Informational Efficiency of Credit Default Swap and Stock markets: The impact of Adverse Credit Events

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Abstract

We investigate credit default swap (CDS) and stock price reactions to a variety of credit events, including news of economic distress, financial distress, M&A, SEC probes or accounting irregularities, and leverage buyouts (LBO). The CDS spread shows a large spike of 37% to 96% depending on the event type on a single day and stays fairly flat the month after, supporting efficiency of the CDS market. The stock price drops by 2% to 9% upon the first four types of credit news but rises by 7% on the LBO news, consistent with wealth transfer effects from bondholders to equity holders. With the exception of LBO news, the stock market seems to reveal information about negative credit events before the CDS market. But we find stock price over-reaction for news of a SEC probe, and under-reaction for financial distress news. This may arise from trading behaviors of uninformed investors in the stock market.

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Introduction

A credit default swap (CDS) is a credit derivative contract where the buyer makes periodic payments (CDS spread) in exchange for protection against default or other credit events specified in the contract. In recent years the CDS market often witnesses dramatic spread widening in response to adverse credit events, even before stock markets.[21] This can arise from information leakage before the announcement of negative news. It may also result from informational advantages or insider trading of major participants, such as large investment banks, insurance companies or hedge funds, due to the unregulated nature of the CDS market (Acharya and Johnson (2007)). Economic distress, financial distress, and SEC probes are major economic reasons driving CDS spread jumps in the 2001 and 2002 CDS market. As LBO deals aroused a lot of interest in 2004 and 2005, they became major forces driving the CDS spread widening.[22]

This paper first examines CDS price reactions around a variety of negative credit news associated with economic distress, financial distress, SEC probes or accounting irregularities, M&A, and leverage buyouts. We find that the strongest reaction of the CDS spread in absolute term is induced by news of SEC probe with an abnormal CDS spread increase by 247 basis points (bp) on a single day, whereas the strongest reaction of the CDS spread in relative terms is triggered by leverage buyout (LBO) news with an abnormal CDS spread increase by 96% on a single day. Depending on the credit event type, the CDS spread exhibits a large spike ranging from 37%-96% on a single day, shows slight but insignificant upward movement in the month prior to the large jump, and stays fairly flat the month after, supporting the efficiency of the CDS market.

[21] For example, The *Wall Street Journal* (WSJ) article (October 4, 2006) "Trading in Harrah's Contracts Surges Before LBO Disclosure" reported that CDS spreads of Harrah experienced dramatic spike two days prior to the announcement, whereas the stock market was much slower to respond.
[22] Source: *Euroweek* (Dec. 2, 2005), 'LBO news is one of the major features of the CDS market at the moment'.

We further investigate the stock market reaction around adverse credit news in an attempt to shed light on the relationship between the stock market and the CDS market. The Merton-type structural model suggests a negative relationship between CDS spreads and stock prices. In practice, capital structure arbitrage that exploits such relationships should foster the integration of the CDS and stock market and information flows between the two markets. However, Collin-Dufresne, Goldstein and Martin (2001), Blanco, Brennan, and Marsh (2005), and Kapadia and Pu (2007) document low correlation between stock returns and changes in credit spreads.

Anecdotal evidence shows that the CDS market anticipates credit deterioration in firms well before stock markets. Given participants of the CDS market, embedded leverage and its market opacity, it can be a preferred channel for informed trading. However, another strand of literature found mixed evidence on the lead-lag relationship between the stock and CDS markets. For example, Longstaff et al. (2003) find that the CDS leads stock for 10 firms, and the stock leads CDS for 12 firms, and conclude that the stock market contains distinct information from the CDS market. Fung et al. (2008) find complex lead-lag relationships between the stock market and the CDS market.[23]

Low unconditional correlation and complex lead-lag relationship suggest that we may need to focus on conditional information flow between stock and CDS prices, i.e., around adverse credit events or when default is a likely event for a firm. Presumably, information revelation in the stock market may be contaminated by trading of uninformed traders, while CDS market information may be revealed in a cleaner way due to an information advantage of market participants. So we use information reflected in the CDS market, i.e., big jump in CDS spread, as the benchmark to examine incremental information revelation in the stock market around different types of credit events.

