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Auditor Reputation and the Insurance Hypothesis: The Information Content of Disclosures of Financial Distress of a Major Accounting Firm

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It is obvious that the rapid demise of Andersen LLP (Limited Liability Partnership) has significant implications for its clients. However, even less dramatic events affecting an auditor may influence the client and its management. For example, evidence supports the assertion that certain events impacting a CPA firm are reflected in its publicly traded clients' security prices. In one study, Firth (1990) finds that auditor criticisms by the British Department of Trade resulted in statistically significant negative returns for audit-firm clients traded on British exchanges. Moreland (1995) documents that Security and Exchange Commission (SEC) enforcement actions directed towards a CPA firm resulted in a reduction in clients' earnings response co-

efficients (ERCs). Baber *et al.* (1995) (henceforth BKV) and Menon and Williams (1994) (henceforth M&W) report a statistically significant risk-adjusted negative security price reaction for a sample of Laventhol and Horwath clients upon disclosure of filing by that firm under Chapter 11 of the U.S. bankruptcy code.

Although evidence supports the contention that audit clients' share price reactions appear related to the disclosure of certain negative information about a CPA firm, it is not clear whether those effects extend to Big 4 accounting firms (previously Big 8, Big 6, or Big 5). Evidence exists to suggest that Big 4 accounting firms are viewed differently as to audit quality and to their ability to provide "deep pockets" (Reed *et al.*, 2000;

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Schwartz and Menon, 1985). DeAngelo (1981) asserts that larger audit firms supply a higher level of audit quality because such firms have more extensive investments in brand name reputations. Davidson and Neu (1993) document that larger auditing firms are associated with higher audit quality audits. In a study of 164 not-for-profit entities, Krishnan and Schauer (2000) find a positive association between audit firm size and audit quality.

Larger CPA firms are also viewed differently with regard to the amount of resources available for potential claimants (Schwartz and Menon, 1985). The perceived difference in the ability of the large CPA firms to serve as insurers was noted by a Shearson Lehman accounting analyst the day after Laventhol's bankruptcy filing. The analyst remarked that the "medium-sized accounting firms such as Laventhol are most financially vulnerable to lawsuits, while the Big 6 do not appear to be in financial trouble" (Cooney, 1990: 67). Thus, given that the Big 4 are in a different class from smaller audit firms, one contribution of this study is to examine the extent to which events impacting a Big 4 firm affect its clients. We assess the client share price effects of litigation-related bankruptcy rumors reported in the financial press about Ernst & Young (henceforth E&Y) in late November and early December, 1990 (see Appendix A).

The potential demise of a top-tier accounting firm has serious implications for client firm management. First, a client firm's cost of capital may increase due to a rise in information risk (i.e., the likelihood of unreliable financial statement information). A decrease in both the quantity and quality of information increases

information asymmetry between management, shareholders, and creditors. Another implication is the increased cost associated with additional management time and effort devoted to providing shareholders, creditors, and regulators with timely, reliable information on corporate activities. A third implication is the increased stress or burden placed on internal corporate governance mechanisms to compensate for the loss (albeit temporary) of a firm's independent auditor.

If litigation-related share price effects exist for a Big 4 firm's clients, then a critical issue not previously explored is whether efforts by that CPA firm to temper negative market reactions may prove successful. Successful mitigation of any negative client firm market reaction would reduce the severity of the managerial consequences noted above. Thus, another purpose of this study is to determine whether the effects of negative information on client firm share prices (here, E&Y bankruptcy rumors) about a CPA firm can be reversed or mitigated by actions of the CPA. The event chosen to examine the impact of CPA firm efforts to dispel negative market effects of bankruptcy rumors is the publication of a full-page advertisement in major newspapers by E&Y that asserted the firm was in sound financial condition. Moreover, the setting is used to provide additional insight, through the use of a cross-sectional regression model, on the insurance and audit quality hypotheses as explanations related to any market effects.

In performing the analyses, we consider a sample of over 660 client firms (versus 75 for BKV and 100 for M&W). Unlike previous studies by BKV and M&W, the sample includes

a considerable number of commercial banks and savings and loans (over 70). It is important to include these types of firms in the sample since they were the genesis of many of the legal problems relating to CPA firms, particularly E&Y, in the late 1980s and early 1990s. Additionally, banks and savings and loans constitute a vital component of the population of audit clients in general.

The next section presents the events of interest. We then consider the theoretical issues, hypotheses and the methods used. The results are then followed by the conclusions and limitations.

Events of Interest

We consider two events of interest in this study. The first is a period of time during which rumors of E&Y's bankruptcy circulated. The second is an event that centers on the date of the first publication (November 30, 1990) by E&Y of a full-page advertisement attempting to dispel bankruptcy rumors.

The first event of interest encompasses a period of time rather than a specific date of an information disclosure. Cornell and Shapiro (1986) acknowledge the dilemma that exists when new information is released gradually rather than on a single event date. Moreover, gradual release of news over an extended period may lead to a revaluation effect which may be difficult to detect because of market noise (Lamdin, 2001). The analysis that results thus considers the accumulation of information and is referred to as the dribs-and-drabs hypothesis (Grace *et al.*, 1995). Although the first item of interest in our study involves this dilemma (the maturation of the rumors), the time

period is shorter than many other dribs-and-drabs-affected studies, that is, about eight days.

