

THE IMPACT OF ASBESTOS AND ENVIRONMENTAL RESERVES INCREASES ON SHAREHOLDER WEALTH

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ABSTRACT

Between 1992 and 2001 significant reserves increase announcements were made by several major property/liability insurers. These reserves increases were for the purpose of recognizing expected asbestos and environmental (A&E) liability. Although most analysts agree that U.S. insurers are underreserved for asbestos and environmental liability, how the market reacts to an insurer's announcement of an increase in these reserves has not been analyzed. An insurer that is significantly underreserved is likely to be viewed by the market as lacking financial stability for the long term. However, when a company increases its reserves, there is a charge to income and a reduction in capital. If surplus is diminished sufficiently as a result of the increased reserving, regulatory attention and eroding shareholder and market confidence could result as well. By calculating the sample insurers' cumulative abnormal returns surrounding the largest asbestos and environmental reserves increase announcements made between 1992 and 2001, the study estimates and documents the market's reaction to these reserves increase announcements. We further explore the potential impact of additional asbestos and environmental liability exposure reporting requirements. Starting with 1995 statutory annual accounting statements, Footnote 24 required additional reporting by insurers of their asbestos and environmental liability exposure (1995 statements were publicly available by the end of the first quarter of 1996). When looking at reserves increase announcements prior to this additional reporting requirement, we find that most insurers announcing large increases in asbestos and environmental reserves prior to 1996 experience a significant reduction in stock price in the days surrounding their announcement. However, consistent with the notion that the additional accounting disclosure requirements after 1995 (Footnote 24) provide valuable information on insurers' exposure, we find that the announcement of A&E reserves increases after 1995 had no statistically significant effect on the market value of announcing insurers.

1. INTRODUCTION

During 1992 and 1993 four insurers (ITT Hartford, Aetna, CNA, and Travelers) announced significant reserves increases for the purpose of funding expected asbestos and environmental

(A&E) liability. In addition, over a period of six months during 1995, four other reserves increase announcements were made by Swiss Re America, Fireman's Fund, Aetna, and Cigna. During this same period, CNA acquired Continental Corporation and Zurich Insurance Group acquired Home Holdings. Both acquisitions were prompted, at least in part, by A&E liability problems of the targeted firms. Alan Levin, managing director of Standard and Poor's, described the events of 1995 collectively as "perhaps the most significant event in the property/casualty industry in decades" (Lenckus 1995). Later in 1995 Nationwide followed with the announcement of an increase in its A&E liability reserves. In 1996 reevaluation of A&E reserving continued with five

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announcements during that year. The next announcement was not until July 2001.

Although most analysts agree that U.S. insurers are underreserved for A&E liability,¹ how the market reacts to an insurer's announcement of an increase in A&E reserves remains unclear. An insurer that is significantly underreserved is likely to be viewed by the market as lacking financial stability for the long term. However, when a company increases its A&E liability reserves, there is a charge to income and a reduction in reported capital. If surplus is diminished sufficiently as a result of the reserving change, regulatory attention and eroding shareholder and market confidence could result as well. Yet Sean Mooney, former senior vice president at the Insurance Information Institute, stated that "the reduction in capital [as a result of increasing environmental reserves] can be viewed as positive as it removes some of the excess 'paper' capital from the industry, and thus can lead to firmer pricing" (Mooney 1994).²

This study estimates and documents the market's reaction to the reserves increase announcements made between 1992 and 2001.³ The announcement of a reserves increase could have one of three effects on the market price of insurers with A&E liability exposure: (1) a statistically significant positive effect, (2) a statistically significant negative effect, or (3) no significant effect. Each outcome contains specific information

about the market's ability to detect understated reserves and the value assigned to changes in loss reserves. Although some anecdotal evidence currently exists, the market reaction to changes in A&E reserves has not been statistically assessed.

The impact of A&E reserves increases on the market value of insurers has become an increasingly important issue for regulators with the introduction of Footnote 24 by the NAIC (Simpson 1996).⁴ Starting with 1995 filings (which were made public in 1996), insurers are required to provide a five-year history of environmental reserves and claim payments. Prior to that time insurers were not required to disclose separately the amount of loss reserves and claims payments that were specifically related to asbestos and environmental reserves. The new reporting requirements give a greater level of transparency to the insurer's financial reporting, allowing investors and analysts to have a better understanding of the proportion of the firm's reserves related to asbestos and environmental claims. Given that our study includes announcements made over the period 1992–2001, the results will allow us to determine if the information provided as a result of Footnote 24 has changed the way in which the market interprets the reserves announcements made by insurers. This enables us to construct a meaningful test of the value of this additional information disclosure that has been mandated by the regulators.

The remainder of the study is divided into five sections. The next section of the paper provides a brief review of the prior research related to this study. This is followed by discussions related to the data, as well as the methodology and hypotheses used in the paper. The results of the paper are presented and the conclusions and implications of the study are outlined in the final two sections.

¹ In 1995 Standard and Poor's (S&P) and Tillinghast estimated that U.S. insurers' environmental liability—including amounts already paid or reserved—was somewhere between \$40 and \$60 billion. S&P also estimated that the total amount reserved by U.S. insurers for this exposure was around \$12 billion (Lenckus 1995). A. M. Best analysts later reported in 1998 that net asbestos and environmental reserves were deficient by approximately \$41 billion (Sclafane 1998). Although by 2000 Best has not had an opportunity to revisit ultimate loss estimates since 1997, they state that "intuitively, [they] do not think insurers are that close to being fully funded [for asbestos and environmental liability]" (Sclafane 2000).

² A number of articles in the insurance and business press have highlighted the scope and magnitude of A&E exposures (Zagaski 1992; Snyder and Smith 1994; Jones 1995; Banham 2001; Coyle 2001; Lemke 2002). Anderson (1996) provides an extensive review of the potential impact of Superfund-related liabilities on the insurance industry.

³ Market price data are not available for mutual insurers. However, announcements made by mutual insurers will be used in the portion of the analysis where the price reaction of nonannouncing firms is evaluated.

⁴ Although when the new reporting requirements were introduced the A&E reserves exhibit was referred to as Footnote 24, subsequent additions have resulted in the actual footnote number varying from year to year in the annual statement blank. Our reference here to Footnote 24 is to the NAIC's requirement that the reporting insurer provide information on its five-year historical pattern of payments and reserves for environmental exposures.