[23] Also see Norden and Weber (2004), Pena and Forte (2006), Acharya and Johnson (2007) for studies on lead-lag relationship between stock and CDS market.

We find that the stock price plunges by 2% to 9% upon the first four types of credit news, considerably lower than the CDS market response in magnitude. Stock prices rise by 7% on the LBO news, consistent with wealth transfer effects from bondholders to equity holders. Interestingly, we find that with the exception of LBO news, the stock market seems to reveal information about negative credit events even before the CDS market. However, the post-event drift in the stock market shows overreaction for news of SEC probes and under-reaction for financial distress news, which challenges the efficiency of the stock market for certain types of adverse credit events. This may arise from noisy trading of uninformed traders in the stock market. Overall, our evidence lends support to the efficiency of the CDS market, and confirms our expectation that the relationship between the stock and CDS markets is conditional on different types of news.

The remainder of the paper is structured as follows. Section 2 discusses the data and research design. Section 3 presents empirical results regarding the CDS and stock market reactions to adverse credit news. Section 4 concludes.

II. Data and Research Design

A. The Credit Default Swap Dataset

This paper uses CDS spreads taken from a comprehensive dataset from the MarkIt Group. The original dataset provides daily quotes on CDS spreads for over 1,000 North American obligors from January 2001 to December 2005. Quotes are collected from a large sample of banks and are aggregated into a composite number, ensuring continuous and reasonably accurate prices quotations.[24]

We use only the five-year spreads because these contracts are the most liquid and constitute over 85 percent of the entire CDS market. To maintain uniformity in contracts, we only keep CDS quotations for senior unsecured debt with a modified restructuring (MR) clause and denominated in U.S. dollars.[25] A firm is kept in the sample only if it has sufficient pricing information once started, but not necessarily to the end as some firms exited the database, e.g. when a credit event triggers payment on the CDS.[26] This sample has 561 credits and 405,748 daily observations on CDS spreads.

Summary statistics on the CDS data are provided in Table I. Panel A describes the distribution of reference credits by year and credit rating. The number of quoted reference entities steadily increases over time, reflecting the growth of this market. The sample includes a wide range of credit ratings, from AAA to B or below. BBB-rated firms, using Standard and Poor's definitions, constitute the largest credit ratings group.

[Insert Table I]

[24] The MarkIt Group collects more than a million CDS quotes contributed by more than 30 banks on a daily basis. The quotes are subject to filtering that removes outliers and stale observations. MarkIt then computes a daily composite spread only if it has more than three contributors. Once MarkIt starts pricing a credit, it will have pricing data generally on a continuous basis, although there may be missing observations in the data. Because of these features, the database is ideal for time-series analysis. These data have also been used by Zhu (2004) and Micu et al. (2004).

[25] The Modified Restructuring clause was introduced in the ISDA standard contract in 2001. This limits the scope of opportunistic behavior by sellers in the event of restructuring agreement to deliverable obligations with a maturity of 30 months or less. This clause applies to the majority of quoted CDS for North American entities.

[26] We discard companies with more than 10% missing observations between their first and final dates.

Panel B shows that on average a firm has 714 CDS daily data points. Even with daily trading, however, the CDS spread does not necessarily change from one day to the next, perhaps because there is no sufficiently new information to justify changing quotes. As the table shows, 33% of observations display no change from the previous day, on average.

Panel C provides summary statistics of CDS spreads by year. The average CDS spread is 141bp for this sample. There are variations across years, however, reflecting changing credit conditions. Spreads were higher in 2002 and lower in 2004 and 2005. Some spreads can be quite high. The 99.9th percentile for spread levels is 3,370bp.[27]

Next, Table II describes summary statistics for CDS daily spread absolute and relative changes in Panels A and B, respectively. The average absolute change is 0bp. The 99.9th percentile for spread increases is 139bp. On average the relative change over the period is zero. The 99th and 99.9th percentile for spread relative change is 13.9% and 44%, respectively.

