Voluntary Disclosure Behavior During Exogenous Crisis Events

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We examine the actions that insurance firms take immediately after the 9/11 terrorist attacks. We find that firms with larger 9/11-related losses make more voluntary disclosures, suggesting that such 9/11-related losses created increases in information asymmetries and that managers used disclosures in an attempt to mitigate these asymmetries. This relation between 9/11-related losses and voluntary disclosures also systematically varies with firm leverage, suggesting that the need for additional external capital may also play a role in disclosure behavior. However, these disclosures do not seem to impact the bid-ask spreads of the disclosing firms.

INTRODUCTION

On the morning of September 11, 2001, terrorists used airplanes to crash into and destroy the World Trade Center buildings in New York City. This terrorist attack (hereafter 9/11) was a huge, unprecedented event in world history, and impacted both U.S. and global economies and markets. For insurance companies, it represented the largest catastrophic event in U.S. history, representing $40-70 billion in insurance losses (e.g., Doherty et al., 2003). The event had a significant impact on the market capitalization of insurance companies, representing the most severe short-term stock price decline in the industry's history (e.g., Cummins and Lewis, 2003). Because of the unprecedented magnitude of property loss and potential open-ended liability losses, estimates about the magnitude of the losses provided by insurers tended to have wide boundaries and were subject to large margins of error. This increased information asymmetries between managers and market participants, which therefore increased the cost of potentially much-needed external capital.

The main goal of the current study is to examine how managers reacted to this change in information asymmetries. Specifically, given that insurance firms experience an exogenous shock that increases information asymmetries, how do managers change their disclosure practices to mitigate them? A large body of research in the accounting literature suggests that managers have different types of disclosure mechanisms at their disposal (e.g., Healy and Palepu, 2001); we examine one particular type of disclosure mechanism: press releases. We

examine the disclosure practices of the 105 firms in the insurance industry during the 9/11 attacks. Overall, we find that firms with larger 9/11-related losses make a higher level of disclosures. We also find that conditioning on the level of losses, firms' disclosure behavior systematically varies with the level of leverage. This suggests that the relation between losses and disclosures in this crisis context systematically varies with leverage.

BACKGROUND

The terrorist attacks on September 11, 2001 have been documented in various places (eg, Chen and Siems, 2004), so we do not belabor the point here. The attacks were unprecedented, unanticipated, and had an enormous impact on the psychology of the nation and the world. The event also had many economic repercussions. Many studies have examined 9/11's adverse effect on various aspects of the stock market. The studies are interesting because they examine how market participants react in a crisis situation with a high degree of uncertainty (e.g., Glaser and Weber, 2005). The most immediate and salient effect of 9/11 was the closing of the New York Stock Exchange for six days. On Monday, September 17, trading resumed. The Wall Street Journal reports that trading on that day was marked by panic and selling: "the day's trading was skewed by panic selling… selling was heavy and deep" (Wall Street Journal, 9/18/2001, p.C1). The Dow Jones Industrial Average closed down 7.3% for the day, the largest one-day point decline in U.S. history (though not largest percentage drop).

Glaser and Weber (2005) find that, overall, investor's estimates of expected returns were higher after 9/11, suggesting belief in mean reversion. Estimates of expected volatility were also higher. Furthermore, differences in opinion about expected returns were lower, but differences in opinion about expected volatility remained the same. Industry-specific studies have concentrated mostly on the insurance and airline industries. Studies such as Hogarth (2002), Cummins and Lewis (2003), Doherty et al. (2003), and Park (2008) have examined the insurance industry. In general, they find that insurance stocks experienced an economically significant decline in prices in the short-term—the largest drops in the industry's history—due to the large-scale changes in uncertainty and expected losses. However, there was a price reversal in the short-term over the next few weeks. Park (2008) finds that these price reversals are robust to controls for post-9/11 changes in systematic risk (Drakos, 2004), as well as the changes in idiosyncratic risk (that could generate correlated parameter estimation risk).

HYPOTHESIS DEVELOPMENT

The impact of 9/11 on insurance companies is complex. Cummins and Lewis (2003) posit that insurance markets were in disequilibrium after 9/11, in response to the significant unexpected loss shocks. These shocks were attributable to several factors. First, insurance companies faced large, unexpected losses (i.e., claims, payouts)—$40-70 billion total in the case of 9/11. Because U.S.-based terrorism losses were unanticipated by the insurance companies, very little or no premium was ever collected (i.e., no revenues to balance against the losses). Even if losses were to be borne by international reinsurers, domestic insurers were still exposed to losses due to deductibles and policy limits, as well as participation in domestic reinsurance pools; also collectibility of claims from reinsurers was also in question. There was also fear of positively correlated losses within the insurers' portfolios (e.g., increase in estimates of correlations for policies located in large, high-rise office buildings in other cities). This is especially problematic

for insurance companies because it violates the key assumption of statistical independence across insured units that provides the mathematical foundation for insurance pricing theory. These new correlated losses therefore exacerbated potential losses.