2. PRIOR LITERATURE

Event-study methodologies similar to the one used in this study have been used to assess the overall impact of a variety of issues on shareholder wealth. Examples of these issues include regulatory changes (Schwert 1981; Binder 1985; Chen and D'Arcy 1986; Moore and Schmit 1989; Horton and Macve 1998; Marlett and Pacini 1999), changes in business strategies (VanDerhei 1987; Impson and Karafiath 1992; Akhigbe, Borde, and Madura 1993; McNamara et al. 1997; Akhigbe and Madura 2001), as well as the reporting of increases in liabilities or large losses (Sprecher and Pertl 1983; Davidson, Chandy, and Cross 1987; Baginski, Corbett, and Ortega 1991; Shelor, Anderson, and Cross 1992; Lamb 1995; Cagle 1996). In the banking area, studies such as McNichols and Wilson (1988), Beaver et al. (1989), Elliot, Hanna, and Shaw (1991), Griffin and Wallach (1991), and Wahlen (1994) have analyzed the information content related to the announcements of increased reserves for loan loss reserve changes. In many ways the implications of changes in loan loss reserves provide a parallel for the study of the impact of changes in insurers' loss reserves. For example, Elliot, Hanna, and Shaw (1991) explore the market's reaction to loan loss reserve increases related to problems with loans from less-developed countries. As with increases in asbestos and environmental reserves by insurers, increases in reserves for loan write-offs have a direct impact on the capital adequacy measures of the announcing firms. The current study has an additional similarity to Elliot, Hanna, and Shaw in that loan loss reserves for loans in less-developed countries and asbestos and environmental reserves both have the potential to impact a large number of similar institutions in their respective industries. Thus, the potential contagion effect for other potentially and highly exposed firms is of interest.

The event-study framework allows us to determine whether the announcement contains new, valuable information for the shareholders. If investors had already built the information into their assessment of the firm's value, or if it will not have a meaningful impact on the firm's value, then there will not be a significant change in the stock price. Given the public assessment by industry analysts that insurers are dramatically un-

derreserved in the area of A&E liability (Sclafane 1998, 2000),⁵ it is questionable as to whether new information will be conveyed in these announcements. If the announcement conveys new information that changes investors' views of the firm's value, then there will be a significant change in the stock price around the announcement. As mentioned earlier, investors could view the announcement of the increase in A&E reserves as an event that either increases or decreases the firm's value. Event-study methodologies also create a means to quantify how the market perceives the announcement.

In addition to assessing the impact on the announcing firm, other authors have used event-study methodologies to assess the impact of announcements on other firms in the industry. For example, in the insurance area, Fenn and Cole (1994) investigate the impact that the announcements related to the investment problems at First Executive and Travelers had on the stock prices of other life insurers. In addition, Avila and Eastman (1995) evaluate the impact that information released on four failing life/health insurers had on the other insurance industry members.

The decision to manage loss reserves in an effort to achieve financial goals also has been documented in several studies. For example, Grace (1990) and Gaver and Paterson (1999) find that insurers have incentives to overstate loss reserves in an effort to reduce tax liabilities. On the other hand, financially troubled firms often understate loss reserves in an effort to reduce the level of regulatory scrutiny (Petroni 1992; Gaver and Paterson 1999). Incentives to smooth earnings through managing loss reserves are documented by Weiss (1985) and Grace (1990). Additionally, Nelson (2000) comments that insurers implicitly discount loss reserves to reflect the time value of money. In this case, insurers making large changes in A&E loss reserves face these same financial implications from their adjustments. Given insurance companies' incentives to manage loss reserves to achieve a variety of financial goals, there is some question as to the degree of

⁵ In a 2001 study, A. M. Best estimates that property-liability insurers will ultimately incur more than \$121 billion in net A&E losses. It projects that the industry's unfunded asbestos position is \$33 billion and environmental exposures are underfunded by \$24 billion.

credibility that a reserves increase announcement will have with investors. Christensen, Hoyt, and Paterson (1999) comment that the credibility placed on insurers' earnings announcements is tempered by the level of ability and the incentives managers have to manage earnings.⁶

Also, prior researchers have argued that because of high monitoring costs investors holding the equity of financial firms (i.e., banks and insurance companies) are "rationally uninformed" about the quality of their assets and liabilities. Polonchek and Miller (1996) empirically demonstrate that the level of these information asymmetries is even higher for insurance companies than for commercial banks. Fenn and Cole (1994) and Avila and Eastman (1995) provide additional evidence that investors are relatively uninformed regarding insurer asset quality, and, hence, new information is likely to have valuation relevance. For property-liability insurers, the heterogeneity and complexity of the risk assumed, as well as the considerable managerial discretion available in setting reserves, arguably contributes to even greater information asymmetries with respect to the firm's liabilities. These factors make the insurance industry an especially interesting environment in which to evaluate the relevance of public information releases such as reserves increases. We anticipate increased relevance relative to firms in nonfinancial industries and would expect reserves adjustment announcements during periods of increased uncertainty to be especially relevant to the valuation of security prices.

3. DATA

For our analysis we calculate the sample insurers' cumulative abnormal returns surrounding the A&E reserves increase announcements made between 1992 and 2001. The initial sample of "potentially exposed" insurers includes those firms that in 1985 were writing "other liability" insurance, which includes environmental liability and comprehensive general liability (CGL) policies.⁷

⁶ Peterson (1981) and Salzman (1984) provide details on reserve estimation practices in property-liability insurance.

⁷ 1985 was chosen because most commercial liability policies were modified to contain so-called "absolute" pollution exclusions after 1985. The name of the CGL was changed effective in 1986 from "comprehensive" general liability to the "commercial" general liability policy.

This information is available on the National Association of Insurance Commissioners (NAIC) Property-Casualty Database. This group of insurers is compared to a listing of insurers whose stock is traded on one of the open exchanges. Then the list is compared with information from *Best's Review* regarding the "50 Largest Writers of Other Liability Insurance" for the years 1985, 1975, and 1967. Additionally, the list is compared to the set of insurers with A&E exposures that were analyzed in a study by Standard & Poor's (1995). The final sample of "potentially exposed" insurers includes 24 publicly traded insurers and four non-publicly traded insurers that had potential exposure to A&E liability. We believe that insurers entering the A&E liability lines of insurance after 1985 are not likely to announce significant revisions in their A&E loss reserves during the 1990s. This expectation is based on the fact that pollution exclusions substantially limited A&E exposures arising from policies written after 1985.

Of this sample of 28 "potentially exposed" insurers, 12 of the firms made announcements related to A&E reserves increases during the sample period. These 12 firms are considered to be "highly exposed" firms because of the public announcement of underreserving for A&E liabilities. The focus of the study is on the "highly exposed" sample of insurers. However, data for the nonannouncing firms with a potential A&E exposure are collected in an effort to test how widespread the impact of these announcements is on the nonannouncing firms. The full sample of "potentially exposed" and "highly exposed" firms is used in the regression modeling discussed in the methodology section. Table 1 provides a complete listing of firms included in the sample.

Data regarding the 1992–2001 event dates and other announcements related to the sample insurers were identified through a Lexis/Nexis search of the *Wall Street Journal*, *Business Insurance*, and the *National Underwriter (Property/Casualty Edition)*. Stock price data were collected from the Center for Research in Security Prices (CRSP) data tapes.