[Insert Table II]

A. B. Identification of Credit Events

The sample of credit events includes jump events over the period 2001 to 2005. To identify jump events, we consider all changes in daily CDS spreads above 100bp, which yields a sample of 583. Large changes in CDS spreads, however, are more likely for firms that already have a low credit rating, or large spread. To include a broader spectrum of credit ratings, we only keep the sample with the relative change in spread exceeding 20%, yielding a sample of 297 events.

[27] Such high numbers would indeed be justified by a high probability of a credit event in the near future. Suppose that a default was certain in 1 year, with zero recovery. It would then be necessary to charge a spread of 10,000 bp to cover the loss. If default would occur in 1 month, then the required annualized spread would be 120,000 bp, which would be collected for one month only. In practice, the CDS market becomes illiquid just before bankruptcy. When this is the case, however, the time series collected by MarkIt would stop.

Since a firm's default swap spread may experience a series of jumps that are related to the same event, we identify consecutive events for the same firm and only keep the first observation within the one-month window. There are a total of 243 events, covering 131 firms. Panel A of Table III summarizes the number of events for each firm. On average, a firm has about 2 jump events in the sample period, with a maximum of 7 and a minimum of 1 event. The median is 1 event for each firm.

[Insert Table III]

The jump event may arise for a variety of reasons. To identify the sources for CDS spread widening, we cross checked Factiva News Database (Formerly Dow Jones Interactive and Reuters Business Briefing) for underlying economic reasons. Five economic reasons are identified: (Type I) economic distress, (Type II) financial distress, (Type III) SEC probe (round-trip trading, fraud, and insider trading), accounting irregularities and lawsuits, (Type IV) mergers and acquisitions, and (Type V) leveraged buyout. Panel B of Table III reports the frequency of credit events by year and by type.

Specifically, we attribute credit events due to declining earnings, higher costs, layoffs, etc as Type I, resulting in a sample of 93; Type II includes 43 events due to high leverage, debt rating downgrades, credit rationing or lack of access to new funds; 53 events arising from information shocks are classified as Type III, including: SEC investigations on accounting practices, round-trip trading, insider trading, fraud, restatement, lawsuits, etc; Type IV includes 35 jump events due to M&A related reasons. To examine whether there are wealth transfer effects upon leveraged buyouts, we identify 20 Type V events, such as buyout news of Computer Sciences, Toys-R-us, Neiman Marcus Group, and J.C. Penney & Co.

Panel C and Panel D of Table III describes the summary statistics of absolute CDS spread changes and relative spread changes by year, respectively. These changes are only recorded over two consecutive days with non-missing observations. Generally, the credit events are fairly spread out over all five years. About half of the jump events, however, occur during 2002. On average, the CDS spread change of a jump event is 218bp, with the maximum change at 1827bp, and the minimum at 100bp. The average relative change is 47.1%, with the maximum at 360%, and the minimum at 20%.

D. Measures of the CDS and Equity Market Responses

To test for changes in credit risk of a firm around credit events, we apply the standard event study method to the firm's CDS spread. Following Zhang (2005), four measures are used in our study. First, we calculate the *Cumulated CDS Spread Changes* (CSCs) for a time interval [t_1, t_2] as the CDS spread of the industry portfolio for day t_2 minus that for day t_1, where t_1 and t_2 are the number of days relative to the event date. We calculate the cross-sectional mean and standard deviation for CSCs for the full sample, e.g. of 243 events. T-statistics are computed in the standard way. In addition, we report the percentage of positive values.