This sudden increase in the magnitude and nature of uncertainty dramatically increased information asymmetries, which in turn increases the demand for transparency (eg, Healy and Palepu, 2001). Losses therefore increase the demand for voluntary disclosures from management. Consistent with this, Park (2008) provides anecdotal evidence that some firms attempted to resolve information asymmetries by announcing their net loss estimates before the markets reopened on September 17. This discussion suggests our main empirical prediction:

Hypothesis H1: Firms with relatively higher 9/11-related losses make more voluntary disclosures in the period following 9/11 relative to prior periods.

SAMPLE

Sample selection

Our sample selection starts with all firms in the life insurance (SIC code 6311), accident and health insurance (6321), and fire/marine & casualty insurance (6331) industries during the 9/11 attacks (see Park, 2008), with available accounting-related data on the quarterly Compustat and daily stock returns data on the CRSP tapes. To mitigate survivorship bias, we include the research files, as well. The initial sample is 119 firms. We exclude 14 firms that do not have sufficient returns or accounting data, which leaves our final sample to be 105 firms in the insurance industries.

Disclosure data and 9/11-related losses measurement

Voluntary disclosure data is collected from Factiva. We search for press releases made in the period immediately following the September 11 attacks (i.e., 9/11/2001 to 12/31/2001) made via PR Newswire and BusinessWire. Similar to prior studies that hand-collect press releases (e.g., Miller, 2002), we assume that our disclosures are representative of the firm's overall corporate disclosure practice. To the extent that it is not, this may add noise or bias to our inferences; however, several prior empirical studies find that firms' disclosure practices tend to be complementary (i.e., not substitutes). We read each press release for discussion about the 9/11 attacks. We ignore press releases that do not mention the 9/11 attacks. Our main disclosure metric is a simple count of the 9/11-related disclosures that we collect. It is important to note that this metric is a level, not a change, measure of disclosure. We choose to focus on the level of disclosure because we limit our study to only 9/11-related disclosures. Because the event is a one-time occurrence, examining the level of such disclosure is the same as examining the change (since the level of disclosure in the prior period related to 9/11 is, by definition, zero). We choose to limit our study to only 9/11-related losses due to the high costs of hand-collecting the other types of disclosures the firm makes; this is fairly standard practice in voluntary disclosure studies (e.g., Miller, 2002).

We collect 9/11-related losses data from these press releases—as well as from earnings announcement press releases where 9/11 related losses are explicitly discussed. To the extent that firms experience 9/11-related losses but do not explicitly discuss them in either a voluntary disclosure or in the earnings announcement press release, our reported loss measure are potentially be biased.

Descriptive statistics

Untabulated descriptive statistics reveal the following. The mean (median) 9/11-related loss (LOSS) is $30.355 million ($0 million). Thirty-five percent of the sample reported a 9/11-related LOSS. The highest LOSS reported is $440 million. However, comparing the loss relative to prior-period total assets (LOSST) suggests that the losses were not proportionately large. For instance, the 90th percentile LOSST is 0.005, suggesting that losses were only 0.5% of total assets. On average, firms made 0.6 voluntary disclosures (VOL_DISCL) that explicitly mentioned the 9/11 attacks. The median firm made no VOL_DISCL, while the 90th percentile firm made one VOL_DISCL. The most "talkative" firm made six VOL_DISCL.

One interesting finding is that 44% of our firms make 9/11-related disclosures. This is interesting because only 35% of the firms actually report 9/11-related losses. The discrepancy arises from firms that make disclosures about the 9/11 attacks to merely state that they had no exposure to the event. This is an interesting aspect of voluntary disclosure activity that suggests firms signal in attempt to create a separating equilibrium. That is, given the extreme crisis event that we are examining, some firms make disclosures simply to state that there is no news to report. This further illustrates the non-linearity in the disclosure patterns of firms.

The mean (median) market value of firms in our sample is $4562 ($570) million, suggesting that the sample skewed towards larger firms. Lastly, we find that earnings and earnings changes are negative, and are statistically different from those of the prior quarter. Quarterly returns are positive, but are statistically lower than in the prior quarter. Untabulated Pearson correlations reveal that the magnitude of the loss (LOSST) is positively correlated with voluntary disclosures (VOL_DISCL), with a correlation coefficient of 0.455 (p=0.000).