Table 2 provides a listing of the announcement dates, the amount of the reserves changes for the announcing firms, total asbestos and environmental reserves for the firm, and the two-day holding period return for the day prior to the announce-

Table 1
Sample Firms 1992–2001

Announcing Firms (highly exposed)	Nonannouncing Firms (potentially exposed)
<i>Publicly traded:</i> Aetna Allstate Insurance Group Cigna CNA Fireman's Fund (Allianz) ITT Hartford Reliance Group Travelers	<i>Publicly traded:</i> American Financial Group American International Group American General Group Berkshire Hathaway Chubb Group Fremont Insurance Group General Reinsurance Group Home Insurance Group (Zurich Re) Kemper National Group Lincoln National Group Ohio Casualty Group Old Republic Group Orion Group St. Paul TIG Insurance Group United States Fidelity & Guaranty
<i>Not publicly traded:</i> American Reinsurance Equitas Nationwide Swiss Re America	

ment and the date of the announcement. In our study we identify 15 announcements made by 12 firms during the years 1992–2001. The reserves increases range from \$134 million to \$1.5 billion. Of the total number of firms in the sample, 29% (eight out of 28; the other four announcing firms are not publicly traded) announced an increase in A&E reserves during the time period. The

reader is cautioned that although holding period returns preceding the announcement provide an initial indication of the market's reaction, they are not adjusted to reflect changes in stock price relative to the overall market. In the following section we control for changes in the overall market by utilizing cumulative abnormal returns surrounding the announcements.

4. METHODOLOGY AND HYPOTHESES DEVELOPMENT

In the empirical analysis, firms are designated as announcing firms for event dates for which they announced a change in A&E loss reserves. The other firms in the sample are designated as non-announcing firms for that event date, even if the firm made an announcement at some other time during the sample period. To determine if an announcement had a significant impact on the shareholders' wealth, the following methodology is utilized.

First, the expected returns for each insurer are estimated by fitting the market model given in equation (4.1) to the insurer's historical daily returns:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it}, \quad t = 1, \dots, T, \quad (4.1)$$

Table 2
Event Dates for 1992–2001
(Reserve Values in \$ Millions)

Event	Date	Increase ^a	Total Reserve ^b	Return ^c
<i>Pre-footnote:</i>				
ITT Hartford	Oct 1 1992	\$900	Unknown	N/A
Aetna	Feb 3 1993	180	Unknown	-0.0192
CNA	Feb 8 1993	1,500	\$3,100	-0.0312
Travelers	Oct 14 1993	325	670	0.0130
Swiss Re America	Apr 12 1995	700	1,000	N/A
Fireman's Fund	June 23 1995	800	1,400	0.0000
Aetna	July 13 1995	750	1,200	-0.0195
Cigna	Oct 2 1995	1,200	1,900	0.0168
Nationwide	Dec 11 1995	1,100	1,500	N/A
<i>Post-footnote:</i>				
American Re	Jan 30 1996	587	947	N/A
Aetna	Feb 8 1996	335	1,535	0.0034
Reliance Group	June 27 1996	134	226	0.0000
Allstate	Oct 9 1996	245	1,200	-0.0024
ITT Hartford	Oct 21 1996	800	2,100	-0.0160
Equitas	July 20 2001	124	11,400	N/A

^aAll increases are pretax additions to reserves. The February 8, 1996, Aetna pretax increase of \$335 million is estimated using the reported \$218.1 million after-tax increase and a 35% tax bracket.

^bThese are the total A&E reserves for the company after the announcement.

^cHolding period returns for $t = -1-0$.

Note: ITT Hartford was not publicly traded prior to December 19, 1995.

where

- R_{it} = Return on shares of insurer i at time t ,
(Price $_{t+1}$ - Price $_t$ + Dividend)/Price $_t$
 R_{mt} = CRSP equally weighted market return at
time t
 α_i = Coefficient representing the return of in-
surer i that is independent of the market
 β_i = Constant representing the market sensitiv-
ity of insurer i
 ε_{it} = Error term.

We estimate all market model parameters using ordinary least squares (OLS) regression analysis over a one-year estimation period up to day -1 (e.g., one day before the announcement), relative to the reserves adjustment announcement date, and employ the CRSP equally weighted market index in market model regressions. This is done to develop an estimate of what the stock's return relative to the market would have been in the absence of a major event.

Once the expected return is estimated, abnormal returns for each insurer are calculated by taking the difference between the insurer's actual returns and its expected returns, as shown in equation (4.2):

$$AR_{it} = R_{it} - (\hat{\alpha}_i + \hat{\beta}_i R_{mt}). \quad (4.2)$$

Cumulative abnormal returns for each insurer are computed by summing the abnormal returns over an event window from t_1 to t_2 , as shown in equation (4.3):

$$CAR_i(-1,0) = \sum_{t=-1}^0 AR_{it}. \quad (4.3)$$

The cumulative abnormal returns for each firm are calculated for the two-day period from the day prior to the event date through the day of the event (days -1 and 0).⁸ The procedure is followed for both the announcing firm and all the other firms. T -tests are conducted to determine if the cumulative abnormal returns for each firm are

statistically different from zero. Significant changes in the firm's cumulative abnormal returns suggest that the market has revised its estimation of firm value based on the announcement.

As stated previously, the announcement of an increase in reserves could have any one of the following effects on the market price of an insurer with A&E liability exposure: (1) a statistically significant positive effect, (2) a statistically significant negative effect, or (3) no significant effect. Each outcome provides important information concerning the market's ability to detect the misstatement of loss reserves prior to the announcement, as well as the impact that the announcement has on firm value.

Two hypotheses support a positive stock price reaction for an announcing firm. First, the market may reflect a prior overestimation of the expected A&E liability of an insurer, and the reserves increase announcement indicates a lower expected assessment of liability by the insurer.⁹ Second, the market already has adjusted for the extent of potential environmental liability, but it expects the increase in reserves to result in a decrease in expected taxes and a resulting increase in firm value.¹⁰

The hypothesis supporting a negative stock price reaction of the announcing firm states that the market underestimated the A&E liability of the insurer and the announcement verifies a higher expected assessment of liability by the insurer. No significant stock price reaction suggests that the market already has properly assessed the insurer's environmental liability, and the insurer is simply recognizing a liability that was already fully reflected in the market price.

⁸ The window of $t = -1$ to 0 is standard in the finance literature for events in which there is minimal leakage prior to the announcement and for which the market is able to evaluate the information in the announcement quickly (see Peterson 1989). Based on the criteria, the window is appropriate for these data as there should be very little leakage prior to the announcement date, and the market should be able to evaluate quickly the information contained in the announcement. See Appendix A.

⁹ The banking literature documents a positive reaction to increases in loan loss reserves. The research shows that bank managers tend to increase discretionary components of reported loan loss provisions when future cash flow prospects increase. For example, Wahlen (1994) finds that in the case of banking, even though the changes in loss provisions reduce current earnings, investors interpret discretionary components of unexpected provisions as "good news" about further changes in cash flows. As a result, stock prices increase with increases in loan loss reserves.

¹⁰ Merritt Insurance Report (1996) states that "the IRS will announce its intent to investigate several insurers concerning 'questionable' A&E loss reserve increases" and "will focus on whether or not these reserve increases were tax deferral or avoidance mechanisms."