Second, we also report measures that are adjusted for general market conditions, as proxied by the same credit rating, to obtain the rating-adjusted CDS spread (*AS*). For firm *j* with rating *r* at time *t*, AS_{jt} is defined as: $AS_{jt} = S_{jt} - I_{rt}$, where S_{jt} denotes the CDS spread of reference entity *j* at day *t*, and I_{rt} denotes that of the equally-weighted CDS index of rating *r* at day *t*. The index *r* refers to the broad rating category: investment-grade and high-yield, with $r = 1, 2$ respectively.[28] For each event, CASCs are calculated as $CASC_j(t_1, t_2) = AS_{jt_2} - AS_{jt_1}$, and then processed as before.[29]

Since the CDS spreads of firms within an industry can vary by a wide margin, aggregating spread changes across different names may overweigh firms with higher CDS spreads, or whose credit quality is lower. The third measure we use is the cumulative relative change of CDS spreads (CRCs), which is a scale-free measure. Similar to measuring equity returns in

[28] The construction of the CDS index follows the CDX Investment Grade Index and High Yield Index rule disclosed by MarkIt. The Investment Grade Index is based on 125 most liquid investment grade CDS names, and the High Yield Index is based on 100 most liquid below-investment grade CDS names.
[29] The construction of CASC has also been used in Jorion and Zhang (2007, 2008).

excess of the market, we further construct the fourth measure: *cumulative abnormal relative changes of CDS spreads* (CARCs), which is a counterpart of CAR in the equity market event study. We apply the market model where the market is measured as a corresponding rating index of each CDS name.

To examine the equity market response around the event, we apply the market model using conventional stock prices. For each event, we replace the CDS data by equity price data. Abnormal returns are computed from a market model estimated over the period [-252,-50], prior to the event. We then aggregate the time series across our various credit events, following MacKinlay (1997).

B.

C. III. Empirical Results

A. CDS Market Reactions to Different Types of Credit Events

The first contribution of this paper is a detailed comparison of firms' reactions in the CDS market to credit events conditional on event types. The main results on CDS spread movements are presented in Table IV. Panel A reports the distribution of spread changes, CSCs and CASCs; and Panel B reports the distribution of relative spread changes, CRCs and CARCs. For each case, the table reports the single-day effect, when a jump occurs.

[Insert Table IV]

The first line reports the effect of jump events for the full sample. The average CSC is 217.3bp, which is significantly different from zero at the 1% level. This result is robust to the adjustment of the CDS index. Specifically, the average CASC is 209.4bp and significantly different from zero at the 1% level. Results are consistent when spread relative change is used. The average CRCs (CARCs) is 46.9% (45.4%), significant at the 1% level.

The other five lines report the effect for jumps due to different reasons (Type I-V). To conserve space, we only discuss the rating-index adjusted results. If the jump is due to economic distress, the average CASCs is 202.7bp and significant at the 1% level. The average CARCs is 38.1%. For the credit events due to financial distress, the average CASCs is 234.9bp, and the average CARCs is 37.7%. On average, both the CDS absolute changes and relative changes due to information shock, such as a SEC probe are higher than that due to economic distress or financial distress. Specifically, Type III is associated with the average CASCs at 247.1bp and the average CARCs at 43.1%. Such events have greater information value because they are less anticipated and involve greater uncertainties than economic or financial distress news. If a jump is due to possible merger and acquisitions, the average CASCs is 155.5bp and the corresponding average CARCs is 42.2.

For jump events due to news of leveraged buyouts (LBO), the average CASCs is 173.4bp, but the average CARCs is as high as 96.3%, the highest relative change among all five types. This is perhaps due to lower initial CDS spread for the firms before they become the target of LBOs. For example, J C Penney's CDS spread jumped within one day to 358.4bp from 108.10bp, a dramatic relative change of 231.5% on back of LBO news.

To gain insights for a longer period around the event window, we examine cumulative relative changes (CARCs) for one month before and one month after each type of credit event (Figure 1). Several points are noteworthy. First, Type IV (LBOs) is associated with the strongest CDS reactions, followed by Type III (SEC probe), Type V (M&A), and Type II (financial Distress). Type I (economic distress) has the lowest drift among the five event types. Second, regardless of event types, there is a slight but insignificant increase in CDS spread one month prior to the jump event. Third, the dramatic CDS change happens on the event day, and there is almost no post-event drift in the one month period after the event, supporting the efficiency of the CDS market.

