Large Losses and Firm Value: Investor Response and Managerial Decisions

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Abstract: This paper examines equity response to the occurrence of large nonoperating losses. As with previous studies, significant negative abnormal returns are detected around the occurrence of large losses. The paper extends the literature by examining issues not previously investigated. For a subset of losses covered by private insurance, negative equity returns were detected when the losses occurred. However, the negative returns were not significant and quickly reversed. With respect to whether loss estimates were available at the time the losses occurred, significant negative abnormal returns were present regardless of the availability of a loss estimate. The equity response was more severe when loss estimates were not disclosed, and there was a longer period of adjustment and greater wealth losses for shareholders. Equity response to anticipated losses (e.g., awards and settlements) was also examined. Significant negative abnormal returns were observed even though these losses were expected. Further analysis revealed that smaller anticipated losses were associated with temporary negative returns, while larger anticipated losses produced more permanent shareholder wealth reductions. These findings are interpreted in the context of information dissemination and managerial decision making. [Key words: large losses, stock returns, risk management]

INTRODUCTION

The goal of the firm manager is to maximize the value of the firm. Within this context, the role of some corporate risks such as financial leverage risk, operating leverage risk, and foreign exchange rate risk have been well developed in the literature. The firm manager knows how to deal with

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Journal of Insurance Issues, 2002, **25**, 1, pp. 63–84.

these risks in order to maximize the value of the firm. In contrast, the analysis of the impact of large nonoperating losses on firm value—and how firm managers ought to deal with such events—has not been well developed, even though the issue remains timely (e.g., Duvall, 1997). A manager needs to know not only how to handle potential large losses but also how to deal with large losses within the context of the firm's total risk exposure. Shapiro and Titman (1985) suggest an integrated approach to corporate risk management. Furthermore, Shapiro and Titman propose methods for managing total corporate risk, including restricting the debt-equity ratio, using futures and forward contracts, and purchasing insurance. Recently, the role of chief risk officer (CRO) has been well accepted not only in the financial services industry but also in nonfinancial businesses. One of the reasons that the number of CROs has grown so quickly is that companies are serious about integrating all of their risk management activities (both operating and nonoperating risk management) under a firm value maximization approach.

The purposes of this paper are to examine the impact of large nonoperating losses on firm value and to provide some suggestions to firm managers (including CROs) as to how to deal with such losses. The importance of large nonoperating losses to the firm manager is obvious. First, the manager is likely a shareholder and is subject to significantly greater absolute and relative exposure to unsystematic risk than are individual (noninsider) investors. Company managers may have a significant proportion of their wealth invested in the firm, and thus do not hold diversified portfolios. In addition, as Han (1996) noted, insurance plays an important role in efficiently transferring a manager's nondiversifiable human capital risk under various managerial compensation arrangements.

Second, the occurrence of large losses raises the question of whether a firm should insure against such events and what are the optimal insurance levels. Mayers and Smith (1982) present a number of arguments consistent with modern financial theory to explain the purchase of insurance by corporations. Several studies (e.g., Mayers and Smith, 1990; Core, 1997; Yamori, 1999) examine these theories using a variety of data sets. Hoyt and Kang (2000) provide a more comprehensive test of the theoretical justifications for the purchase of corporate property insurance. Results of their study indicate that insurance serves a role in reducing agency costs, buying insurance has tax benefits for corporate insurance purchasers, and insurers have a comparative advantage in delivering certain insurance-related services, such as loss control and claims administration. If the purchase of insurance is viewed favorably, it is interesting to examine how financial markets react to insured losses versus uninsured losses.

Third, such losses raise questions about (firm) information dissemination in relation to the size of the loss and the share price change. Fourth, there are short-term and long-term cash-flow implications for the firm, which, through "normal" capital markets investigations, interested investors attempt to ascertain and to discount into security prices. Fifth, there is the issue of firm managers' attempts to manage (resolve) uncertainty created by large nonoperating losses.

The issue is also of direct importance to shareholders. Irrespective of the teachings of modern financial theory (that large nonoperating losses are not important because they represent diversifiable risk), investors are concerned with possible price declines (and consequent wealth decrements) related to such events.

This paper addresses each of these issues. Prior research on the issues addressed in this study is limited in scope and may be divided into two categories. One group of papers examines the impact of a specific event on the value of sample firms in a single industry (see, for example, Hill and Schneeweis, 1983; Fields and Janjigian, 1987; Barrett et al., 1987). The other group of studies analyzes the impact of large losses on the value of those specific firms that actually suffered the losses. This study belongs to the latter category.

In an early study, Sprecher and Pertl (1983) showed that large losses have a significant negative effect on the equity returns of the companies suffering the losses. Subsequently, they found that the magnitude of the negative return was related to the size of the loss (1989).

Unfortunately, with few exceptions there has been little research on the impact of insured losses. Two studies have provided indirect evidence on insured losses. Davidson, Chandy, and Cross (1987) and Barrett et al. (1987) investigated the effect of large losses in the airline industry upon shareholder value. While Sprecher and Pertl (1983) found no evidence of a reversal of the (announcement date) negative abnormal returns after the occurrence of large losses, Davidson, Chandy, and Cross (1987) reported that the pattern of negative abnormal returns reversed within the five days following the most severe airline disasters. Although Davidson et al. hypothesize that the difference in these results is attributable to adequate insurance coverage in the airline industry (as opposed to other industries), they admit that "[e]xactly why airline stock prices do not adjust to large losses… is a matter of conjecture" (Davidson et al., 1987, p. 170). In contrast, Barrett et al. found no significant adjustment of stock prices subsequent to the day after the airplane crashes.