EMPIRICAL RESULTS

In Table 1, we present results for the cross-sectional determinants of voluntary disclosures. Estimating a probit model, we assess the cross-sectional variation in the voluntary disclosures of insurance firms in the aftermath of 9/11 as a function of the magnitude of 9/11-related losses (LOSS). As control variables, we include lagged firm size (MV), market-to-book (MTB), leverage (LEV), and average bid-ask spread (SPREAD). Prior literature finds that firms that are larger and have higher levels of information asymmetry are more likely to make disclosures (eg, Healy and Palepu, 2001).

TABLE 1
DISCLOSURES AND 9/11 LOSSES

	Coeff	Chi-sq	p-val
LOSST	**47.059**	**16.110**	**0.000**
LEV	1.924	1.060	0.304
MV	**0.217**	**5.930**	**0.015**
MTB	-0.418	2.130	0.145
BAS	1.254	0.020	0.901

Consistent with hypothesis *H1*, the results in Table 1 show that the coefficient on 9/11-related losses (LOSST) is significantly positive (47.059, p-val=0.000), suggesting that larger losses are related to higher levels of disclosures.

Other tests

9/11 losses could cause insurance companies to face severe shortages in capital due to payouts/claims. The loss exposures were potentially significant, and anecdotal evidence suggests that insurance companies often reestimated reserve estimation parameters even in the lines of business which did not have a loss from the shock (Park, 2008). Firms with smaller pre-loss leverage were therefore in the best position to "ride out the storm". However, firms with high pre-loss leverage were likely to need a capital infusion. For instance, the insurance firm Chubb Corporation sought $600 million in new debt securities in the immediate aftermath of 9/11. During this debt issuance, its financial health was called into question by Fitch, the debt rating agency. Specifically, Fitch put Chubb's Senior Notes on their "Rating Watch Negative" list, stating in a press release that: "Losses for the events of September 11 on a gross basis were particularly large relative to capital, which highlight significant concentrations of risk. … Fitch hopes to gain further comfort that losses related to the events of September 11 have stabilized and no significant issues regarding reinsurance recoverables arise." As is illustrated in this excerpt, the potential need for a capital infusion was particularly problematic because the losses from 9/11 caused significant information asymmetries. The increase in information asymmetries made accessing external capital more difficult and expensive. This discussion suggests that, among firms with 9/11-related losses, those with higher levels of leverage may make more voluntary disclosures in the period following 9/11 relative to prior periods. In Table 2, we examine this possibility by interacting leverage (LEV) with 9/11 losses (LOSST).

TABLE 2
INTERACTING WITH LEVERAGE

	Coeff	Chi-sq	p-val
LOSST	**36.930**	**6.300**	**0.012**
LEV	1.568	0.680	0.411
LOSST*LEV	**444.489**	**1.290**	**0.021**
MV	0.207	5.370	0.256
MTB	-0.399	1.920	0.166
BAS	1.644	0.030	0.870

Consistent with the above discussion, we find that the coefficient for the LOSST*LEV interaction term is significantly positive (4444.489, p-val=0.021), suggesting that the relation between disclosures and losses (documented in Table 1) systematically vary with a firm's level of leverage. One interpretation of this result is that firms that experience relatively larger 9/11-related losses and *also* have higher levels of leverage before the attacks are more susceptible to potential shortages in capital arising from payouts/claims. These potential shortages increase the likelihood that the firm will need to obtain additional capital. In turn, the need for additional capital implies that firms will particular concerned about the cost of that additional capital, particularly given the risk in information asymmetries around the 9/11 attack event. This therefore may induce such firms to make more disclosures in an effort to reduce these information asymmetries.