The identified rumor period related to E&Y began on November 19, 1990, when notice of Laventhol and Horwath's impending bankruptcy first appeared (see Appendix A). The failure of Laventhol and Horwath triggered intense speculation of the possible failure of other major accounting firms (namely, the Big 4). Although Laventhol and Horwath's demise appeared linked to the downfall of the *Praise the Lord* ministry, the supposition about the financial failure of other major accounting firms, including E&Y, was tied to potential legal liabilities associated with savings and loan failures. One of the largest of those failures was Lincoln Savings and Loan, an audit client of E&Y. Although no major news story tendered the explicit prediction of E&Y's bankruptcy, most pointed to the S&L crisis and identified those audit firms that were most vulnerable, often singling out E&Y. E&Y rumor development can be tracked in the stories presented in Appendix A. The identified rumor period extends across the eight-trading days ending (and including) November 29, 1990, the day prior to E&Y's full-page advertisement. If the findings of BKV and M&W can be generalized to a Big 4 firm, then the perception that E&Y may file for bankruptcy (the rumor event) should be reflected in negative client-firm abnormal returns.

On Friday, November 30, 1990, E&Y ran a full-page advertisement in the *Wall Street Journal* stating in a headline, "Thanks for a Great Year. . . ." The ad did not specifically address rumors of bankruptcy, but noted that "In the years ahead, Ernst & Young will continue to be a

leader." The same ad appeared in five other major newspapers on the following Monday. On Monday, December 3, 1990, the next trading day, the *Wall Street Journal's* Peter Pae explicitly stated in an article that "Ernst & Young, the largest accounting firm in the U.S., is running full page advertisements hoping in part to end speculation that it is considering filing for bankruptcy protection" (Pae, 1990: A5). We call the date of the advertisement, November 30, the advertisement event. The market reaction to this event is not predictable. It is not clear whether investor reaction would be positive in response to an attempt to quell the rumors or whether reaction would be negative in response to a confirmation, in the form of the advertisement, that the rumors were true. Our hypothesis development and subsequent analyses reflect this uncertainty.

Theoretical Issues

Auditing research highlights two possible explanations for any observed negative client share price reactions when detrimental information about a CPA firm's financial condition or reputation becomes available to investors. One explanation is the demand for audit quality. Auditors provide assurance to financial statement users that any misrepresentations by management will be detected and reported. A second explanation is the insurance hypothesis. Investor losses that result from financial statement misrepresentations may be wholly or partially recovered by suing auditors.

In addressing the insurance hypothesis, the accounting literature posits that auditors provide a type of implicit insurance to users and inves-

tors (Hill *et al.*, 1993). The auditor is considered a potential indemnifier if an investment or credit loss is experienced. The auditor is deemed to be a "deep pocket" because the CPA firm often carries malpractice insurance or, in many cases, is the only solvent defendant in a lawsuit. M&W (1994) assert that the legal right to seek indemnification from an auditor for losses is assigned a value by investors. This value is hypothesized to be a component of the stock price of publicly traded clients. The insurance hypothesis thus predicts that negative share price reactions for client firms should be observed around the announcement of any event (here, rumors of bankruptcy) that threatens a CPA firm's ability to pay claims against it.

Alternatively, it is hypothesized that the quality of the assurances provided by an auditor has value relevance to the market. Investors would be expected to utilize, to a lesser extent, client financial information with a lower perceived level of reliability. A reduction in audit quality would be expected to have a negative impact on the share prices of an auditor's clients. Moreland (1995) and Firth (1990) both conclude that publicized criticism of a CPA firm diminishes audit quality assessments and the perceived quality of clients' accounting information resulting in less confidence in (or reliability placed on) reported earnings.

Audit quality can be defined as the probability that audited financial statements contain no material misstatements or omissions. Although audit quality itself is not directly observable, users develop observable proxies, such as audit firm reputation, which are associated with audit quality (Wilson and Grimlund, 1990).

Financially distressed auditors may be perceived as more likely to compromise their independence and fail to report misstatements in order to retain their clients. Compromised independence results in a lower level of audit quality being provided on financial statements (Baber *et al.*, 1995).

Dopuch and Simunic (1982) suggest that financial statement users will change assessments of audit quality based on new publicly available information about an auditing firm. New information, such as rumors about a pending bankruptcy filing or financial distress, may lower perceived financial statement reliability and, thus, the perceived quality of audit services provided (Palmrose, 1988). Any loss of credibility in the financial statements and/or loss of confidence in the audit firm may manifest as a reduction in client firm share price (Firth, 1990).

Both the insurance hypothesis and audit quality explanation can account for negative client firm share price reactions upon disclosure of rumors of the potential bankruptcy of an accounting firm. The two explanations, however, may not be mutually exclusive. BKV could not discriminate between the two explanations in an empirical study of the negative client stock price reactions upon the disclosure of the Laventhol and Horwath bankruptcy filing. Although the explanations may overlap, it may be possible to identify certain client firms with share price reactions more related to one explanation than the other. We make progress toward this objective.

Virtually no evidence exists to suggest that a CPA firm may be able to mitigate adverse signals to the market. The issue relates to efforts a CPA

firm might take to offset negative reaction to previously released information. Again, market theory suggests that if those efforts reveal new information, then that information should manifest in client share price reaction (Firth, 1990).

Hypotheses and Methods

Hypotheses Development

As previously indicated, the insurance hypothesis and audit quality explanation are likely interrelated and both predict that a client firm's stock price will decline when an auditor's ability to pay is threatened or overall reputation is damaged. The first hypothesis relates to the expected market reaction to the rumor event. It is stated in the null form, as follows:

H1: The disclosure of the rumored bankruptcy or financial distress of E&Y is not associated with abnormal share price reactions of the firm's publicly traded clients.