[Insert Figure 1]

B. The Equity Market Reaction

Next, we examine whether the equity market is efficient enough to capture the information reflected in the CDS market. Table V reports the cumulative equity abnormal returns (CAR) around the jump event windows, in comparison with CARC using the CDS prices.

[Insert Table V]

The first five panels illustrate different stock market reactions conditional on the type of credit events. For economic distress type, the CAR is -4.9% (-9.3%) for the three (eleven) day window, followed by -10.7%(-13.9%) for the financial distress type, and -14.4% (-9.5%) for the SEC probe type. All t-statistics are significant at the 1% level for each day of the [-1, 1] period, the three-day window, and the eleven-day window. For the M&A type, the CAR is -4.5% for the three day window, with a t-statistic of -4.2. The eleven day CAR is -3.4%, but is barely significant. Collectively, the stock market moves in an opposite direction from the CDS market for the above four types, i.e., when the CDS spread soars, the stock price plunges.

The stock price may also surge as the CDS spread jumps. As shown in the fifth panel, this happens if jump is due to LBOs news. On day 0, the stock price rises by 7% on average, with a t-statistic of 10.99. The average CARs is 9.2% (9.5%) for the three (eleven) day window. Over seventy percent (75%) of the events have positive price changes. Note that the CDS spread change is dramatically higher than that in the stock market. Using the CDS spread, we find that the average CARCs is 111.5%(116.3%) for the three (eleven) day window, over ten fold the CARs. Our result confirms the finding of Warga and Welch (1993) that stock price increases around the LBO announcement, but bond price declines, suggesting a wealth transfer effect from the bondholders to the stockholders.

For the full sample, the average CARs is a negative change of -6.8% (-7.8%) for the three (eleven) day window, with a t-statistic of -16.1 (-9.8). In contrast, the average CARCs is 49.1% (50.6%) for the three (eleven) day window, about three times the abnormal equity returns in magnitude.

Figure 2 illustrates how the stock prices evolve for the two-month window ([-1, +1] around the event. The largest stock price changes happen on day 0 for all types of events. Except for the case of LBO news, the stock market and the CDS market reaction moves in an opposite way. In terms of magnitude, the equity CAR is just a fraction of the CDS relative changes at- and post- event. Take day 0 as an example, the equity abnormal change is only 5% to 20% of the change in the CDS market, conditional on the event types.

It seems that information is revealed in the stock market earlier than in the CDS market for the first four types of credit events, particularly for the news associated with SEC probes and financial distress. The stock market does not seem to anticipate the LBO news, however.

The post-event drift is different depending on the event type. Note that the stock price reaction due to SEC probes (Type III) is the greatest before and at the event date, with a cumulative abnormal equity returns by 25%. However, it reverts back after the event and posts a 10% recovery in the month after, suggesting stock price overreaction. For events due to financial distress (Type II), the stock price drops -19% during the month before and on the event date, and continues to drop by an additional 5% in the month after. This may indicate an initial under-reaction to financial distress news by shareholders. A further drop in stock price may be due to deteriorating credit conditions and subsequent bankruptcies. Indeed, this sub-sample includes some companies that filed for bankruptcy later. Post-drift is most volatile in the case of M&A. This may suggest that the information contained in the M&A news is not necessarily good or bad news for the equity-holders of the company, but it is certainly bad news for the debt-holders, as suggested by a big jump in CDS spread on the event day that stays high in the month after. Finally, the equity CAR soars upon LBO news and stays high, showing no post-event drift.

[Insert Figure 2]

IV. Conclusion

Existing studies find mixed evidence on the relationship between information flows between CDS and stock markets. We shed light on this issue by comparing the stock price reaction with the CDS price reaction around a variety of adverse credit events. One contribution of the paper is that we use easily identifiable CDS jump as a benchmark to examine information revelation in the stock market.

We find that the CDS price increases by 37% to 96% on a single day in response to credit event news that are related to economic distress, financial distress, SEC probes, M&A or LBO. The stock price drops by 2% to 9% upon the first four types of credit news but rises by 7% on the LBO news, consistent with wealth transfer effects from bondholders to equity holders.