Lastly, we examine the potential impact of disclosures on the average bid-ask spread over the first three trading days after 9/11. One aspect of the 9/11 attacks that is peculiar is the fact that the markets were closed by fiat for four trading days (Tuesday 9/11 to Friday 9/14), and only reopened on Monday, September 17. This means that for six full days, market participants were unable to trade. This also means that any market-based tests around the event date must actually be pushed to the first trading day after the event, 9/17. Interestingly, we find that many of the insurance firms in our sample make voluntary disclosures in the period *prior* to market opening (i.e., in the five days following 9/11). Specifically, we find that 22 firms make one disclosure prior to the 9/17 market opening, one firm makes two disclosures, and one firm makes three disclosures. Put differently, of the 46 firms that make 9/11-related voluntary disclosures, 52% of them (n=24) make disclosures before the markets opened on 9/17. Given our discussion of disclosures and information asymmetries, it is possible that disclosures made in the pre-9/17 period before the market opened were made as an attempt to reduce information asymmetries once the market did open again. To test this possibility, we estimate a model to assess the cross-sectional determinants of the average bid-ask spread over the first three trading days after the 9/11 attacks: Monday 9/17 to Wednesday 9/19. The main independent variable we consider is the number of voluntary disclosures made in the pre-9/17 period before the market opened. If the voluntary disclosures decrease information asymmetries, we expect to find a negative relation between SPREAD and pre-9/17 VOL_DISCL. In untabulated results, we find that the bid-ask spread is not related to pre-9/17 VOL_DISCL. Nor is the spread related to LOSST.

SUMMARY AND CONCLUSIONS

We examine the voluntary disclosure behavior of firms in the insurance industry in the period immediately following a major crisis event; namely, the 9/11 terrorist attacks. Of the 105 firms in our sample, 35% of them report losses explicitly related to the attacks. However, a larger number of firms (44%) make 9/11-related disclosures. The discrepancy arises from many firms having no insurance exposure to the attacks making disclosures of the "non-event" to their financial position. This is consistent with these unaffected firms making their disclosures or signaling to separate themselves from other firms, lest they be pooled together with those firms that do indeed experience a loss from the event. Of those that incur insurance losses, firms with larger losses make a higher level of disclosures. Moreover, we find that conditioning on the need for external financing (using a leverage measure) further increases disclosure behavior. Lastly, we find that voluntary disclosures that firms make before the market opens on 9/17 do not seem to have an effect on bid-ask spreads.

Some of the evidence we provide is ex post not too surprising. For instance, perhaps it is not surprising to learn that voluntary disclosures were higher for firms that exhibited greater losses. Also, though we were initially surprised at the non-trivial number of firms that disclosed their "non-event" status, the result is quite normal given what we know from Akerlof's (1970) seminal study. Other findings are a bit more surprising. For instance, our main result—that firms with higher losses and higher leverage make relatively more disclosures—is perhaps surprising to some readers because the magnitude of the losses as a share of total assets is not particularly significant. For instance, the mean loss is 0.3% of total assets; the 90^{th} percentile loss is 0.5% of total assets. Though not trivial, the losses are certainly not overwhelming as a percentage of assets. Further, it is not clear whether losses of similar magnitude for a non-crisis event like the 9/11 attacks would elicit similar behavior from management—it is difficult to imagine many

scenarios where firms voluntarily disclose their "non-exposure" to other events that represent a mean 0.3% loss. (Indeed, such disclosures of non-exposure would arguably inundate the information environment with noise or information overload.) Thus, the behavior we document is not meant to be extended to other "typical" scenarios. However, we do believe that the study may have some external validity in other crisis events, where market psychology may play a more significant role (e.g., Hurricane Katrina, the current mortgage-related financial crisis). Lastly, given the significant information asymmetries that the attacks created, we are surprised that firms' voluntary disclosures did not have an impact on the immediate bid-ask spreads of these firms. One interpretation of this non-result is that, though managers tried to reduce the information asymmetries via their disclosures, because of the (irrational) fear that existed in the aftermath of the 9/11 attacks, it seems that this was not reflected in bid-ask spreads.

We contribute to the literature in at least two ways. First, extant studies in the insurance/risk literature examine the stock price behavior (e.g., returns, volatility) of insurance firms following 9/11, assuming that information asymmetries related to insurance losses play a major role in such behavior. However, none of these studies examine managers' attempts at resolving such information asymmetries. Given the economically significant impact that voluntary disclosures can have on the cost of capital (e.g., Healy et al., 1999), examining managers' disclosures therefore helps paint a richer context to the price movements of insurance firms during this crisis event, as well as the types of actions that managers were taking in moments of crisis. Second, several studies in the accounting literature examine voluntary disclosure behavior of managers experiencing firm-specific events (e.g., firm-specific earnings surprises, or firm-specific product market events). However, we are not aware of any studies that consider events that are outside the managers control, particularly significant crisis events like 9/11. The behavior we document therefore sheds light on how managers may respond to future crisis events where market psychology arguably plays a significant role; in a larger sense, this is not limited to future potential terrorist attacks, but also includes such events as manager response to Hurricane Katrina or the current crisis in the financial sector related to mortgage-related securities.

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