One study has provided some direct evidence on the impact of insured losses. Sprecher and Pertl (1986) included an insurance variable in a study of the effects of large losses; the focus of their paper, however, was not a

comparison of insured and uninsured losses, and Sprecher and Pertl did not examine price adjustments following the occurrence of large insured losses. Further, Sprecher and Pertl's results relating to the insurance variable were inconclusive. Specifically, the insurance variable was statistically significant in some of the models examined, but it was not significant in other models. It is difficult to reach a conclusion from Sprecher and Pertl's results. In summary, the market reaction to insured losses remains largely unexamined. Therefore, the results of previous studies cannot provide useful suggestions to risk managers and CROs as to how to deal with large nonoperating losses.

In addition to insured losses, there are other important issues related to large nonoperating losses that have not been examined. Specifically, previous researchers have analyzed samples in which the amount of the loss was publicly known. None of those studies examined the effect of large losses on firm value when the amount of the loss was not disclosed. It is useful to compare equity returns for losses with disclosed loss estimates with equity returns for losses without disclosed loss estimates. Such comparisons provide information about investor reaction to uncertainty. Furthermore, the information may help firms' managers be more forthcoming in discretionary disclosure situations.

Another issue that has not been examined in isolation is the impact of "anticipated" losses. Loss announcements may be categorized as "anticipated" or "unanticipated." For the purposes of this study, we define "anticipated" losses to be foreseeable events (namely, awards from and settlements of lawsuits). Such losses are foreseeable in the sense that subsequent to a lawsuit filing, one knows that eventually there will be an outcome that may be an award or settlement. In contrast, "unanticipated" losses are unforeseeable events such as fires, explosions, plane crashes, and train derailments. Most previous studies analyzed samples that combined unanticipated and anticipated loss announcements. For example, Sprecher and Pertl (1986 and 1989) examined samples that included aircrash-related, fire-related, and lawsuit-related losses. The market reaction to unanticipated losses and anticipated losses may not be similar. Therefore, it may not be appropriate to examine an aggregate sample of unanticipated and anticipated losses.

It is in the context of the limited prior empirical work that this paper is presented. This paper extends the literature in several ways. First, we analyze the equity reaction to announcements of large nonoperating losses. In contrast to previous research that used announcements presented in a variety of secondary sources, this paper uses the comprehensive loss listing provided by the *World Insurance Report* and its successor, the *World Loss Log*, both published by the *Financial Times of London*. Second, we use the actual date

the loss occurred, rather than the announcement (i.e., publication) date, which has been used in virtually all previous studies.[1] Third, equity reactions to insured losses are analyzed; specifically, we examine whether there is a price adjustment following the occurrence of insured losses. None of the existing literature investigates the price adjustment following the occurrence of insured losses. The new evidence rejects the "informed" hypothesis and supports the uncertain information hypothesis proposed by Brown, Harlow, and Tinic (1988). Fourth, equity reactions to losses where the estimated amount of the loss was disclosed are compared to equity reactions where the estimated amount of the loss was not disclosed. In contrast to the findings in the literature for losses with a disclosed loss estimate, there is a long period of adjustment to the loss when a loss estimate is not disclosed. This finding has implications for managerial information dissemination decisions. Finally, equity returns are analyzed in relation to whether the loss announcement was unanticipated or anticipated. Most previous studies analyzed samples that combined "unanticipated" and "anticipated" loss announcements. The findings reported here suggest that for "anticipated" announcements, significant negative abnormal returns are present before the announcement date. Furthermore, at the time of announcement, significant negative abnormal returns are observed even though the losses are anticipated.

THE HYPOTHESES

The first issue examined is whether there is a significant equity response to large nonoperating losses at the time they occur and during the days immediately following these losses if such losses are substantially covered by insurance. It may be argued that no significant equity reaction should occur if a major portion of these losses is covered by insurance (and consequently the net loss to the firm is small) and investors are aware of this information. Further, no price adjustment is expected during the days immediately following the loss. We will refer to this hypothesis as the "informed" hypothesis.

Conversely, it can be argued that there may be a negative equity reaction to large losses at the time they occur even though a major portion of these losses is covered by insurance if investors are unaware of the insurance coverage. The negative reaction can be attributed to the fact that investors perceive, given a large loss has occurred, that the best scenario for the firm is no net loss, while the worst scenario is a large net loss. In the days immediately following insured losses, information about insurance coverage may become available to investors.[2] Therefore, subsequent price changes

will tend to be positive if investors are unaware that the losses were substantially insured at the time of loss. We will refer to this hypothesis as the "uninformed" hypothesis. This hypothesis is consistent with the uncertain information hypothesis proposed by Brown, Harlow, and Tinic (1988). Thus the appropriate null hypothesis is that there is no price adjustment during the days immediately following occurrences of large losses when a major portion of each loss is covered by insurance.

The second issue investigated is whether there is a significant equity reaction to large losses when the amount of the loss is not disclosed. It is commonly believed that investors attempt to avoid uncertainty and, consequently, assign a lower value to securities that have greater uncertainty for a given level of expected return. If we assume that the disclosed and undisclosed loss estimate subsamples are drawn from the same population, then one might argue the market reaction to losses without a dollar estimate may be greater than the market reaction to losses with a dollar estimate. Two null hypotheses can be tested. The first null hypothesis is that there is no market reaction to large losses when the amount of the loss is not disclosed. The second null hypothesis is that the market reaction to losses without disclosed loss estimates will be smaller than the market reaction to losses with dollar estimates.