Further testing is conducted to determine the impact of the announcements on other “highly exposed” insurers in the sample. This is done in an effort to capture potential industry-wide effects from these announcements.¹¹ The hypotheses related to these tests are discussed in the following section. The effect of one firm’s reserves adjustment announcement on the stock prices of other firms is likely to provide the most insight into the explanation for a stock price movement of the announcing firm. A positive or negative stock price movement around the event date of a firm that is not increasing its reserves suggests that the market misestimated the A&E liability for the entire industry and is adjusting stock prices of all insurers exposed to A&E liability to account for this misestimation. An increase in the stock price of the announcing firm coupled with no significant stock price movement for the nonannouncing firms is consistent with the previously stated tax deferral hypothesis or reflects that the market had overestimated the A&E loss potential for the announcing firm. A decrease of the stock price of the announcing firm coupled with no significant stock price movement for the nonannouncing firms would suggest that the announcement is providing new information to investors regarding the announcing firm, but is not affecting the market’s overall assessment of A&E liability exposures for the industry.

The likelihood of a statistically significant price reaction, positive or negative, will be greater the more uncertainty investors face. In those situations additional information released to the market will be more likely to affect the market’s assessment of firm values. Table 3 provides a summary of the hypotheses related to the potential impact of the announcement of increases in A&E liability reserves on the market price of the announcing firm and on the other “highly exposed” firms.

In an effort to test further the impact of the Footnote 24 reporting requirements on the information content of the announcements, two tests are conducted. As an initial test, the significance of the CARs for the announcing firms are mea-

Table 3
Summary of Hypotheses

Impact on Stock Price	Announcing Firms	Nonannouncing Firms
Positive	The market overestimated the expected A&E liability for the insurer The market had adjusted for the expected A&E liability, but it expects that the announcement will decrease taxes	The market misestimated the A&E liability for the entire industry
Negative	The market underestimated the A&E liability	The market misestimated the A&E liability for the entire industry
No effect	The market has already properly assessed the insurer’s A&E liability	If found with a positive move in stock price for the announcing firms, this is supportive of the tax hypothesis

sured before and after the enactment of the reporting requirements in an effort to determine if there is an overall change in the information content related to the announcements based on the increased level of disclosure. Then, as an added test, a regression model is estimated for the full sample of “potentially exposed” insurers.¹² The following model is estimated:

$$\begin{aligned}
 CAR_{it} = & \alpha + \beta_1 ANNOUNCE * BEFORE_i \\
 & + \beta_2 ANNOUNCE * AFTER \\
 & + \beta_3 HIGHLY_EXPOSED * BEFORE_i \\
 & + \beta_4 HIGHLY_EXPOSED * AFTER \\
 & + \sum_{j=5}^{17} \beta_j EVENT_{jt} + \epsilon_{it}, \quad (4.4)
 \end{aligned}$$

where

CAR_{it} = Cumulative abnormal return of insurer i at time t

¹¹ Testing related to the impact of the announcements on the sample of all “potentially exposed” firms also is conducted as a robustness test. Findings are discussed in the results section.

¹² Elliot, Hanna, and Shaw (1991, p. 851) utilize a similar regression approach in which they regress the estimated CARs against several variables of interest.

ANNOUNCE*BEFORE_i = Interaction term that equals one if insurer i is the announcing firm and the announcement occurred before the implementation of Footnote 24

ANNOUNCE*AFTER_i = Interaction term that equals one if insurer i is the announcing firm and the announcement occurred after the implementation of Footnote 24

$\text{HIGHLY_EXPOSED*BEFORE}_i$ = Interaction term that equals one if insurer i is a “highly exposed” firm and the announcement occurred before the implementation of Footnote 24

$\text{HIGHLY_EXPOSED*AFTER}_i$ = Interaction term that equals one if insurer i is a “highly exposed” firm and the announcement occurred after the implementation of Footnote 24

EVENT_{jt} = Dummy variable representing an event j at time t (fixed effects for the time period).

This provides a test of the impact on announcements for both a given announcing firm and other “highly exposed” firms before and after the enactment of Footnote 24. In an effort to provide added controls for other factors such as the size of the events and trends in the overall marketplace, a series of dummy variables controlling for each individual event are included in the model. In several cases an announcing firm made multiple announcements during the time period. For this reason, robustness tests were created omitting subsequent announcements. The results of these tests are discussed in the results section.

5. RESULTS

5.1 Impact of Announcements for the Announcing Firm

Because of the possible impact of the NAIC’s increased disclosure requirements (Footnote 24), we review our results over the two periods 1992–1995 and 1996–2001.¹³ The NAIC’s disclosure requirements were effective for 1995 annual statements, which would have been available by the end of the first quarter of 1996. The CARs for the

¹³ Although insurers were required to begin to disclose the A&E liabilities in 1995 with the Footnote 24 requirements, this information was not widely available to the public until the end of the first quarter of 1996. For this reason, the post-footnote period begins at the start of 1996.

announcing insurers are presented in Table 4.¹⁴ Five of the six announcements between 1992 and 1995 resulted in negative CARs for the announcing insurer. Also, only two out of four of the post-Footnote 24 announcements resulted in negative CARs for the announcing insurer. The relative frequency of announcements in 1995 is consistent with so-called “house cleaning” by insurers prior to the increased levels of public disclosure required in Footnote 24. Tests for the impact of announcements on the announcing firms also are provided in the regression model. These results are discussed later in this section.

5.2 Impact of Announcements on Other “Highly Exposed” Firms

To evaluate any contagion effects that a firm’s announcement might have had on the other “highly exposed” (announcing) firms, the CARs for the “highly exposed” firms were calculated surrounding each announcement. As can be seen in Table 4, only three of the 15 announcements produced a negative and significant contagion effect for the “highly exposed” firms.¹⁵ Not surprisingly, these announcements were during the pre-footnote period, when less disclosure was re-

¹⁴ As noted in equations (4.2) and (4.3), the CAR can be thought of as the difference in the firm’s returns from what is expected based on prior performance in the period surrounding the event. For our purposes the CAR is the sum of the abnormal returns for a firm on the day prior to the announcement and the day of the announcement. CARs are considered significant if the difference over the period is statically different from zero. If a CAR is positive, the announcement is considered to be positive in the view of the market. Negative CARs signal that the market has a negative view of the information.

¹⁵ As a test of the possible contagion effects on all of the “potentially exposed” insurers, similar tests were performed based on the stock price reaction of all insurers in the sample for each announcement. The results of these tests were mixed. While the CNA announcement was still significant and negative, the Swiss Re announcement was not significant for the entire sample of “potentially exposed” firms. The results for other announcements were a mixture of effects. The difficulty with interpreting these results is two-fold. First, it is difficult to actually measure the level of exposure for the “potentially exposed” firms. Additionally, it is difficult to assess the adequacy of loss reserves for these firms. The firms in the “highly exposed” group created a public signal of the inadequacy of their loss reserves, whereas the firms in the “potentially exposed” group did not. For this reason, it is difficult to interpret the meaning of the significant positive and negative results for these tests. The full results of these tests are available from the authors upon request.