Our findings support efficiency of the CDS market. We find the CDS price reaction concentrates on a single day for all five types of adverse credit events, with negligible movement one month before and one month after. This can be due to special features of the CDS market. CDS market participants include commercial banks with information advantages or even insider information, so the market seems to timely and correctly interpret information embedded in the credit news. In addition, all participants are large and sophisticated investors who are privy to the same information, so no one will have the ability to out-profit others. The stock market appears to anticipate the first four types of credit news, but not the LBO news, consistent with the anecdotal evidence. Interestingly, we find overreaction of stock prices in the case of SEC probes and under reaction in the case of financial distress. So information revealed in the stock market seems less accurate than the CDS market for these two types of events. This may arise from noisy trading of uninformed investors in the stock market.

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Table I
Summary Statistics of the CDS Dataset

The CDS dataset spans the period from January 2001 through December 2005. Panel A reports the number of underlying credits by year and by Standard & Poor's rating for our sample. Panel B describes the distribution of the number of CDS observations for a firm, as well as that of the percentage of daily observations with no change. Panel C reports the summary statistics for CDS daily spread classified by year in basis point. All contracts have a 5-year maturity.

Panel A: Rating Distribution of Number of Underlying Reference Entities

Year	AAA, AA	A	BBB	BB	B or below	Total
2001	11	53	77	27	22	190
2002	17	74	136	33	15	275
2003	21	93	180	51	31	376
2004	25	97	209	68	48	447
2005	27	107	229	94	72	529
Number of firms	30	111	237	97	74	549

Panel B: Summary Statistics for the Number of CDS Observations for a Firm

	Mean	Std Dev	Median	Max	Min
All Firms	714	374	631	1256	103
Percentage of observations with no change	33%	19%	28%	98%	1%

Panel C: Summary Statistics of CDS Spread by Year

Year	N	Mean	Std Dev	Median	Max	Min	p5	p25	p75	p95	p99	p99.9
2001	29569	140	128	99	1062	12	30	63	173	408	710	888
2002	61899	225	377	115	6533	15	38	70	251	664	1705	5255
2003	70321	135	201	63	5750	8	22	38	144	453	1026	2025
2004	108430	120	237	53	7050	6	19	34	119	413	892	3154
2005	135529	124	243	49	7751	5	16	31	123	448	936	2471
Total	405748	141	257	65	7751	5	20	37	152	471	1025	3370

Table II
Summary Statistics for the CDS Spread Changes

Panel A and Panel B report the summary statistics for CDS daily consecutive spread absolute changes in basis point, and relative changes in %, respectively. Panel C reports the summary statistics for the number of daily CDS observations for a firm. The bottom line reports the summary statistics for the percentage of CDS observations with no changes.

Panel A: Summary Statistics for CDS Spread Changes by Year (basis point)

Year	N	Mean	Std Dev	Median	Max	Min	p25	p75	p95	p99	p99.9
2001	29036	0.2	8.6	0.0	473	-330	0.0	0	4.2	21.7	87.5
2002	61209	0.5	31.8	0.0	1827	-1472	0.0	0	12.4	56.7	294.8
2003	67975	-0.5	10.8	0.0	703	-450	-0.7	0.2	3.3	14.7	80.8
2004	107931	-0.1	16.4	0.0	1095	-2135	-0.4	0.2	3.3	18.5	120.3
2005	134618	0.2	12.1	0.0	1005	-1239	-0.3	0.3	4.1	18.8	112.8
Total	400769	0	17	0	1827	-2135	-0.3	0.2	4.5	25.0	139.0

Panel B: Summary Statistics for CDS Spread Relative Changes by Year (%)

Year	N	Mean	Std Dev	Median	Max	Min	p25	p75	p95	p99	p99.9
2001	29036	0.2	4.0	0.0	112.5	-46.3	0.0	0.0	4.0	15.2	41.4
2002	61209	0.3	6.6	0.0	148.9	-57.9	0.0	0.0	6.9	27.4	58.9
2003	67975	-0.3	3.4	0.0	84.9	-50.9	-1.0	0.3	3.5	9.5	27.7
2004	107931	0.0	4.2	0.0	163.8	-60.0	-0.7	0.4	3.8	12.5	40.2
2005	134618	0.1	4.0	0.0	360.0	-73.8	-0.6	0.5	4.0	10.9	32.0
Total	400769	0.0	4.4	0.0	360	-74	-0.6	0.3	4.1	13.9	44.0