The third issue addressed relates to investor reaction to "anticipated" loss announcements. As discussed above, we use awards and settlements as proxies for "anticipated" losses. When it is reported that lawsuits are settled or damages are awarded, it is likely these announcements are anticipated.[3] In these cases, there usually are both an antecedent loss event and discussions between the plaintiff and the defendant before and after the lawsuit filing. In contrast, "unanticipated" loss announcements are unforeseeable events such as fires, explosions, plane crashes, and train derailments. Most previous research analyzed samples that combined "unanticipated" and "anticipated" loss announcements. For example, Sprecher and Pertl (1986 and 1989) examined samples that included aircrash-related, fire-related, and lawsuit-related losses. The market reaction to unanticipated losses and anticipated losses may not be similar. Therefore, it may not be appropriate to examine an aggregate sample of unanticipated and anticipated losses. An award or settlement announcement may be treated as good news or bad news, depending on the expected value of the award or settlement assigned by investors before the announcement. If the award or settlement is larger than expected, a negative reaction should occur; if the award or settlement is smaller than expected, a positive reaction should occur. Therefore, a testable null hypothesis is that there is no market reaction to anticipated loss announcements.

Finally, we examine whether there is a relationship between the relative size of anticipated losses (defined as the size of the loss divided by the market value of the firm) and the magnitude of the equity response to them. For anticipated losses, it is reasonable to assume that investors form expectations about the relative size of awards or settlements before they are announced. Therefore, one would not expect the market to react differently to relatively large and relatively small anticipated losses. The null hypothesis is that there is a difference in market reaction to relatively small and relatively large anticipated losses.

SAMPLE AND METHODOLOGY

The final sample consists of 155 losses that occurred during the period January 1, 1980 through December 31, 1988. The sample was compiled from "World Loss Log" sections of the *World Insurance Report* and the *World Loss Report*. These reports were published biweekly by the *Financial Times of London* and provide a comprehensive, worldwide listing of major losses, claims, disputes, litigation, awards, and settlements in all classes of property and liability insurance and reinsurance. For each loss, the World Loss Log provides the name of the company suffering the loss, the cause of the loss, a brief description of the loss, a loss estimate (if available), and the number of known injuries and fatalities, if any. A review of loss dates reveals no clustering of losses during the sample period.

The loss reports were screened to obtain a sample of large losses suffered by publicly traded (NYSE or AMEX) American firms. Some of the firms in the sample suffered several large losses during the period examined. A questionnaire was sent to each firm in an effort to ascertain the extent to which the property, liability, and business interruption portions of each loss were covered by private insurance. A follow-up questionnaire was sent to firms that did not respond. As is typical with questionnaires, the response rate was low—34 firms out of the 110 firms contacted responded. Some of the firms stated that they considered the information requested to be confidential (proprietary), and others noted they could not supply the requested information because of terms imposed under legal judgments. A final sample of 19 insured large losses was obtained.

To eliminate confounding effects, additional information was obtained from the *Wall Street Journal Index*. Losses that occurred around the time of other major company-specific events (e.g., takeover bids, management changes, significant changes in dividends) were eliminated from the sample. A summary of the characteristics of the losses is provided in Table 1.

Table 1. Characteristics of Sample of Losses

	Number
Total sample of losses	155
Insured losses (verified by company response)	19
Loss estimates	
Disclosed	109
Undisclosed	46
Loss predictability	
Unanticipated losses—fires, explosions, etc.	61
Anticipated losses—settlements and awards	77
Anticipated losses—other miscellaneous	17
Relative size of anticipated losses	
Less than one percent of market value	54
Greater than one percent of market value	23

Standard event study methodology (Brown and Warner, 1985) was used to analyze the market reaction to the large losses. For each firm i, stock returns were collected for the period from two hundred days prior to the loss through twenty-one days prior to the loss. These returns were used to estimate the OLS parameters in Equation 1:

$$R_{i,t} = \hat{a}_i + \hat{b}_i R_{m,t} \quad (1)$$

where $R_{i,t}$ is the return for security i on day t; $R_{m,t}$ is the return for the CRSP value-weighted index on day t; and $_i$ and $_i$ are the OLS estimates. Then for each firm for each day of the event period (20 trading days prior to the event date through 20 trading days after the event date), abnormal returns, $A_{i,t}$, were obtained:

$$A_{i,t} = R_{i,t} - (\hat{a}_i + \hat{b}_i R_{m,t}) \quad (2)$$

Further, for any particular day t, the mean abnormal return $\overline{A}_t$ was obtained:

$$\overline{A}_t = \frac{\left(\sum_{i=1}^{N_t} A_{i,t} \right)}{N_t} \tag{3}$$

where N_t is the number of losses in the sample analyzed. In addition to individual residuals, the cumulative abnormal returns (CARs) were obtained and analyzed:

$$CAR_{T_1, T_2} = \sum_{t=T_1}^{T_2} \overline{A}_t \tag{4}$$

where CAR is the cumulative abnormal return during the period $t = T_1$ through $t = T_2$. It should be noted that $t = 0$ was defined as the date the loss occurred or the first trading day thereafter if the loss did not occur on a trading day. It should also be noted that some losses occurred around or just after the close of trading for the day. Thus, realistically for these firms, the equity reaction occurred on day $t + 1$. As is the case in most event studies, the proper event period is considered to be the two-day window ($t = 0, t + 1$). Brown and Warner's (1985) methods of hypothesis testing were utilized.