Table 4
Contagion Effects of Announcements on Highly Exposed Firms

Event	Date	CARs for Announcing Firms ^b	Avg. CAR for Highly Exposed	T-Value for Highly Exposed
<i>Pre-footnote:</i>				
ITT Hartford	Oct 1 1992	N/A	0.0256 ^a	4.0824
Aetna	Feb 3 1993	-0.0276	0.0250 ^a	3.2390
CNA	Feb 8 1993	-0.0311	-0.0189 ^a	-4.4044
Travelers	Oct 14 1993	-0.0126	0.0019	0.2693
Swiss Re America	Apr 12 1995	N/A	-0.0085 ^a	-3.6688
Fireman's Fund	June 23 1995	-0.0041	0.0045	0.9381
Aetna	July 13 1995	-0.0294 ^a	-0.0067	-0.8725
Cigna	Oct 2 1995	0.0000	-0.0077	-0.7443
Nationwide	Dec 11 1995	N/A	-0.0104 ^a	-2.4336
<i>Post-footnote</i>				
American Re	Jan 30 1996	N/A	0.0168	1.3726
Aetna	Feb 8 1996	-0.0116	-0.0008	-0.1078
Reliance Group ^c	June 27 1996	0.0215	0.0128 ^a	2.9905
Allstate	Oct 9 1996	0.0298	-0.0096	-1.9041
ITT Hartford	Oct 21 1996	-0.0142 ^a	0.0055	1.0406
Equitas	July 20 2001	N/A	-0.0548	-1.6550

^aSignificant at <.01.

^bFor CARs listed as N/A, the insurer that increased reserves was not publicly traded at the time of the increase. Note that ITT Hartford was not publicly traded prior to December 19, 1995.

^cBecause of the volatile nature of the Reliance Group during this period, Reliance Group announcements were not included in the empirical results.

quired in annual financial statements, and, therefore, less information was available concerning the "highly exposed" firms' A&E reserves adequacy. The three announcements that were viewed most negatively by the market were the CNA, Swiss Re, and Nationwide announcements. The results found in Table 4 suggest that the market determined that new and negative information was introduced with these announcements, resulting in negative and statistically significant CARs for the "highly exposed" firms. A more complete description of the CNA, Swiss Re, and Nationwide announcements is included in Appendix B. These results are consistent with the notion that public announcements will be more valuable and, therefore, have more of a valuation impact during periods of uncertainty. As the discussion in the appendix documents, these announcements reflected periods when there was elevated uncertainty regarding the likely impact of A&E exposures on insurers.

5.3 Further Testing of the Impact of Footnote 24

To provide a preliminary assessment of whether the implementation of Footnote 24 increased

the transparency of the insurers' A&E positions, thereby reducing the overall new information content of the announcements, we conduct tests of the overall significance of announcements occurring before and after the implementation of new reporting requirements. As seen in Table 5, the cumulative effect for the announcing firms on their respective announcement dates indicates that the pre-footnote announcements yielded negative and statistically significant average CARs whereas the post-footnote announcements

Table 5
Cumulative Effect for Announcing Firms on Announcement Dates

Period	Avg. CAR	T-Value	No. of Announcements ^b
All announcements	-0.0112	-1.77	9
Pre-footnote	-0.0175 ^a	-3.12	6
Post-footnote	0.0014	0.10	3

^aSignificant at <.10.

^bBecause of the volatile nature of the Reliance Group during this period, Reliance Group announcements were not included in the empirical results. In this table the analysis in this table is limited to those firms that were publicly traded at the time of their announcement of a reserve increase.

yielded CARs that were negative but not statistically significant.¹⁶ This provides support for the premise that the information provided by the firms through Footnote 24 was meaningful and was entered into the market's assessment of firm value prior to the firms' announcements, thereby lessening the reaction of the market to the announcements.¹⁷

Table 5 provides some evidence that the additional reporting requirements of Footnote 24 reduce the information content of the announcements regarding reserves increases. The regression model in Table 6 provides a further test of the impact of Footnote 24 disclosures. The results of the model show negative cumulative abnormal returns surrounding announcement dates for announcing insurers prior to the implementation of the new reporting requirements. The variable ANNOUNCE*AFTER is included in the

model in an effort to capture the effect of announcements made by announcing firms after the additional reporting requirements were put into effect.¹⁸ As reflected by the results for the other interaction variables in the regression model, on average the announcements did not have a statistically significant impact on the market values of "highly exposed" insurers. This was true both before and after the implementation of the Footnote 24 disclosure requirement. The lack of significance related to announcements after the implementation of the additional disclosure requirements provides further support for the hypothesis that these reporting requirements provide valuable valuation information to the market. As a result, information that had previously been revealed to the market through A&E reserves increase announcements is now provided by these enhanced disclosures, thereby minimizing the impact of such announcements.¹⁹

Table 6

Cumulative Abnormal Returns Regression

$$\begin{aligned} \text{CAR}_{it} = & \alpha + \beta_1 \text{ANNOUNCE*BEFORE}_i + \beta_2 \text{ANNOUNCE*AFTER} \\ & + \beta_3 \text{HIGHLY_EXPOSED*BEFORE}_i \\ & + \beta_4 \text{HIGHLY_EXPOSED*AFTER} + \sum_{j=5}^{17} \beta_j \text{EVENT}_{jt} + \varepsilon_{it} \end{aligned}$$

Variable	Coefficient	T-Value
Intercept (α)	-0.0123 ^a	-1.7169
ANNOUNCE*BEFORE	-0.0139 ^a	-2.1304
ANNOUNCE*AFTER	0.0103	0.7200
HIGHLY_EXPOSED*BEFORE	-0.0031	-1.0891
HIGHLY_EXPOSED*AFTER	-0.0069	-1.0217
Event fixed-effects terms	Included	
$R^2 = 0.211078$	$N = 314^b$	

^aSignificant at <.10.

^bBecause of the volatile nature of the Reliance Group during this period, Reliance Group announcements were not included in the empirical results.

6. CONCLUSIONS AND IMPLICATIONS

Although many industry experts have stated that the insurance industry is underreserved with respect to asbestos and environmental liability exposures, it appears that the market has not fully discounted firm value to reflect the potential understatement of liabilities. For the period 1992–95, the majority of announcements of increased asbestos and environmental reserves were associated with a decrease in firm value for the announcing firm.