With respect to the advertisement event, significant negative market reactions would support the contention that investors viewed the ad as confirmation that E&Y was contemplating filing for bankruptcy protection. Significant positive market effects would support the assertion that E&Y successfully dispelled the bankruptcy rumors. Since we cannot logically and objectively predict the direction of the market response, the following non-directional null hypothesis is tested concerning the advertisement event:

H2: The disclosure of the E&Y full-page advertisement is not associated with share price reactions of the firm's publicly traded clients.

The event of interest, in this case the advertisement event, may have different effects on client firms depending on firm-specific characteris-

tics. Asymmetrical effects may be identified by separating firms on the basis of various operating characteristics such as size, industry, and risk. To examine any asymmetrical effects of the advertisement event, we test the following hypothesis, stated in the null:

H3: The advertisement event had no differential impact on the abnormal returns of client firms possessing different firm-specific characteristics.

Tests of shareholder reactions to the events of interest require identification of the clients of E&Y leading up to and during the event periods. The sample identification process is discussed in the next section.

Sample Selection

The list of the publicly traded clients of E&Y as of 12/31/89 and 12/31/90 was obtained primarily from Compustat. Because auditors of commercial banks and savings and loans are not listed on Compustat, those E&Y clients were obtained by cross-referencing *Who Audits America* and the National Automated Accounting Research Service (NAARS). An initial sample of 1,282 clients was identified. Sample filters were employed to reduce the likelihood that significant abnormal return reactions were associated with confounding events. Following Bhagat *et al.* (1994), client firms with a value-relevant disclosure in the Lexis-Nexis database within five days of the events of interest were eliminated from the sample. Earnings announcements, mergers, acquisitions, tender offers, proxies, bankruptcy filings and major income-tax-related events were treated as value-relevant disclosures or confounding events (Thompson *et al.*, 1987).

Each E&Y client firm required daily returns on the *Center for Research on Security Prices (CRSP)* tapes for at least 100 days for the period from 220 days prior to and until five days after each event. Also, those client firms with five or more days of missing returns during days -20 to $+5$ for either the rumor period or the advertisement event were eliminated from consideration. Finally, client firms with fewer than 40 non-zero returns were removed from the sample. As reported in Table 1, the final sample included 666 client firms.

Table 1 also reveals that about 57 percent of E&Y's clients are NASDAQ-listed companies. The sample appears diversified with 237 four-digit SIC code industries represented. Those industries with the largest number of client firms are as follows: electrical equipment (58, 8.7%), industrial and commercial machinery (57, 8.6%), commercial banks (54, 8.1%) and measuring instruments (49, 7.4%).

Research Methodology— Hypothesis One

The risk-adjusted market model is used to analyze client-firm equity reaction to the relevant disclosures. Event study methodology is founded on the assumption that the market is sufficiently efficient to capture market response to the events of interest.

Each client firm's daily share price reaction in the rumor period and advertisement event window was obtained by predicting a normal return for each client firm on each event day and then subtracting the predicted return from the actual return. Normal returns are produced by estimation of the following model using

Table 1
E&Y Client Firm Sample Analysis

<u>Panel A - Filters</u>		<u>No. of Firms</u>
Publicly-Traded Clients (per <i>Who Audits America</i>)		1282
Less: Firms not listed on Compustat		(177)
Less: Firms reporting confounding events (e.g., earnings announcements, disclosures of mergers, acquisitions, etc.)		(156)
Less: Firms with excess missing returns and/or excessive zero returns		(283)
Final Sample		<u>666</u>

<u>Panel B - Exchanges</u>		<u>Stock Exchange</u>	
	<u>NYSE</u>	<u>AMEX</u>	<u>NASDAQ</u>
	216	67	383

<u>Panel C - Value</u>		<u>Market Value of Equity</u> (in millions as of 11/30/90)
	<u>Mean</u>	<u>Median</u>
	\$563,547	\$50,108

<u>Panel D - Industry Concentration</u>			
<u>SIC Code</u>	<u>Industry</u>	<u>No. of Firms</u>	<u>Percent</u>
3600-99	Elec. Equip. except computers	58	8.7
3500-99	Ind. & comm. mach. incl. comp equip.	57	8.6
6021-22	Commercial banks	54	8.1
3800-99	Measuring instruments	49	7.4
2830-36	Pharmaceuticals	22	3.3
6035-36	Savings & loans	20	3.0
6798	REITS	17	2.6
3410-99	Fabricated metals	16	2.4
3700-99	Transportation equip.	16	2.4
5010-99	Durable goods wholesalers	16	2.4
7372	Prepackaged software	16	2.4
----	All others	<u>325</u>	<u>48.7</u>
	Total Sample	<u>666</u>	<u>100.0</u>

OLS regression on a client-firm-specific basis:

$$(1) R_{it} = a_i + b_i R_{mt} + e_{it}$$

where R_{it} = return for the firm during the t^{th} day;

R_{mt} = return on the daily CRSP equally-weighted index;¹

a_i = intercept for the firm;

b_i = a proxy for the systematic risk of the firm;

e_{it} = error term for the firm on the t^{th} day.

The relation between client firm return and market return should remain unchanged in the absence of unanticipated information. Hence, these returns can be employed to forecast the "normal" client firm return. The prediction error or abnormal return (AR) for firm i on day t is computed as:

$$(2) AR_{it} = R_{it} - (a_i + b_i R_{mt})$$

The abnormal return distributions for an equally weighted portfolio of all sample-client firms were calculated from the individual returns. These distributions form the basis for the evaluation of market reaction to the events of interest.