RESULTS

Entire Sample

The results for the entire sample are presented in Panel A of Table 2.[4] The excess returns on day $t = 0$ and $t + 1$ are –.42 percent and –.48 percent, respectively. Each of these negative excess returns is significant at the five percent level. The two-day abnormal return (for $t = 0$ and $t + 1$) is –.90 percent, which is significant at the one percent level. The CAR over the period $t + 2$ through $t + 20$ is .32 percent, which is not statistically significant. Thus, the two-day announcement effect does *not* represent a transitory change in firm value. These results are consistent with those of Sprecher and Pertl (1983).

Insured Losses

The results for firms indicating that their loss was insured are presented in Panel B of Table 2. It should be noted that the results presented are based on a small subsample of 19 losses where insurance coverage was

Table 2. Entire Sample and Insured Losses

Time	Avg. Residual	CAR	*t*–Statistic
Panel A: Abnormal Returns for the Entire Sample (*N* = 155)			
t – 20	0.0016	0.0016	1.01
t – 5	–0.0025	–0.0069	–1.54
t – 4	0.0026	–0.0043	1.58
t – 3	–0.0016	–0.0059	–1.00
t – 2	0.0004	–0.0055	0.24
t – 1	0.0001	–0.0054	0.07
t = 0	–0.0042	–0.0096	–2.54**
t + 1	–0.0048	–0.0144	–2.92***
t + 2	0.0001	–0.0143	0.08
t + 3	0.0025	–0.0117	1.54
t + 4	0.0015	–0.0102	0.94
t + 5	0.0002	–0.0099	0.15
t + 6	0.0035	–0.0064	2.16**
t + 7	0.0018	–0.0045	1.14
t + 8	–0.0007	–0.0052	–0.43
t + 9	–0.0012	–0.0064	–0.76
t + 10	0.0002	–0.0062	0.12
t + 20	0.0004	–0.0111	0.26
Panel B: Abnormal Returns for Insured Losses (*N* = 19)			
t – 20	0.0013	0.0013	0.32
t – 5	0.0017	0.0155	0.42
t – 4	0.0018	0.0173	0.46
t – 3	0.0068	0.0242	1.69
t – 2	–0.0006	0.0235	–0.16
t – 1	–0.0003	0.0232	–0.09
t = 0	–0.0065	0.0167	–1.59
t + 1	–0.0003	0.0163	–0.09
t + 2	–0.0027	0.0136	–0.67
t + 3	0.0057	0.0194	1.42
t + 4	0.0052	0.0246	1.29
t + 5	0.0029	0.0276	0.74
t + 6	0.0050	0.0326	1.25
t + 7	0.0037	0.0364	0.91
t + 8	–0.0008	0.0355	–0.21
t + 9	0.0057	0.0413	1.42
t + 10	0.0010	0.0423	0.26
t + 20	0.0013	0.0602	0.34

Notes: ** Significant at the 5 percent level.
*** Significant at the 1 percent level.

verified. The pattern of these results is in marked contrast to those for the entire sample. While the event day excess return is relatively large (–.65 percent), it is not statistically significant. The two-day announcement effect is –.68 percent, which is less than the two-day announcement effect for the entire sample (–.90 percent). This two-day abnormal return is not statistically significant. On the basis of this empirical evidence, we are unable to reject the "informed" hypothesis.

As noted above, the abnormal return on day t = 0 is –.65 percent with a t-statistic of –1.59. There are positive abnormal returns from day t + 3 through day t + 10, with the exception of day t + 8. Moreover, the CAR from t + 3 through t + 7 is about 2.30 percent and is significant at the five percent level. These results are consistent with the "uninformed" hypothesis and the uncertain information hypothesis (Brown, Harlow, and Tinic, 1988). By day t + 20, the CAR is over 4 percent higher than on day t + 1. The t-statistic for this change is 2.56, which is significant at the five percent level.[5]

These results are consistent with the notion that, given a large loss has occurred, investors view the purchase of corporate insurance positively. In the absence of knowledge about whether the firm has purchased insurance, investors value the firm at an expected value reflecting the value of the firm with and without insurance. As investors learn that the firm has purchased insurance, they revise their valuation accordingly, with the revised expected value exceeding the original expected value.

The results in Panel B of Table 2 are consistent with the findings of Davidson et al. (1987), who found no long-term significant negative abnormal returns for airline firms around the dates of airline disasters. While Davidson et al. speculate that the abnormal returns were not significant because airline firms are required to carry liability insurance, our results provide direct evidence that there are no long-term significant negative abnormal returns for insured large losses other than airline disasters. It should be noted that the difference in results between the entire sample and the insured losses subsample is not related to the size of the losses. The median loss as a percentage of market value for the entire sample is 0.43 percent, while the median loss as a percentage of market value for the insured losses subsample is 0.46 percent.

Loss Amount Estimates: Disclosed and Undisclosed

Next, the entire sample was divided into two subsamples: losses for which an estimated loss amount was disclosed at the time of the loss and losses for which an estimated loss amount was not disclosed at the time of the loss. Results of the analyses of these two subsamples are presented in Panels A and B of Table 3.

