow Jones Interactive service to search for the date of the press release announcing the replacement or dismissal of Andersen. We also identify the date from the firm's 8-K and/or 10-K reports as to when the board of directors made its decision to replace Andersen. Neither date reveals significant CARs at the 5% level. For example, when we employ the earliest known date for each firm, the resulting CAR computed over the $(-1, +1)$ period is -0.24% and is insignificant. The percentage of firms reporting negative CARs over this period is 58%. The CARs for the other windows are similar. Because the majority of client firms switched auditors after the indictment date, these firms could not credibly signal to the market that they had not been overstating earnings by merely switching to another auditor (because after the indictment these firms had little choice as the likelihood of Andersen's survival became increasingly remote). The CARs on the switch dates probably reflect only switching costs.

5.5 CROSS-SECTIONAL ANALYSIS AND AUDIT FEES

In table 9, we present the results of the multivariate cross-sectional analysis of the CARs from the shredding date (January 10, 2002) and the Powers report date (February 4, 2002). We use both a two- and a three-day CAR in the regressions. We examine each day separately and then combine the observations from both dates and include an event day dummy for the shredding date. This variable, *Jan10*, is 1 if the event date is January 10, 2002, and 0 otherwise.

The coefficient on *Houston* is negative in all estimations and statistically significant as an explanatory variable for the shredding date, abnormal returns. This suggests that the market revised downward the reliance it placed on the Houston office audits and that the document-shredding event may have played a critical role in the market's assessment of Andersen's quality.

The coefficient on sales growth is also of interest. This coefficient is negative and significant in five of the six estimations. This indicates that the market was concerned about Andersen's clients' sales growth. Perhaps the market was downgrading firms with higher growth in revenue because these

TABLE 9
Cross-Sectional Regression

$$CAR_{it} = \beta_1 + \beta_2 Houston_{it} + \beta_3 Salesgrow_{it} + \beta_4 Afee_{it} + \beta_5 NAfee_{it} + \beta_6 Lev_{it} + \beta_7 SP500_{it} + \beta_8 ComSer_{it} + \beta_9 OilGas_{it} + \beta_{10} EUtil_{it} + \beta_{11} Mach_{it} + \beta_{12} Jan10_{it} + \mu_{it}$$

where CAR_{it} is cumulative mean abnormal return (two- or three-day windows); $Houston_{it}$ equals 1 if the client is audited by Andersen's Houston office, 0 otherwise; $Salesgrow_{it}$ is the percentage growth in sales from 1999 to 2000; $Afee_{it}$ is total audit fees deflated by assets; $NAfee_{it}$ is total non-audit fees (IS fees + other fees) deflated by assets, Lev_{it} is long-term debt divided by total assets; $SP500_{it}$ equals 1 if the firm is a member of the S&P 500, 0 otherwise; $ComSer_{it}$ equals 1 if the firm is a member of the Commercial Services & Supplies industry, 0 otherwise; $OilGas_{it}$ equals 1 if the firm is a member of the Oil & Gas industry, 0 otherwise; $EUtil_{it}$ equals 1 if the firm is a member of the Electrical Utilities industry, 0 otherwise; $Mach_{it}$ equals 1 if the firm is a member of the Machinery industry, 0 otherwise; and $Jan10_{it}$ equals 1 if the event-date CAR is from the January 10, 2002, event, 0 otherwise.

Variable	Combined Dates		Jan 10	Feb 04	Jan 10	Feb 04
	CAR(0, +1)	CAR(0, +2)	CAR(0, +1)	CAR(0, +1)	CAR(0, +2)	CAR(0, +2)
	Estimate (<i>t</i> -value)	Estimate (<i>t</i> -value)	Estimate (<i>t</i> -value)	Estimate (<i>t</i> -value)	Estimate (<i>t</i> -value)	Estimate (<i>t</i> -value)
Intercept	0.010 1.62	0.002 0.25	-0.007 -1.19	0.012 1.71	-0.014* -1.98	0.006 0.59
<i>Houston</i>	-0.015* -2.46	-0.017* -2.00	-0.016* -2.14	-0.013 -1.44	-0.024** -2.62	-0.010 -0.73
<i>Salesgrow</i>	-0.009** -3.18	-0.018** -4.39	-0.006 -1.62	-0.012** -2.84	-0.015** -3.16	-0.022** -3.25
<i>Afee</i>	0.001 0.24	0.000 0.03	0.000 0.07	0.002 0.26	0.002 0.24	-0.001 -0.13
<i>NAfee</i>	-0.002 -1.48	-0.002 -0.99	-0.004 -1.91	-0.001 -0.33	-0.004 -1.35	-0.001 -0.29
<i>Lev</i>	-0.006 -0.59	-0.011 -0.77	0.007 0.51	-0.018 -1.22	-0.005 -0.31	-0.017 -0.74
<i>SP500</i>	-0.003* -2.19	-0.005 -0.97	-0.002 -0.43	-0.013** -2.53	0.004 0.78	-0.014 -1.75
<i>ComSer</i>	0.006 0.98	0.008 0.93	0.004 0.53	0.007 0.85	0.010 1.12	0.005 0.37
<i>OilGas</i>	-0.13* -2.07	-0.003 -0.30	-0.019* -2.45	-0.006 -0.66	-0.019 -1.93	0.014 0.97
<i>EUtil</i>	-0.10 -1.59	-0.012 -1.33	0.000 0.06	-0.020* -2.16	0.011 1.10	-0.035* -2.41
<i>Mach</i>	0.003 0.52	0.008 0.84	0.004 0.41	0.003 0.34	-0.006 -0.53	0.022 1.41
<i>Jan10</i>	-0.010** -3.47	-0.012** -2.66				
<i>F</i> -value	4.94**	4.10**	2.18*	3.75**	3.14**	3.34**
Adj. R^2	0.095	0.076	0.053	0.117	0.094	0.102
Obs.	416	416	208	208	208	208