For several compelling reasons we use a non-parametric technique (Corrado's rank statistic) in lieu of the traditional parametric t-statistic. First, normality of abnormal returns is a key assumption in event studies

(Campbell and Wasley, 1993). Non-normality can cause misspecification in parametric t-tests in event studies (Brown and Warner, 1985; Campbell and Wasley, 1993). The abnormal return distributions for days -20 to $+5$ (using 11/30/90 as day 0) were tested for normality and found to be highly non-normal.² Second, cross-sectional dependence exists because all sample firms share common event dates (Bernard, 1987). Third, some stocks listed on the NYSE, AMEX, or NASDAQ tend to be thinly traded and thin trading may cause t-tests to be misspecified (Maynes and Rumsey, 1993; Cowan and Sergeant, 1996). NASDAQ stocks are the most susceptible to this problem and they comprise over one-half of this study's sample. Finally, parametric t-tests on abnormal or standardized abnormal returns in event studies are also vulnerable to misspecification caused by an increase in the variance of the event period returns distributions (Corrado, 1989; Boehmer *et al.*, 1991). In sum, we conclude that the assumptions required for traditional parametric tests are sufficiently violated to preclude their use.

The non-parametric rank statistic, introduced in Corrado (1989), however, is robust to non-normal distributions, multi-day event periods, al-

¹ The equally weighted index is more likely to detect abnormal stock returns due to the higher degree of correlation between the index and security returns (Peterson, 1989). Moreover, research demonstrates that use of the value-weighted index for NASDAQ stocks can lead to either rejection of the null hypothesis too often in the absence of abnormal performance or lower rejection rates in the presence of abnormal performance (Campbell and Wasley, 1993).

² The skewness and kurtosis coefficients and the Shapiro-Wilk statistic were calculated for the 26 trading days surrounding the advertisement event (11/30/90). A perfectly symmetrical normal distribution has a kurtosis coefficient of 3. The mean and median kurtosis coefficients across all days are 25.8 and 22.2, respectively. This indicates highly leptokurtic distributions. The abnormal returns are also moderately positively skewed (mean and median skewness of 1.76 and 1.67, respectively). The Shapiro-Wilk statistic can assume a value between 0 and 1. The statistic must be extremely close to 1 (e.g., .99) for a distribution to be considered normal. The abnormal return distributions here have mean and median Shapiro-Wilk statistics of .789 and .794, respectively.

ternative methods of estimating beta, cross-sectional dependence, increases in the variance of abnormal returns during the event period, and thinly-traded stocks (Campbell and Wasley, 1993).³ For purposes of Corrado's rank statistic, market model parameters were estimated based on the 226-day sample period from day -220 to day +5 (Corrado, 1989). The first step involved transforming each firm's series of abnormal returns into ranks from 1 to 226. The ranking procedure transformed each abnormal return distribution into a uniform distribution across possible rank values regardless of asymmetry in the original distribution (Corrado, 1989). Ranks were then standardized by dividing each abnormal return rank by one plus the number of non-missing returns in each firm's abnormal return series (Corrado and Zivney, 1992). The standardization serves two purposes: 1) it prevents the rank statistic from becoming misspecified in the presence of missing returns and 2) it serves as a cross-sectional variance adjustment to improve specification in tests for abnormal performance (Corrado and Zivney, 1992).

The rank test statistic is the ratio of the mean deviation of the securities' event day ranks to the estimated standard deviation of the portfolio mean abnormal return rank. The rank test

statistic, T , substitutes $(U_{it} - 1/2)$ for the abnormal return, AR_{it} (for a given event day):

$$(3) \quad T = \frac{1}{\sqrt{N}} \sum_{i=1}^N \frac{(U_{it} - 1/2)}{s(U)}$$

where N = number of firms;
 $s(U)$ = standard deviation of the portfolio mean abnormal return rank for the sample period.⁴

Research Methodology— Hypothesis Two

An examination of return variability is a non-directional technique for exploring the market impact of the advertisement event on E&Y's publicly traded clients. The calculation of abnormal returns is the basis of such an analysis. Two competing measures are Beaver's (1968) U statistic and May's (1971) U statistic. We use May's U statistic to detect variance effects. May's U employs the absolute value of the standardized market model residual rather than the square of the market model residual (as does Beaver's U). Rohrbach and Chandra (1989) demonstrate that Beaver's U is dominated by May's U when market model residuals are leptokurtic and skewed (i.e., non-normal).

May's U statistic for the present study is as follows:

³ The signed rank and sign tests, both non-parametric techniques, require symmetrical return distributions for correct test specification (Corrado, 1989). These two tests can be misspecified in the presence of positive skewness, such as here (Brown and Warner, 1985).

⁴ The denominator of T , $s(U)$ is computed as follows:

$$\sqrt{\frac{1}{226} \sum_{t=-220}^{+5} \left(\frac{1}{\sqrt{N_t}} \sum_{i=1}^{N_t} (U_{it} - 1/2)^2 \right)}$$

where N_t = number of non-missing returns in the cross-section of N -firms on day t in the sample period (Corrado and Zivney, 1992).

$$(4) \quad W_{it} = \frac{|AR_{it}|}{|\overline{AR}_{ite}|}$$

where $|AR|$ = absolute value of firm i 's abnormal return on day t during the event period;

$|\overline{AR}_{ite}|$ = absolute value of firm i 's mean abnormal daily return during the sample period where:

$$(5) \quad |\overline{AR}_{ite}| = \frac{1}{M} \sum_{t=-220}^{+5} |AR_{ite}|$$

where M = number of days in the sample period with non-missing returns.