Table 3. Disclosed vs. Undisclosed Loss Estimates

Time	Avg. Residual	CAR	*t*-Statistic
Panel A: Abnormal Returns for Firms with Disclosed Loss Amount (N = 109)			
t – 20	0.0010	0.0010	0.50
t – 5	–0.0029	–0.0094	–1.38
t – 4	0.0028	–0.0066	1.33
t – 3	–0.0029	–0.0095	–1.37
t – 2	0.0008	–0.0087	0.39
t – 1	0.0004	–0.0082	0.21
t = 0	–0.0021	–0.0103	–0.99
t + 1	–0.0058	–0.0162	–2.72***
t + 2	0.0009	–0.0152	0.43
t + 3	0.0023	–0.0129	1.08
t + 4	0.0036	–0.0092	1.72*
t + 5	–0.0002	–0.0094	–0.11
t + 6	0.0047	–0.0047	2.20**
t + 7	0.0013	–0.0033	0.64
t + 8	–0.0029	–0.0063	–1.36
t + 9	–0.0017	–0.0080	–0.80
t + 10	–0.0002	–0.0083	–0.13
t + 20	0.0010	–0.0104	0.50
Panel B: Abnormal Returns for Firms with Undisclosed Loss Amount (N = 46)			
t – 20	0.0031	0.0031	1.25
t – 5	–0.0015	–0.0009	–0.61
t – 4	0.0020	0.0011	0.83
t – 3	0.0014	0.0025	0.56
t – 2	–0.0006	0.0018	–0.26
t – 1	–0.0006	0.0011	–0.27
t = 0	–0.0090	–0.0078	–3.66***
t + 1	–0.0024	–0.0103	–0.98
t + 2	–0.0017	–0.0120	–0.69
t + 3	0.0030	–0.0089	1.24
t + 4	–0.0036	–0.0126	–1.46
t + 5	0.0014	–0.0111	0.57
t + 6	0.0008	–0.0103	0.35
t + 7	0.0031	–0.0072	1.25
t + 8	0.0044	–0.0027	1.80*
t + 9	–0.0001	–0.0029	–0.06
t + 10	0.0013	–0.0015	0.55
t + 20	–0.0010	–0.0128	–0.42

Notes: * Significant at the 10 percent level.
** Significant at the 5 percent level.
*** Significant at the 1 percent level.

For firms that have loss estimates provided in the World Loss Log (Panel A), the two-day abnormal return is –.80 percent (t-statistic = –2.61), which is significant at the one percent level. The positive abnormal returns on days t + 2, t + 3, and t + 4 sum to .70 percent (t-statistic = 1.88), significant at the 10 percent level. Thus, for firms that have loss estimates, the reaction to the loss announcement is largely eliminated by the close of trading on day t + 4 (one week after the loss). Over the longer period, t = 0 through t + 20, the cumulative abnormal return is –.22 percent.

The results for the subsample for which loss estimates were not available at the time of the loss (Panel B) are somewhat different. The two-day abnormal return (–1.15 percent) is significant at the one percent level. In contrast to the subsample for which loss estimates were available, the CAR for t + 2, t + 3, and t + 4 is –.23 percent. The day t = 0 through day t + 4 CAR is –1.38 percent (t-statistic = –2.49), which is significant at the five percent level. The CAR over the longer period, t = 0 through t + 20, is –1.41 percent.

In summary, there was an immediate, significant, negative reaction regardless of whether an estimate of the loss amount was provided. This reaction is more severe when the loss amount is undisclosed, whether measured over a two-day window (–1.15 percent versus –.80 percent), over a one-week window (–1.38 percent versus –.10 percent), or over a one-month window (–1.41 percent versus –.22 percent). One might argue that in cases where a loss estimate is provided, the initial reaction is an overreaction that is largely dealt with by market participants in a fairly rapid fashion (see DeBondt and Thaler, 1985 and 1987). In contrast, one might argue that in cases where a loss estimate is not provided, the initial reaction is not an overreaction. These results may provide managerial incentive for disclosure of loss estimates.

While it seems reasonable to conclude that uncertainty plays a (negative) long-term role in the market reaction, the results must be interpreted carefully. Our conclusion is based on the assumption that the two subsamples were drawn from the same population. If the mean size of the undisclosed losses is less than the mean size of the disclosed losses, then the empirical results strongly support the conclusion that uncertainty plays an important role in the market reaction. If, however, the mean size of the undisclosed losses is greater than the mean size of the disclosed losses, then our results may be attributable to the relative sizes of the losses rather than to uncertainty. Of course, it is unlikely that the mean size of the undisclosed losses is greater simply because of legal disclosure requirements.

Unanticipated vs. Anticipated Losses

Next, two subsamples were analyzed: unanticipated losses (e.g., fires, explosions, oil platform accidents) and anticipated losses (awards and settlements). Results for the unanticipated losses are presented in Panel A of Table 4. The abnormal return on day t = 0 is –.39 percent, significant at the 10 percent level. This result is consistent with most of the previous studies. Four of the anticipated losses involved airline crashes, which are insured. When these four losses are dropped from this subsample, the excess return on t = 0 increases to –.44 percent and the t-statistic changes from –1.70 to –1.90.[6] This result is consistent with the results for the insured loss subsample discussed earlier and the contention of Davidson et al. that the market does not react as negatively when a portion of the loss is insured. It should be noted that the reaction seems to be complete by the end of day t + 1.