In reaction to concerns over the magnitude of A&E exposures and the adequacy of insurers' reserves for these exposures, the NAIC required with the filing of 1995 annual statement blanks that insurers provide additional information on A&E claims and reserves (the five-year exhibit that was initially referred to as Footnote 24). We find empirical evidence that is consistent with the

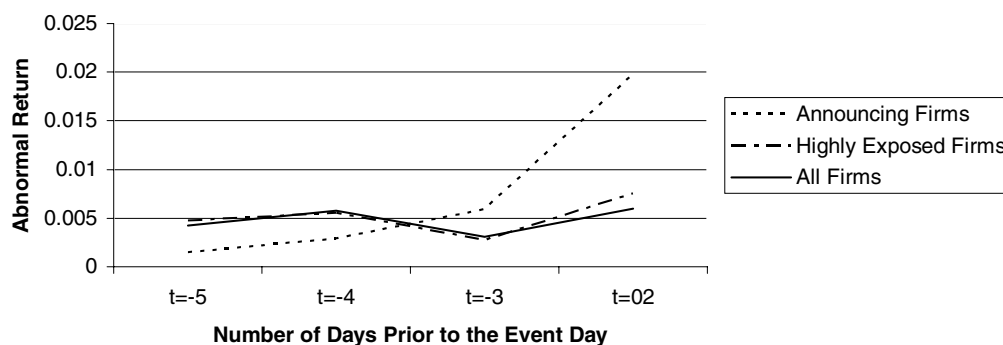
¹⁶ As a robustness test, firms were removed from the sample if they had already made an announcement of increased asbestos and environmental reserves during the sample period. The results for the full sample and pre-footnote period were statistically similar to the results reported. Because of limited observations, statistical significance was not calculated for the post-footnote period.

¹⁷ Because of the drastic changes in the financial position of Reliance during the sample period, the Reliance observations have been removed from these tests. It should be noted that with the observations included, the results for the pre- and post-footnote reporting periods were statistically similar. The results for the full sample period were negative and significant.

¹⁸ As a robustness test, the regression models also were run without the event control variables. The results of the main variables remained unchanged from what is reported.

¹⁹ As a robustness test, subsequent announcements by a given announcing firm were removed from the sample. The interaction variable for the announcing firms prior to the Footnote 24 requirements is insignificant while the interaction variable for these firms after the regulation is positive and significant. The other variables of interest remain unchanged.

Figure A.1



notion that the information made public by the Footnote 24 requirements was important to the market's valuation of insurers' A&E exposures.

However, with three notable exceptions, the A&E reserves increases did not result in an adverse change in the market's assessment of firm values for other "highly exposed" insurers. Our results are consistent with the idea that public information releases will be most influential on the market's assessment of firm values when financial statement disclosures are inadequate (lack of transparency in accounting information) and when uncertainty is greatest.

Our findings have important implications for valuation actuaries. First, they show that the market is not consistently able to detect large misstatements of loss reserves adequately. This suggests that accurate reserves statements by actuaries are critical and that adjustments to erroneous ones do have an effect on the market's assessment of firm value. Second, faced with the potential reduction in firm value and possible increase in regulatory costs, insurers have the incentive to understate or further delay the announcement of increased asbestos and environmental liability reserves. In reviewing reserves, actuaries must be cognizant of this potential conflict in incentives. As observed by Gutterman (2002), "The demands that financial reporting of insurance companies present to actuaries are great and growing." Our results certainly underscore his point.

Although the reserves increases from 1992 to 2001 represent a significant response by insurers to the realization of coming asbestos- and environmental-related liabilities, the issue of as-

bestos and environmental liability is likely to remain in the forefront. A 2003 study by A. M. Best reported that "only half of the 30 insurer groups with the largest A&E exposures have conducted 'ground up' loss reserve evaluations in the last two years, nearly all resulting in reports of sizable deficiencies" (McLeod 2003).

APPENDIX A

ABNORMAL RETURNS SURROUNDING THE EVENT WINDOWS (EXCLUDING RELIANCE)

To further test the window, a graphical assessment of the cumulative abnormal returns in the window around the announcements was created. Figures A.1 and A.2 provide a representation of the returns surrounding the event dates for the firms in the sample. Extending the window beyond the current period would increase the possibility of confounding effects related to other events in the industry and/or within the firm.

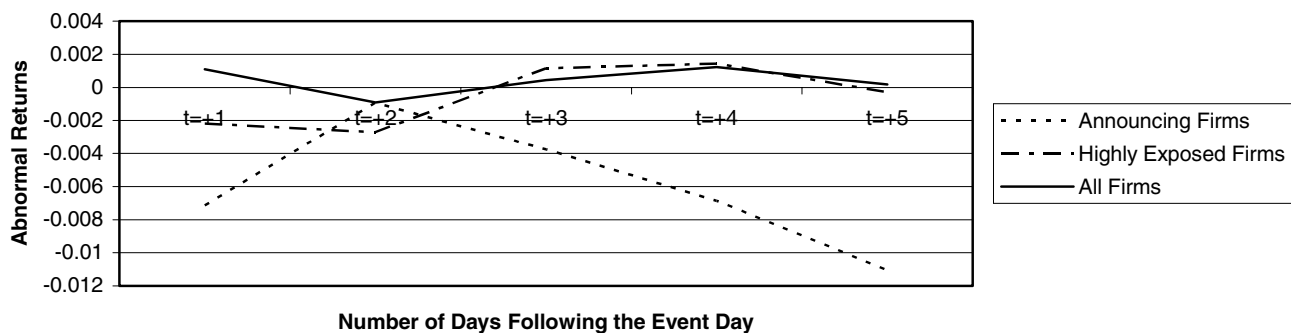
APPENDIX B

DESCRIPTION OF CNA, SWISS RE, AND NATIONWIDE ANNOUNCEMENTS

THE CNA ANNOUNCEMENT

The largest of the negative CARs for the "highly exposed" firms was associated with the announcement by CNA, which represented the largest reserves increase announcement during the period of our study (\$1.5 billion). The first wave of

Figure A.2
Abnormal Returns after Event Window



announcements began in October 1992 with the ITT Hartford increase of \$900 million and ended approximately a year later with the Travelers' increase of \$325 million. The ITT Hartford increase was to "bolster reserves and fund the runoff of pre-1988 surplus lines and reinsurance business written by First State, New England Insurance, and New England Re. Much of the widening loss [stemmed] from asbestos and pollution liability claims" (McLeod 1992). The McLeod article goes on to say that this move was "applauded" by insurance analysts. The same article cites Myron M. Picoult, managing director and senior insurance analyst with Oppenheimer & Co., who stated that whether other insurers will follow ITT's lead "depends on how brain-dead they are."

Approximately four months following the ITT announcement, Aetna followed with a much smaller announcement of \$180 million. This was due to a "not-so surprising \$100 million addition to asbestos loss reserves" along with an \$80 million addition due to its environmental exposure. Dave Lenckus reported in *Business Insurance* that the \$80 million addition due to the environmental exposure "raised the eyebrows" of insurance analysts (Lenckus 1995). Later in the article Gordon Luce, deputy manager of Brown Bros. Harriman & Co. of New York, stated that he was "not expecting an amount [in environmental reserves] that would require a special announcement." In addition, Michael Lewis, a senior vice president with Dean Witter Reynolds of New York stated, "We're surprised. We didn't expect anything in environmental." Perhaps this announcement, while not significant in size, alerted the market to potential A&E exposure that was not fully anticipated.