Absent abnormal price changes in the event period for an individual firm, the W_{it} ratio for event days would have an expected value of one (May, 1971).

Cross-sectional correlation could affect the reliability of parametric z - or t -tests applied to May's U statistic (Rohrbach and Chandra, 1989). May's U is robust, however, to moderate cross-sectional dependence. Nonetheless, we use a non-parametric technique set forth in Rohrbach and Chandra (1989) to compensate for the possibility of cross-sectional dependence. In this study, any event day with a C statistic (or rank) of 216 or higher indicates a May's U statistic significantly greater than one (at a p -value of .05 or less).

Research Methodology— Hypothesis Three

McWilliams and Siegel (1997) advise researchers using event study

analysis to follow-up tests of significance of share price reactions with a cross-sectional regression analysis of abnormal returns on the hypothesized predictors. We use a generalized least squares (GLS) rank regression model to test variables aimed at providing a better understanding of the insurance hypothesis and audit quality explanation for a two-day event window (days 0, +1) for the advertisement event.⁵ GLS is used to compensate for any cross-sectional dependence (Bernard, 1987; Bhushan, 1993). Ranks rather than actual data values are used because ranks generalize the functional form of the model and minimize heteroskedasticity that can result from using a linear function to represent a non-linear relationship (Cheng *et al.*, 1992). Using ranks is a distribution-free procedure that does not require normality to be well-specified (Conover and Iman, 1981). We derive the following GLS cross-sectional rank regression model:

$$(6) \quad CARR_i = a_i + b_1 SIZE_i + b_2 RISK_i + b_3 IND_i + e_i$$

where $CARR_i$ = cumulative abnormal return rank of firm i for the (0, +1) event window centered on 11/30/90;

a_i = intercept for the firm;

$SIZE_i$ = the standardized rank of firm i 's market value of equity as of 11/30/90;

$RISK_i$ = the standardized rank of firm i 's beta estimated by the market model;

⁵ The E & Y ad that appeared on Friday, November 30, in the *Wall Street Journal* also appeared in five other major newspapers on Monday, December 3 (day +1). We also tested the cross-sectional rank regression model for a seven-day event window (-3, +3). The results are very similar to those reported for the two-day event window.

IND_i = a dummy variable coded 1 if firm i is in a high risk industry (a bank, savings and loan, real estate company, or computer/electronics firm) ; 0 otherwise; and
 e_i = a disturbance term.

The independent variables tested in the model—size, risk, and high-risk industry—are justified in the next section.

Size. Recovery of damages from an accounting firm is a function of the amount of damages (or auditor-supplied insurance) that plaintiffs expect to receive. The amount of any potential award is also related to the amount of damages incurred by plaintiffs. Kellogg (1984) found that plaintiff damages are positively related to client-firm size. Large client firms are more likely to have resources to pay plaintiffs, thereby making it worthwhile for plaintiffs to sue (Carcello and Palmrose, 1994). For insurance hypothesis purposes, auditor-provided insurance is more important to shareholders of larger client firms (Baber *et al.*, 1995). Any event or announcement, such as bankruptcy rumors, that creates the perception of a Big 4 firm's diminished ability to pay damages will have a greater negative impact on larger client firm share prices. Thus, the insurance hypothesis predicts a negative relationship between client-firm size and cumulative abnormal return ranks (CARRs).

Audit quality, on the other hand, may be more important to the shareholders of smaller client firms. Because less information is generally available on smaller firms, audited financial statements are more important to investors of smaller firms (Nathan, 1997). Any disclosure of new

information that leads investors to reassess audit quality may lead to a more pronounced share price reaction for smaller firms (Atiase, 1985). Information which lowers the perceived reliability of an accounting firm's audits will lead to a greater negative price reaction for smaller client firms. Hence, the audit quality hypothesis suggests a positive relationship between client-firm size and CARRs.

Risk. Client firms with higher risk increase the probability that stockholders will incur a significant loss (Stice, 1991). Greater losses provide prospective plaintiffs with a stronger incentive to seek a legal recovery from auditors regardless of whether an audit failure has occurred. In many cases, lawsuits have been filed against auditors in the absence of an audit failure (Alexander, 1991). In such lawsuits, the plaintiffs' primary objective is to gain access to the auditor's "deep pockets." Importantly, Stice (1991) indicates that firm risk is a proxy for the expected benefits of litigation (i.e., expected recovery of losses or insurance), but not a proxy for alleged audit failure. Thus, firm risk may have a stronger connection to the insurance hypothesis than the audit quality explanation. We expect a negative relationship between CARRs and firm risk. Following Akhigbe and Whyte (2001) and Reed *et al.* (2000), we operationalize this construct by using the standardized rank of beta (systematic risk) derived from the market model for each sample firm.

Industry. Stice (1991) notes that industry membership may influence the significance of factors associated with auditor litigation. Palmrose (1988) notes that banks, savings and

loans, real estate companies, and computer/electronics firms possess higher litigation risk. These high-risk industries typically possess significant financial statement line items subject to management estimates, difficulty in determining asset values and income realization, and greater opportunity for manipulation. Given the potential effect of an accounting firm's bankruptcy, the insurance value of the audit may be more important for high-risk industries. Additionally, the assurance value of the audit may be more important for high-risk industries whose financial statements contain significant management estimates. We expect a negative relationship between CARRs and high-risk industries based on expectations from both the insurance and audit quality hypotheses.