The market's reaction to anticipated losses (awards and settlements) is presented in Panel B of Table 4.[7] As these losses are anticipated, investors have the opportunity to adjust their loss estimates on the basis of new information obtained prior to the award or settlement announcements.[8] During the period from t – 15 through t – 1, the CAR is –2.04 percent, significant at the 10 percent level.[9] These results suggest that investors adjust anticipated loss estimates upward in the days immediately before award and settlement announcements. These results are different from the results for unanticipated losses, where no significant abnormal returns are detected before the losses occur. The market reacts negatively at the time of the announcement despite the fact that these loss announcements were anticipated (and, as indicated above, there is significant negative anticipation). The abnormal returns on days t = 0 and t + 1 are –.47 percent and –0.88 percent, respectively. The two-day abnormal return of –1.36 percent is significant at the one percent level. Furthermore, by day t + 20 the cumulative abnormal return is far closer to the t + 1 (post-announcement) level than the t – 1 (preannouncement) level. This finding might lead one to conclude that, on average, the actual awards and settlements are greater than investors expect. This result is consistent with the large increase in average legal awards that contributed to the liability crisis during the 1980s (see Lai and Witt, 1992).

In summary, the market reacts negatively to both unanticipated and anticipated losses. In fact, the results show that the market reacts more strongly to anticipated losses than to unanticipated losses. The reason may be partially attributable to the fact that the median loss as a proportion of market value is higher for the anticipated losses (.43 percent) than it is for the unanticipated losses (.25 percent).

Table 4. Anticipated vs. Unanticipated Losses

Time	Avg. Residual	CAR	*t*-Statistic
Panel A: Abnormal Returns for Unanticipated Losses (N = 61)			
t – 20	0.0019	0.0019	0.86
t – 5	–0.0018	0.0025	–0.80
t – 4	0.0017	0.0043	0.76
t – 3	0.0002	0.0045	0.09
t – 2	0.0001	0.0047	0.08
t – 1	–0.0006	0.0041	–0.26
t = 0	–0.0039	0.0002	–1.69*
t + 1	–0.0003	–0.0000	–0.13
t + 2	–0.0021	–0.0022	–0.93
t + 3	0.0007	–0.0014	0.31
t + 4	–0.0011	–0.0026	–0.49
t + 5	0.0005	–0.0021	0.22
t + 6	0.0030	0.0009	1.35
t + 7	0.0023	0.0033	1.01
t + 8	0.0034	0.0067	1.49
t + 9	–0.0013	0.0053	–0.60
t + 10	0.0007	0.0061	0.33
t + 20	0.0001	–0.0058	0.07
Panel B: Abnormal Returns for Anticipated Losses (N = 77)			
t – 20	0.0015	0.0015	0.52
t – 5	–0.0041	–0.0147	–1.44
t – 4	0.0030	–0.0117	1.04
t – 3	–0.0039	–0.0155	–1.34
t – 2	0.0009	–0.0146	0.30
t – 1	0.0004	–0.0142	0.14
t = 0	–0.0047	–0.0189	–1.63
t + 1	–0.0088	–0.0278	–3.05***
t + 2	0.0009	–0.0269	0.30
t + 3	0.0024	–0.0244	0.85
t + 4	0.0049	–0.0195	1.70*
t + 5	–0.0002	–0.0197	–0.06
t + 6	0.0053	–0.0144	1.85*
t + 7	0.0021	–0.0123	0.72
t + 8	–0.0038	–0.0161	–1.32
t + 9	–0.0030	–0.0191	–1.03
t + 10	–0.0004	–0.0195	–0.14
t + 20	0.0004	–0.0227	0.15

Notes: * Significant at the 10 percent level.
*** Significant at the 1 percent level.

Relatively Small Anticipated Losses vs. Relatively Large Anticipated Losses

Sprecher and Pertl (1989) examined the relationship between size of loss and change in shareholder wealth for unanticipated losses. In this section we consider this issue for anticipated losses. The anticipated losses were divided into two subsamples according to loss size as a percentage of firm market value. Firms for which the loss was less than one percent of the market value of the firm constitute one subsample, while the second subsample consists of firms that had losses greater than or equal to one percent of firm market value. The results for these two subsamples are presented in Table 5.

For the firms with anticipated losses that were less than one percent of firm market value (Panel A), the market response is largely observed on day t + 1. The response is large (–1.50 percent) and significant (t = –6.19) at the one percent level. However, the reaction appears to be an overreaction. By day t + 7, the cumulative abnormal return is below its day t – 1 level. Indeed, both the day t + 4 and day t + 5 abnormal returns are positive and significant. By approximately one month after the loss announcement, about three-fourths of the day t + 1 wealth loss has been recovered by shareholders.

The pattern of abnormal returns for the firms with losses greater than one percent of market value (Panel B) is somewhat different. For these firms, the day t = 0 abnormal return (–1.70 percent) is large and significant. During the next several days, the abnormal returns are largely positive (the t + 6 abnormal return is significant). However, by one month after the loss announcement, the cumulative abnormal return is approximately equal to its t = 0 level. Thus, it appears that for this subsample the announcements lead to permanent wealth losses.