* Significant at the 5% level.
** Significant at the 1% level.

firms might be using aggressive revenue-recognition strategies that could not be sustained in the future.

Both the audit and non-audit fees coefficients are insignificant in all estimations. We expected these coefficients, especially the coefficient on non-audit fees, to be negative as an indication that the market perceived Andersen's independence to be questioned. Although the coefficient on non-audit fees is consistently negative, it is never statistically significant.

The coefficients on leverage and the industry dummy variables for the Machinery industry and Commercial Services & Supplies industry are also consistently insignificant. The Electrical Utilities industry dummy variable is a significant explanatory variable for the Volcker/Powers report event-date CARs, but it has no explanatory power for the shredding-date CARs. Similarly, the Oil and Gas industry dummy variable is significant with for the shredding-date CARs, but it is insignificant for the Volcker/Powers report event-date CARs. Finally, the coefficient on the S&P 500 variable appears to be significant in explaining the Volcker/Powers report event-date CARs, but not the shredding-date CARs. Thus, no consistent pattern emerges with respect to industry or firm size.

In summary, in the cross-sectional analysis of all of its S&P1500 clients, we are unable to show that Andersen's overall independence was questioned, as measured by the amount of audit or non-audit fees charged to its clients. In addition, clients with audits performed by the Houston office appear to be have been more negatively affected by the January 10, 2002, shredding announcement. Finally, and perhaps most interesting, there appears to be a strong and consistent relation between Andersen's clients' revenue growth and the magnitude of their respective CARs. We interpret this to be a reaction to the possible aggressive recognition procedures followed by high-growth firms.

The loss in reputation of Andersen as a direct result of shredding documents ultimately resulted in the loss of all of Andersen's SEC registrant clients. Andersen therefore paid the ultimate market price for loss of reputation. We document a decline in value for Andersen's clients on the shredding announcement date. Furthermore, we document a more significant decline in Andersen's clients audited by their Houston office. We argue that this cost is due to loss of reputation.

Andersen's clients did not rush to switch auditors until after Andersen was indicted. One explanation is that the majority of our firms are December year-end firms. The cost of switching auditors in the middle of a year-end audit may be prohibitively high. It is unclear how the market might react to negative news concerning the auditor of a firm that is perceived to provide high-quality financial reports; that is, to what extent can the market distinguish between the quality of a firm's report and the quality of its auditor? If such a firm was not adversely affected on the shredding date, the firm might defer switching to avoid unnecessary switching costs. Conversely, if a firm was adversely affected on the shredding date, it is more likely that this firm would switch auditors because of concern that the client's reputation for providing

high-quality financial reports is being negatively affected by its association with Andersen. On the other hand, a firm that pushes the limits of revenue recognition has a dilemma regardless of the impact on the shredding date. If the firm switches to another more conservative auditor, the firm might suffer additional losses (such as Peregrine). Therefore, aggressive reporting firms might remain with their current auditors, preferring to let the market wonder why the firms have yet to switch auditors.

In our sample, there is a significant negative correlation between size and the time until the firms switched auditors. Thus, the larger firms switched earlier than the smaller firms. This is consistent with a political costs argument that larger firms are more concerned about how their accounting numbers are perceived in the market place. In addition, on the shredding date, most companies still believed that Andersen would survive.

6. Conclusion

The cost of audit failure to an audit firm can be massive. In the long run, impaired auditor reputation decreases the audit firm's ability to attract new clients or to keep existing clients (Wilson and Grimlund [1990]). Private firms, desiring to go public in an IPO, prefer to use high-quality auditors in an attempt to assure potential investors that the financial statements are prepared in accordance with GAAP. Employees of the audit firm will seek employment elsewhere if the firm's reputation declines. Before the Enron event, penalties had been relatively benign and the costs of failed audits not too severe. When an audit firm settled a court case, the settlements usually were structured so that the auditing firm did not admit any guilt. In this article we examine the cost of audit failure and the resulting loss in Andersen's reputation surrounding various dates in the Enron saga. The information released on these dates casts a disparaging image of both Andersen's auditing procedures and perhaps its reputation.

On the three days following Andersen's admission that a significant number of documents had been shredded, we find that Andersen's other clients experienced a statistically negative market reaction, suggesting that investors downgraded the quality of the audits performed by Andersen. We also find that audits performed by Andersen's Houston office suffered a more severe decline in abnormal returns on this date. Whether the decline in reputation observed for Andersen may spill over to other audit firms is yet to be determined, but clearly others are already worried.

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