Results

Hypothesis One

Table 2 summarizes Corrado's rank statistic, T , for the rumor period (November 19-29 — eight trading days). Corrado's rank statistic is not significant for November 19, the day on which the Chapter 11 bankruptcy filing of Laventhol and Horwath was first publicly disclosed. The next two trading days also reflect insignificant results. The share prices of E&Y's clients appear to have been unaffected by the Laventhol bankruptcy filing announcement. Several statistically significant security price reactions occurred during the next several days, however. Negative reactions for November 23 and 28 resulted in negative T statistics of -1.604 (p -value = $.0544$) and -2.112 (p -value = $.0173$), respectively. The T s are consistent with the mean and median standardized abnormal return ranks shown in

Panel B of Table 2. November 28 has the lowest mean and median standardized abnormal return ranks ($.447$ and $.388$, respectively) of the rumor period. November 23 possesses the second lowest mean and median standardized abnormal return ranks. Insignificant reactions occurred on both November 26 and 29. A marginally significant positive reaction (opposite of hypothesized direction) occurred on November 27.

Appendix A indicates that on November 23, the *Wall Street Journal* ran an article on the Laventhol and Horwath bankruptcy filing which quoted Arthur Bowman, editor of *Bowman's Accounting Report*, as saying a national accounting firm was considering a Chapter 11 filing. Appendix A also reveals that no news stories appeared to fuel the E&Y bankruptcy rumors on November 27 (day of a marginally significant positive reaction). Only one article was located that appeared November 28 concerning accountant malpractice suits that "could take out a few more accounting firms."

Panel C of Table 2 identifies the T -statistic for various combinations of cumulative abnormal return ranks (CARRs) during the rumor period. The only CARR that is statistically significant is for trading days November 28 and 29 (the two days immediately preceding the E&Y advertisement).

Because an interpretation of the appropriate event period must be made, no unequivocal conclusion relative to hypothesis one can be formed. However, we suggest that the results in Table 2 provide limited support for rejecting hypothesis one. The rumors concerning a potential bankruptcy filing by E&Y are associated with negative risk-adjusted share price reactions of the auditing firm's clients leading up to the advertise-

Table 2
Corrado's Rank Statistic for Abnormal Returns
Rumor Period

Panel A - Rank Statistics

<u>Trading Day</u>	<u>T-statistic</u>	<u>p-value^a</u>
November 19	-.194	.4231
November 20	.406	.3424
November 21	.341	.3665
November 23	-1.604	.0544
November 26	.028	.4888
November 27	1.340	.0901
November 28	-2.112	.0173
November 29	-.232	.4082

Panel B - Abnormal Returns and Return Ranks

	<u>Return Ranks^b</u>		<u>Abnormal Returns</u>	
	<u>Mean</u>	<u>Median</u>	<u>Mean</u>	<u>Median</u>
November 19	.495	.463	.00069	-.00098
November 20	.510	.604	.00283	.00194
November 21	.508	.533	.00189	-.00011
November 23	.460	.423	.00008	-.00286
November 26	.501	.537	-.00149	.00019
November 27	.533	.487	.00620	.00008
November 28	.447	.388	-.00326	-.00351
November 29	.494	.507	.00190	-.00044

Panel C - CARR Rank Statistics

<u>Trading Days</u>	<u>T-statistic</u>	<u>p-value^a</u>
Nov 19-29 (8 trading days)	-.717	.2368
Nov. 23-29 (5 trading days)	-1.154	.1243
Nov. 23-28 (4 trading days)	-1.174	.1202
Nov. 27-29 (3 trading days)	-.580	.2810
Nov. 26-28 (3 trading days)	-.430	.3336
Nov. 27-28 (2 trading days)	-.546	.2927
Nov. 28-29 (2 trading days)	-1.658	.0487

^ap-values shown are one-tailed.

^bThe expected value of a standardized abnormal return rank is .5.

Table 3
May's U Statistic and Corrado's Rank Statistic for Abnormal Returns
Advertisement Event

Panel A - May's U Statistic

<u>Event Day</u>	<u>Mean May's U</u>	<u>C Statistic^c</u> <u>(or Rank)</u>	<u>p-value^a</u>
November 30 (day 0)	1.261	214	.0575
December 3 (day +1)	1.278	188	.1726

Panel B - Rank Statistics and CARR Rank Statistics

<u>Trading Days</u>	<u>T-statistic</u>	<u>p-value^a</u>
November 30 (day 0)	-2.796	.0026
December 3 (day +1)	-.365	.3575
Nov. 30 - Dec. 3 (2 trading days)	-2.235	.0130

Panel C - Abnormal Returns and Return Ranks

	<u>Return Ranks^a</u>		<u>Abnormal Returns</u>	
	<u>Mean</u>	<u>Median</u>	<u>Mean</u>	<u>Median</u>
November 30 (day 0)	.429	.326	-.00386	-.00704
December 3 (day +1)	.490	.441	-.00325	-.00169

^ap-values shown are one-tailed.

^bThe expected value of a standardized abnormal return rank is .5.

^cThe C-statistic can take on any rank or integer value from 1 to 226 (since the sample period contains 226 trading days). The C-value represents the rank of the rank sums of the May's U statistics for a day in the sample period.

ment event (particularly the two days immediately preceding the ad).