Five days after the Aetna announcement, CNA added \$1.5 billion to its liability reserves. This was described as "among the biggest reserve additions ever" and was compared in size only to CIGNA's \$1.2 billion boost in reserves in 1985 (Greenwald 1993). The increase was tied to CNA's anticipated settlement with Fibreboard, one of its policyholders from the 1950s. Fibreboard faced tens of thousands of asbestos claims, each deemed by the courts to be a separate occurrence. From 1957 to 1959, Fibreboard's policies with CNA did not have aggregate limits, creating a tremendous exposure for CNA. Speaking about the increase, Mark Puccia, S&P director stated, "We thought there was a good possibility of an addition, but its size was an order of magnitude greater than anticipated" (Greenwald 1993). Mr. Puccia, referring to the ITT, Aetna, and CNA announcements, stated that "these are not unique cases." Charles Ronson, an analyst with Balestra Capital in New York, stated that "if insurers like CNA increase their reserves, then others will follow," suggesting that this announcement was a signal of other insurers' unfunded A&E exposure (Greenwald 1993). It is possible that the unexpected (albeit small) announcement made by Aetna coupled with the staggering CNA announcement just five days later was the cause of the significant effect on the market value of "highly exposed" insurers.

THE SWISS RE ANNOUNCEMENT

In April 1995, approximately 18 months after the last announcement in 1993, Swiss Re America was the first among several insurers to boost reserves for A&E exposure in the second wave of

announcements. Alan Levin, a managing director with insurance rating agency Standard & Poor's of New York, stated that these reserves increases, along with a couple of key A&E-related acquisitions, were "perhaps the most significant event in the property/casualty industry in decades" (Lenckus 1995). Although each reserves increase announcement provided information to the markets regarding the overall condition of insurers with this exposure, the Swiss Re announcement was the first strong signal of the extent to which the industry was in need of addressing its under-reserving in the A&E area.

Announcements by Swiss Re and Fireman's Fund (April and June; the first two in the series of announcements in 1995) prompted Eric Simpson, vice president of Best's property/casualty division, to state that "the race is on to boost environmental reserves due to the expected scrutiny by ratings agencies and the media" (Lenckus 1995). He further stated, "There will be a number of other large companies that will be stepping up to the plate. It might force some rethinking as to how companies will address the problem and where they'll get resources to do it" (Scism 1995). With the Fireman's Fund announcement came speculation about Aetna's announcement, which occurred in July, within a month of the Fireman's Fund announcement (Scism 1995). Likewise, with the Aetna announcement, predictions were made of a CIGNA announcement, which followed in October of the same year (Lenckus 1995). Clearly, in the "race" among several major players in the property/casualty industry to boost A&E reserves to adequate levels, the Swiss Re announcement represented the starting gun.

THE NATIONWIDE ANNOUNCEMENT

The \$1.1 billion reserves increase announcement from Nationwide marked the fifth and last significant reserves announcement in 1995. The increase represented almost a three-fold boost to the \$400 million in asbestos and environmental liability reserves that it had prior to the announcement. The announcement came just prior to the end of the year in which NAIC's increased disclosure requirements (Footnote 24) were to take effect. The timing of this announcement would suggest that it was potentially due, in part,

to the disclosure requirements implemented by the NAIC. However, Nationwide's announcement was also characterized as being "well timed" given Moody's announcement less than a month before that the company was under review for its exposure to natural catastrophes, asbestos, and environmental liability.

At the time of the Nationwide announcement, Eric Simpson, vice president of A. M. Best, described the increase as "extraordinary," and Best immediately responded to Nationwide's announcement with its "A+" (Superior) rating. In addition, Best stated that the increase would place the insurer group "among the most conservative in the industry." After the announcement, Sean Mooney, senior vice president and chief economist at the Insurance Information Institute, remarked about the 1995 reserves increase announcements, "The year has been a fulfillment of a long-held viewpoint by Wall Street analysts and individuals who have reviewed those companies in the business and concluded that reserves were greatly underestimated and needed to be increased" (Niedzielski 1995, p. 33).

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REFERENCES

- AKHIGBE, AIGBE, STEPHEN F. BORDE, AND JEFF MADURA. 1993. Dividend Policy and Signaling by Insurance Companies. *Journal of Risk and Insurance* 60: 413-28.
- AKHIGBE, AIGBE, AND JEFF MADURA. 2001. Intra-Industry Signals Resulting from Insurance Company Mergers. *Journal of Risk and Insurance* 68: 489-505.
- AMERICAN ACADEMY OF ACTUARIES ENVIRONMENTAL AND MASS TORT LIABILITY WORK GROUP. 2001. Dissecting A&E Survival Ratios. *Best's Review* (September): 93-95.
- ANDERSON, DAN R. 1996. Financial and Organizational Impact of Superfund-Mandated Hazardous Waste Liabilities on the Insurance Industry. *CPCU Journal* (spring): 22-39.
- AVILA, S., AND K. EASTMAN. 1995. The Market Effects of Life Insurer Insolvencies and the Implications for Regulators. *Journal of Insurance Regulation* 13: 302-29.
- BAGINSKI, S. P., R. B. CORBETT, AND W. R. ORTEGA. 1991. Catastrophic Events and Retroactive Liability Insurance: The Case of the MGM Grand Fire. *Journal of Risk and Insurance* 58: 247-60.