The two-day announcement effects for the two subsamples are similar. Specifically, the abnormal returns for the two-day announcement periods are –1.44 percent and –1.12 percent, respectively, for the relatively small and relatively large loss subsamples. Thus we are able to reject the null hypothesis that the immediate market reaction is related to the size of the anticipated losses during the two-day announcement periods. In contrast, over the longer period (t = 0 through t + 20), the abnormal returns are –.36 percent and –1.99 percent, respectively. For this longer period we are unable to reject the null hypothesis that the market reaction is related to the size of the losses. One might speculate that in the case of larger losses there is subsequent disclosure that some of the loss will not be covered by insurance or that the larger losses, on average, are greater in magnitude than investors expected. The pattern of abnormal returns subsequent to the

Table 5. Small vs. Large Anticipated Losses

Time	Avg. Residual	CAR	*t*–Statistic
Panel A: Abnormal Returns for the Anticipated Losses Less Than One Percent of Firm Market Value (*N* = 54)			
t – 20	–0.0047	–0.0047	–1.94**
t – 5	–0.0015	–0.0077	–0.63
t – 4	0.0025	–0.0052	1.04
t – 3	–0.0030	–0.0082	–1.24
t – 2	–0.0048	–0.0130	–1.97*
t–1	–0.0014	–0.0145	–0.59
t = 0	0.0006	–0.0138	0.27
t + 1	–0.0150	–0.0289	–6.19***
t + 2	–0.0008	–0.0298	–0.36
t + 3	0.0038	–0.0260	1.57
t + 4	0.0060	–0.0199	2.49**
t + 5	0.0044	–0.0155	1.81*
t + 6	0.0015	–0.0140	0.61
t + 7	0.0007	–0.0132	0.31
t + 8	–0.0031	–0.0163	–1.28
t + 9	0.0002	–0.0161	0.08
t + 10	–0.0033	–0.0195	–1.36
t + 20	0.0000	–0.0181	0.04
Panel B: Abnormal Returns for Anticipated Losses Greater Than One Percent of Firm Market Value (*N* = 23)			
t – 20	0.0161	0.0161	1.99*
t – 5	–0.0102	–0.0308	–1.27
t – 4	0.0040	–0.0267	0.50
t – 3	–0.0058	–0.0325	–0.72
t – 2	0.0142	–0.0182	1.76*
t – 1	0.0047	–0.0134	0.59
t = 0	–0.0170	–0.0305	–2.11**
t + 1	0.0058	–0.0246	0.72
t + 2	0.0049	–0.0197	0.61
t + 3	–0.0007	–0.0204	–0.09
t + 4	0.0021	–0.0183	0.26
t + 5	–0.0109	–0.0292	–1.35
t + 6	0.0143	–0.0148	1.77*
t + 7	0.0051	–0.0097	0.64
t + 8	–0.0053	–0.0151	–0.66
t + 9	–0.0104	–0.0255	–1.30
t + 10	0.0063	–0.0192	0.79
t + 20	0.0012	–0.0333	0.15

Notes: * Significant at the 10 percent level.
** Significant at the 5 percent level.
*** Significant at the 1 percent level.

announcements for relatively large anticipated losses is somewhat different from the pattern for the subsample with relatively small anticipated losses. Although the abnormal returns are largely positive immediately after the relatively large losses, this subsample experiences a permanent wealth loss. In summary, although the initial (immediate) market reaction to relatively small anticipated losses is similar to the reaction to relatively large anticipated losses, the market reaction to relatively small and relatively large anticipated losses is quite different over the interval t + 2 to t + 20. The finding that the market's reaction to the relatively large losses seems permanent is consistent with Sprecher and Pertl's (1989) results. In contrast, the market's negative reaction to the relatively small losses seems transient in nature. This finding is not inconsistent with the results for large losses because the small losses have much less impact on the value of the firm, and, therefore, the impact on the market value of shareholder wealth is reduced.

SUMMARY AND CONCLUSIONS

This paper adds to our understanding of the impact of large non-operating losses upon firm value by analyzing interesting subsamples of a large sample of non-operating losses. The major results are as follows:

(1) Like previous researchers, we detect significant negative abnormal returns around the occurrence of large nonoperating losses.
(2) When these losses are privately insured, the abnormal returns are negative, but not significant. Further, one month after the occurrence of insured losses, shareholders have obtained positive abnormal returns. These results largely support the "uninformed" hypothesis.
(3) There is a rapid adjustment to large losses when a loss estimate is available at the time the loss occurs.
(4) In contrast to the findings for losses with a disclosed loss estimate, when a loss estimate is not disclosed, there is a long period of adjustment to the loss. Further, there is a larger wealth loss for shareholders when a loss estimate is not available than when a loss estimate is available.
(5) For anticipated losses, significant negative abnormal returns are present before the announcement date. Upon announcement, significant negative abnormal returns are observed even though the losses are anticipated.
(6) While smaller anticipated losses are associated with largely transitory negative abnormal returns, larger anticipated losses are associated with more permanent shareholder wealth losses.

Firm managers (including CROs) are charged with maximizing firm value. The results presented here may be viewed by firm managers in the context of uncertainty and the resolution of uncertainty. When a loss occurs—insured or uninsured, loss estimates available or unavailable, anticipated or unanticipated—equity markets react negatively. Investors' immediate perception is that as residual claimants, any loss will be borne by the shareholders. It is impossible for investors to immediately assess the impact of the loss because all relevant information is not known when the loss occurs. Over time, however, more information becomes available and more accurate loss assessments can be made. In some cases, disclosure that some or all of the loss was insured may lead to recovery of wealth lost during the initial negative market reaction. The implication for financial managers is clear: disclose that some or all of the loss was insured as soon as possible to reduce uncertainty.