Hypothesis Two

Panel A of Table 3 displays the mean May's U statistics and corresponding C statistics for the event days of the "advertisement" event (11/30/90 - day 0). Day 0 exhibits a statistically significant increase in the variance of client-firm abnormal return reactions (p-value = .0575). The

advertisement placed in the *Wall Street Journal* by E&Y on November 30, 1990 is related to a significant market reaction of E&Y's clients. May's U-statistic, however, indicates the magnitude but not the direction of the market reaction.

Recall that it was not predicted whether the ad would quell the bankruptcy rumors or confirm investors' perceptions of a pending bankruptcy filing. Abnormal return rank statistics in Panel B of Table 3 indicate a T

value of -2.796 (p -value = $.0026$) for 11/30/90 (day 0), documenting that the ad is associated with negative client-firm returns. Although the E&Y ad appeared in major newspapers (other than the *Wall Street Journal*) on December 3, Table 3 indicates no significant market reaction on that day. The return ranks reported in Panel C are consistent with this conclusion. Thus, evidence suggests that E&Y was not able to effectively dispel the rumors of bankruptcy and that the ad may have reinforced belief in the rumors. The advertisement event (on November 30) led investors to realign their portfolios in response to heightened perceptions of a loss of auditor-supplied insurance and/or diminished audit quality. The advertisement event apparently provided new information to the market, suggesting an increased probability of the bankruptcy of E&Y.

Hypothesis Three

Overall results reported in Table 4 indicate that the GLS rank regression model is significant with an F statistic greater than 20. The R-squared, however, is only $.08$. Analysis of the coefficients shows that client-firm size (SIZE) is significantly positive ($p < .01$). The results indicate that smaller client firms have greater negative share price reactions than larger client firms to unfavorable information concerning the quality of E&Y audits. Such a finding is consistent with the differential information hypothesis that indicates that smaller firms have more substantial security price reactions to unanticipated information (Atiase, 1985; Nathan, 1997). The significant positive relationship between CARRs and firm size appears to provide more empirical support for the

audit quality explanation than the insurance hypothesis.

Table 4 also reveals that RISK is significantly negative ($p = .048$). The finding suggests that auditor-supplied insurance is more important to shareholders of higher systematic risk client firms as measured by beta. Greater losses, which are more probable in the case of higher risk firms, give prospective plaintiffs a greater incentive to sue auditors regardless of whether an audit failure has occurred. Thus, the results involving RISK suggest shareholder reaction is more closely associated with the insurance hypothesis than the audit quality explanation.

The variable capturing high industry risk, IND, is not significant. Our data do not support the assertion that shareholders in high-risk industry client firms view the ad event differently from other client firm shareholders.

Conclusions and Limitations

Our study is a systematic analysis of client-firm share price reaction to rumors of bankruptcy of a Big 4 firm and an advertisement attempting to quell those rumors. We have expanded the existing literature by: 1) testing application of the insurance hypothesis and audit quality explanation to a Big 4 firm using a large sample size that includes banks and savings and loans, 2) examining an attempt by a Big 4 firm to reverse the effect of negative information on client-firm share prices, and 3) analyzing variables that show more support for the insurance hypothesis than the audit quality explanation or vice-versa in the unique setting studied.

Our findings provide some evidence that bankruptcy rumors concerning a Big 4 firm possess information content that impacts its

Table 4
GLS Rank Regression Model Results

Independent Variables ^b	Predicted Sign-Audit Quality	Predicted Sign-Insurance Hypo.	Coeff. Est.	t-statistic	p-value ^a
Intercept			.177	1.742	.041
SIZE	+	-	.787	7.415	<.001
RISK	N/A	-	-.165	-1.670	.048
IND	-	-	.050	.790	.785
F statistic	N/A	N/A	N/A	21.010	<.001
R-squared	N/A	N/A	N/A	.080	N/A

^ap-values shown are one-tailed.

^bFor evaluation purposes, additional tests of the general model were performed. The regression model was tested for multicollinearity using variance inflation factors and condition indices. No independent variable had a condition index over 6 or a variance inflation factor (VIF) over 2. Multicollinearity is a problem when a condition index exceeds 30 and/or a VIF is greater than 10 (Kennedy, 1992).

publicly traded clients. The results suggest that investors react to information that adversely affects Big 4 auditor reputation. Thus, our findings concerning a Big 4 firm are consistent with prior research reporting effects on clients of smaller CPA firms. Although the Big 4 may offer higher quality audits, theory is supported to suggest that market participants still react to changes in perceptions of that quality. Moreover, market participants react to the diminished likelihood of recovery of financial loss. In summary, the findings substantiate the assertions that some market participants place value on a Big 4 auditor as an insurer of investor losses and a provider of audit quality in the financial reporting process. Analyses also suggest that efforts by a Big 4 firm to quell rumors of financial distress may have had the opposite effect. That is, an advertisement suggesting that E&Y would continue as a going concern seems related to negative client firm share price reactions.

The cross-sectional rank regression analysis permits some distinction between the insurance hypothesis and the audit quality explanation based on client firm-specific variables. Results for SIZE suggest that audit quality is more important to investors in smaller client firms. This is consistent with the logic that investors may place more reliance on audited financial statements of smaller firms given the limited public information available for those firms. Empirical evidence also indicates that auditor-supplied insurance is valued more by investors in higher-risk firms. Again, this supports the theory that the potential for recovery of losses is more important for those accepting more risk. In sum, one contribution of this study is progress toward distinguishing between the audit quality and insurance hypotheses.