- BANHAM, RUSS. 2001. Burned by Asbestos. *CFO Magazine* (September): 41–44.
- BEAVER, W., C. EGER, S. RYAN, AND M. WOLFSON. 1989. Financial Reporting, Supplemental Disclosures, and Bank Share Prices. *Journal of Accounting Research* 27: 157–78.
- BINDER, JOHN J. 1985. Measuring the Effects of Regulation with Stock Price Data. *RAND Journal of Economics* 16: 167–83.
- CAGLE, JULIE A. B. 1996. Insurance Company Loss Reserve Adjustments and Security Prices. *Journal of Insurance Regulation* 15: 124–49.
- CHEN, K. C., AND STEPHEN P. D'ARCY. 1986. Market Sensitivity to Interest Rate Assumptions in Corporate Pension Plans. *Journal of Risk and Insurance* 53: 209–25.
- CHRISTENSEN, THEODORE E., ROBERT E. HOYT, AND JEFFREY S. PATERSON. 1999. *Ex Ante* Incentives for Earnings Management and the Informativeness of Earnings. *Journal of Business Finance & Accounting* 26: 807–32.
- COYLE, MATTHEW T. 2001. Asbestos Claims Pose Significant but Not Catastrophic Threat to U.S. Insurers. *Standard & Poor's RatingsDirect* (August 1): 1–4.
- DAVIDSON, WALLACE N., III, P. R. CHANDY, AND MARK CROSS. 1987. Large Losses, Risk Management and Stock Returns in the Airline Industry. *Journal of Risk and Insurance* 54: 162–72.
- ELLIOT, JOHN A., J. DOUGLAS HANNA, AND WAYNE H. SHAW. 1991. The Evaluation by the Financial Markets of Changes in Bank Loan Loss Reserve Levels. *Accounting Review* 66: 847–61.
- FENN, GEORGE W., AND REBEL A. COLE. 1994. Announcements of Asset Problems and Contagion Effects in the Life Insurance Industry. *Journal of Financial Economics* 35: 181–98.
- GAVER, JENNIFER J., AND JEFFREY S. PATERSON. 1999. Managing Insurance Company Financial Statements to Meet Regulatory and Tax Reporting Goals. *Contemporary Accounting Research* 16: 207–41.
- GRACE, ELIZABETH V. 1990. Property-Liability Insurer Reserve Errors: A Theoretical and Empirical Analysis. *Journal of Risk and Insurance* 57: 28–46.
- GREENWALD, JUDY. 1993. CNA Adds \$1.5 Billion to Liability Reserves. *Business Insurance* (February 15): 1, 55.
- GRIFFIN, P., AND S. WALLACH. 1991. Latin American Lending by Major U.S. Banks: The Effects of Disclosures about Non-accrual Loan and Loan Loss Provisions. *Accounting Review* 66: 831–47.
- GUTTERMAN, SAM. 2002. The Evolving Role of the Actuary in Financial Reporting of Insurance. *North American Actuarial Journal* 6(2): 47–59.
- HORTON, JOANNE, AND RICHARD MACVE. 1998. Planned Changes in Accounting Principles for UK Life Insurance Companies: A Preliminary Investigation of Stock Market Impact. *Journal of Business Finance and Accounting* 25: 69–101.
- IMPSON, C. MICHAEL, AND IMRE KARAFIATH. 1992. A Note on the Stock Market Reaction to Dividend Announcements. *Financial Review* 27: 259–71.
- JONES, BRIAN A. 1995. Reserving for Pollution Lacks an Easy Solution. *Best's Review (Property/Casualty Edition)* (January): 62–64.
- LAMB, REINHOLD P. 1995. An Exposure-Based Analysis of Property-Liability Stock Values around Hurricane Andrew. *Journal of Risk and Insurance* 62: 111–23.
- LEMKE, TIM. 2002. Insurers Face Increasing Asbestos Pressure. *Washington Times*, May 17.
- LENCZUS, DAVE. 1995. Aetna's Reserving Turns Up Pressure. *Business Insurance* (July 17): 1–2.
- MARLETT, D. C., AND C. PACINI. 1999. Insurer Stock Price Responses to the Creation of the California Earthquake Authority. *Journal of Insurance Regulation* 18: 80–108.
- MCLEOD, DOUGLAS. 1992. ITT to Take Big Charge to Bolster Hartford's Reserves. *Business Insurance* (October 5): 1–2.
- . 2003. Asbestos, Environmental Risks Are Underreserved: A. M. Best. *Business Insurance* (October 13): 4.
- MENAMARA, MICHAEL J., STEPHEN W. PRUITT, ROBERT A. VAN NESS, AND CHARLIE CHAROENWONG. 1997. Property-Liability Insurance Company Market Pullout Announcements and Shareholder Wealth. *Journal of Risk and Insurance* 64: 441–63.
- MENICHOLS, M., AND G. P. WILSON. 1988. Evidence of Earnings Management from the Provision for Bad Debts. *Journal of Accounting Research* 26: 1–31.
- MOONEY, SEAN. 1994. Insurer Glasses Are Both Half Full and Half Empty. *National Underwriter (Property/Casualty Edition)* (October 24): 43.
- MOORE, WILLIAM T., AND JOAN T. SCHMIT. 1989. The Risk Retention Act of 1986: Effects on Insurance Firm Shareholders' Wealth. *Journal of Risk and Insurance* 56: 137–45.
- NELSON, KAREN K. 2000. Rate Regulation, Competition, and Loss Reserve Discounting by Property-Casualty Insurers. *Accounting Review* 75: 115–38.
- NIEDZIELSKI, JOE. 1995. Nationwide Adds \$1.1B to Reserves. *National Underwriter (Property & Casualty/Risk & Benefits Management Edition)* (December 11): 1, 33.
- PETERSON, PAMELA P. 1989. Event Studies: A Review of Issues and Methodology. *Quarterly Journal of Business and Economics* 28: 36–66.
- PETERSON, TIMOTHY M. 1981. *Loss Reserving—Property/Casualty Insurance*. New York: Ernst & Whinney.
- PETRONI, KATHY RUBY. 1992. Optimistic Reporting in the Property-Casualty Insurance Industry. *Journal of Accounting and Economics* 15: 485–508.
- POLONCHIEK, J., AND R. MILLER. 1996. The Valuation Effects of Insurance Company Securities Issuances. *Advances in Financial Economics* 2: 187–204.
- SALZMANN, RUTH E. 1984. *Estimated Liabilities for Losses and Loss Adjustment Expenses*. Englewood Cliffs, NJ: Prentice Hall.
- SCHWERT, G. WILLIAM. 1981. Using Financial Data to Measure Effects of Regulation. *Journal of Law and Economics* 24: 121–58.
- SCISM, LESLIE. 1995. For Cigna, Property-Casualty Line Still Proves Tricky—Unit Has Put Deep Trouble behind It but Faces High Costs, Pollution Claims. *Wall Street Journal* (August 21): B4.
- SCLAFANE, SUSANNE. 1998. A. M. Best: Reserve Levels Are Shaky. *National Underwriter (Property & Casualty/Risk and Benefits Management Edition)* (October 19): 37–38.

- . 2000. Best Says Asbestos Worries Outweigh EIL. *National Underwriter (Property & Casualty/Risk and Benefits Management Edition)* (November 13): 6, 11.
- SHELOE, ROGER M., DWIGHT C. ANDERSON, AND MARK L. CROSS. 1992. Gaining from Loss: Property-Liability Insurer Stock Values in the Aftermath of 1989 California Earthquake. *Journal of Risk and Insurance* 59: 476–88.
- SIMPSON, ERIC M. 1996. Footnote 24 Ushers in New Era of A&E Liability Disclosure. *Best's Review (Property/Casualty Edition)* (September): 65–67.
- SNYDER, JOHN H., AND W. DOLSON SMITH. 1994. Environmental/Asbestos: The Industry's Black Hole. *Best's Review (Property/Casualty Edition)* (May): 33–37, 90–102.
- SPRECHER, C. RONALD, AND MARS A. PERTL. 1983. Large Losses, Risk Management and Stock Prices. *Journal of Risk and Insurance* 50: 107–117.
- STANDARD AND POOR'S. 1995. *Environmental Liability and the Insurance Industry*. New York: Standard and Poor's.
- VANDERHEI, JACK L. 1987. The Effect of Voluntary Termination of Overfunded Pension Plans on Shareholder Wealth. *Journal of Risk and Insurance* 54: 131–56.
- WAHLEN, JAMES M. 1994. The Nature of Information in Commercial Bank Loan Loss Disclosures. *Accounting Review* 69: 455–78.
- WEISS, MARY. 1985. A Multivariate Analysis of Loss Reserving Estimates in Property-Liability Insurers. *Journal of Risk and Insurance* 52: 199–221.
- ZAGASKI, CHESTER A., JR. 1992. *Environmental Risk and Insurance*. Chelsea, MI: Lewis Publishers.

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