The empirical results from the insured losses subsample support the uncertain information hypothesis of Brown, Harlow, and Tinic (1988) and Mayers and Smith's (1982) discussion of the positive aspects of corporate insurance purchases. In other cases, the market reaction is an overreaction (see DeBondt and Thaler, 1985 and 1987) and prices adjust accordingly. Such positive adjustments may involve a reduction of the uncertainty associated with future monetary payments associated with the loss. This possibility is illustrated by the results for the subsamples with and without disclosed loss estimates. For the subsample with specific monetary loss estimates, the market reaction appears short and relatively small. For the subsample without specific monetary loss estimates, the market reaction appears large and relatively lengthy. In one case, uncertainty appears to be largely resolved, while in the other case it appears to be largely unresolved, leading to a lengthy period during which market participants attempt to ascertain the impact of the loss and simultaneously adjust equity values. The implication for financial managers is clear: disclose loss estimates as soon as possible when loss estimates are available.

The market reaction to anticipated losses likely relates only to partial uncertainty. Settlements and awards are the result of long periods of negotiation and/or a trial. These events are known and observed by investors. Indeed, during the twenty days prior to the announcement of awards and settlements, this subsample suffers an abnormal return of about –1.5 percent. The finding that the initial reaction is invariably negative suggests that the actual awards and settlements are higher than the loss estimates. For the relatively small anticipated losses, the long-term market response is small. Perhaps for these firms the award or settlement was close to investors' expectations or viewed as immaterial. For the larger anticipated losses, the market reaction seems permanent and negative.

Perhaps for these outcomes, the final losses were larger than anticipated and/or material, and, in any case, the resolution of uncertainty was viewed as a negative result for the firm.

NOTES

[1] Barrett et al. (1987) also use actual loss dates in their analyses. If one assumes that all information that is known to management is immediately reflected in stock prices, use of the actual date of loss (or the two-day window described in the "Sample and Methodology" section) provides a precise measurement of the information effect of the loss. Alternatively, in the absence of this assumption, in many cases neither management nor informed investors can reach a reliable estimate of the direct and indirect monetary magnitude of the loss on the loss date (or even soon thereafter). Use of the actual loss date (or the two-day window) facilitates accurate measurement of the market reaction to the loss (and the markets' perception of the loss magnitude). The reader should note that frequently there is no *Wall Street Journal* (*WSJ*) announcement of these losses. Conversely, some loss announcements are provided two or more days following the loss. Consequently, use of the *WSJ* announcement date would not facilitate examination of reaction to the loss—while use of the actual loss or event date does allow this analysis. This temporal difference between event date and announcement date is well documented. Glascock, Davidson, and Henderson (1987) note an average lag of about three days between Moody's making a bond rating change and Moody's publishing this information. Further, only about one-third of these bond rating changes subsequently were reported in the *WSJ*. Abdel-Khalik (1984) and Thompson, Olsen, and Dietrich (1987) note significant lags between actual events and their dissemination in the *WSJ*. Henderson (1990, p. 287) concludes "it is essential to find the earliest date of public disclosure when defining event dates. A *WSJ Index* search is a start, not a finish."

[2] A number of information sources are available to investors, including local and national newspapers and the insurance trade press. In addition, a group of security analysts tracks most companies and can obtain relevant information not reported by the press by directly contacting the company that suffered the large loss. The authors discussed the information dissemination process with several analysts. In general, on the day of the loss, analysts call the firm. Investor relations representatives provide a standard response, including a statement indicating that "we believe the loss is covered to a large extent, but at the present time we do not know the extent of coverage, and we will get back to you when we have more information." Over the next several weeks, investor relations personnel will get back to the analysts as more information becomes available. For some losses, they will provide this information on the date of the first telephone call.

[3] There are other "anticipated" loss announcements, such as the filing of a lawsuit. We chose not to include them in our "anticipated" loss subsample because the nature of these other anticipated events is different from that of awards and settlements. Further, the number of occurrences of each of the other "anticipated" events is not sufficiently large enough for us to provide separate analyses.

[4] To conserve space, daily results are presented for days t – 5 through t + 10 only. Complete results (t – 20 through t + 20) are available from the authors.

[5] For these 19 firms, there was one subsequent announcement about insurance coverage in the *WSJ*. However, it should be noted that after such losses, analysts frequently call the firm, the firm may make announcements not reported in the *WSJ* (see notes 2 and 3 above), and other sources may make relevant information available to investors. Further, it is possible that in some cases management succeeds in getting a benefit from an insured loss. In this case, old and possibly useless inventories, as well as other operating assets, may leave the firm at a "higher price" than if the firm simply wrote off the inventory and received tax benefits.

[6]Owing to space limitations, these results are not reported here. They are available from the authors.

[7]One may argue that lawsuit announcements should also be included in the anticipated losses subsample because lawsuit announcements can be anticipated. However, the characteristics of lawsuit announcements are different from those of announcements of awards and settlements. Award and settlement announcements resolve uncertainty, whereas filing a lawsuit does not reduce uncertainty.

[8]This information may include comparison with the accounting aspects of anticipated losses. If a loss is anticipated, an adequate allowance may have been recorded in the firm's financial statements. If the settlement or award is materially different from the allowance, we should expect an immediate market reaction.

[9]To save space, the complete results (day t – 20 through day t + 20) are not provided here. These results are available from the authors.

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