Several limitations are apparent in this study. First, limitations common to event studies, in general, are present. In particular, the isolation of

events of interest may be questioned. Another limitation relates to the external validity of the findings. We analyzed only one Big 4 CPA firm with a limited set of events. The results are not exceptionally strong and the

ability to generalize to other CPA firms and events is limited. Additional studies using different firms and events would help to confirm or deny the generalizability of our findings.

Appendix A

Ernst & Young News Story Scenario Rumors of Bankruptcy & Advertisement (Based on LEXIS/NEXIS Search)

November 19, 1990 - Monday

The New York Times

Headline: Faltering Laventhol Is Reportedly Closing
By Alison Leigh Cowan

"The roughly 350 partners of Laventhol & Horwath voted over the weekend at a hastily arranged emergency meeting to file for Chapter 11 bankruptcy protection and disband the firm, former Laventhol partners said last night." (There was no mention of troubles of other firms in this article.)

November 20, 1990 - Tuesday

The Wall Street Journal

Headline: Laventhol Says It Plans to File for Chapter 11
By Peter Pae

"Laventhol isn't the only firm in trouble, consultants to the accounting profession say.' It's the tip of the iceberg,' said Jay Nisberg, a Ridgefield, Conn., consultant. 'Other firms are on the cusp of major problems.' "

The Daily Telegraph

Headline: Litigious Lessons from the US
By (Not indicated)

"Industry expert Arthur Bowman yesterday said he believed that one of the Big Six accounting firms had considered seeking bankruptcy protection this year."

"Even the Government has joined in, suing virtually all the top firms for allegedly failing to tell it how bad the thrift crisis was before Washington discovered the true cost of 'depositor protection.' Ernst & Young, the nation's largest accountants, faces a \$560m lawsuit over just one thrift failure."

November 23, 1990 - Friday

The Wall Street Journal

Headline: Laventhol Bankruptcy Filings Indicates Liabilities May Be as Much as \$2 Billion
By Peter Pae

“There are indications that other major accounting firms may also face serious problems. Arthur Bowman, editor of Bowman’s Accounting Report, an industry trade journal, says in his latest issue that another national firm is contemplating a Chapter 11 filing to escape what he called ‘potential liability problems that far exceed insurance coverage.’ ”

November 24, 1990 - Saturday

The Independent (London)

Headline: View From Manhattan: Bean-Counters in a Zero-Sum Game

By Larry Black

“Many people in the accounting business in the US believe Laventhol’s problems are more general than they seem. For one thing, more that \$3bn worth of lawsuits for negligent auditing also plague five of the Big 6 firms, including America’s largest domestic accountant, Ernst & Young.”

“Ernst & Young alone is being sued for more than \$1bn in connection with the failures of Dallas’ Western Savings Association, California’s notorious Lincoln Savings & Loan, and another series of thrifts in Tennessee.”

“Ernst & Young, for example, has eased at least 300 partners out the door this year, and continues to be plagued by rumors of even bigger problems. Indeed, most specialists say Laventhol & Horwath will not be the only major international accounting firm to face bankruptcy in coming months: some are bold enough to predict that one of the Big Six will be among their number.”

November 25, 1990 - Sunday

Chicago Tribune (Final Edition)

Headline: Party’s Over as CPAs Face Tough Times

By Laurie Cohen

“But experts said there may be serious difficulties ahead for more accounting firms, especially those with a heavy load of pending litigation. A spokesman for New York-based Ernst & Young, which is battling a number of lawsuits involving the thrift debacle and other failures, said the litigation ‘is very defensible and we’ll prevail. It’s not the same kind of cases Laventhol has.’ ”

November 26, 1990 - Monday

Crain’s New York Business

Headline: Firms Chasing Clients, Top Pros of Laventhol

By Judy Temes

“While few firms are in such a bind, a number face potential liabilities as large or larger than Laventhol. That’s especially true because plaintiffs’ damages have, and can be tripled under the Racketeering Influenced Corrupt Organizations act. Ernst & Young, for example, is named as a defendant in one major savings and loan-related lawsuit seeking \$ 500 million and an adverse ruling could present it with severe problems, experts say.”

November 28, 1990 - Wednesday

Focus

Headline: I&H Partners Line Up to Salvage Pieces of Firm

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By Rich Kirkner

“Right now all our competitors are trying to get Laventhol clients, but that doesn't mean they don't see the impact of what's happening,' he says. And that impact - particularly the prevalence of malpractice suits against accounting firms and the subsequent costs of court battles and settlements - could take a few more accounting firms out.”

November 30, 1990 - Friday

Wall Street Journal

Full Page Advertisement by E&Y

“Thanks for a Great Year”

December 3, 1990 - Monday

Wall Street Journal

Headline: Ernst & Young, In Full Page Ads, Seeks to End Rumors It May Seek Chapter 11

By Peter Pac

“Ernst & Young, the largest accounting firm in the U.S., is running full page advertisements hoping in part to end speculation that it is considering filing for bankruptcy protection.”

The Los Angeles Business Journal

Headline: Rumors Swirl About What CPA Firm May Sink After Laventhol

By David Rees

“Who will be Next?”

“The two names rumored most in such replies and the word 'rumored' must be emphasized: Ernst & Young, one of the Big Six, and Spicer & Oppenheim, one of the so-called Second Tier national accounting firms.”

“In casting about for possible defendants with 'deep pockets,' one source remarked, plaintiffs determined Ernst & Young seemed to fit the bill.”

December 4, 1990 - Tuesday

The Times

Headline: Young at Heart

By Jon Ashworth

“Ernst & Young, one of the largest firms of accountants in America, has dismissed talk that it is about to file for bankruptcy protection.”

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