Panel C: Summary Statistics for the Number of CDS Observations for a Firm

	Mean	Std Dev	Max	Min	p25	p50	p75	p95
All Firms (N=561)	714	374	1256	103	381	631	1103	1246
% (Observations with no changes)	33	19	98	1	20	28	40	74

Table III
Frequency of Credit Events by Year

Jump event is selected in three steps: (1) We compute the CDS spread daily changes and build an empirical distribution. We then select a subsample of 583 observations with absolute change exceeding 100 basis point; (2) To ensure such an observation have a sufficiently large relative CDS spread daily change, we sort the subsample by relative change, and identify a sample of 297 observations with relative change over 20%; (3) We delete later jump events that happen within one-month window, which yields a final sample of 243 jump events.

Panel A: Summary Statistics for the Number of Events for a Firm

N of Events	N of Firms	Mean	Std Dev	Median	Max	Min
243	131	1.9	1.2	1	7	1

Panel B: Frequency of Credit Events by Year and by Type

	2001	**2002**	**2003**	**2004**	**2005**	**Total**
Economic distress	8	56	6	15	8	93
Financial distress	2	27	4	5	5	43
SEC probe or accounting	3	31	4	9	5	52
M&A	2	16	2	8	7	35
Leverage buyout	0	7	0	2	11	20
Total	15	137	16	39	36	243

Panel C: Absolute CDS Spread Change (Basis Point)

YEAR	N	Mean	Std Dev	Median	Max	Min	P75	P95	P99
2001	15	154	45	138	242	105	183	242	242
2002	137	248	256	161	1827	100	243	705	1372
2003	16	258	161	179	625	101	355	625	625
2004	39	169	93	123	428	100	190	375	428
2005	36	164	123	125	609	102	171	504	609
Total	243	218	209	148	1827	100	233	544	1226

Panel D: Relative CDS Spread Change (%)

YEAR	N	Mean	Std Dev	Median	Max	Min	P75	P95	P99
2001	15	45.5	22.4	40.3	112.5	21.8	54.0	112.5	112.5
2002	137	43.5	25.6	36.8	157.0	20.4	55.2	85.9	148.4
2003	16	34.3	24.1	31.1	107.2	21.3	42.0	107.2	107.2
2004	39	49.5	28.1	53.6	163.8	20.2	63.9	88.3	163.8
2005	36	64.1	79.9	38.7	360.0	20.6	79.4	265.0	360.0
Total	243	47.1	39.3	36.8	360.0	20.2	60.2	107.2	231.5

Table IV

CDS Market Reaction to Jump Events by Event Type

The table reports the CDS market response to jump events over the period 2001 to 2005. CSC is the cumulative CDS spread change in basis points. CASC is the cumulative rating-index-adjusted CDS spread change in basis points. CRC is the cumulative CDS spread relative change in percentage. CARC is the cumulative CDS spread relative changes, defined as the market model residual estimated over the period [-252, -50] prior to the event, where the market is the corresponding CDS Investment-grade Index or High-yield Index, depending on the rating of the CDS name. The superscripts ***, **, and * indicate significance at 1%, 5% and 10% levels, respectively. The "% (>0)" entry indicates the percentage of observations with positive CSC/CASC/CRC/CARC.

Panel A

		CSC (basis point)			CASC (basis point)		
Type	**N**	**Mean**	**t-stat.**	**% (>0)**	**Mean**	**t-stat.**	**% (>0)**
Full Sample	243	217.3	16.2	100.0	209.4	15.3	100.0
Economic distress	93	214.1	12.8	100.0	202.7	12.8	100.0
Financial distress	43	234.1	7.7	100.0	234.9	7.9	100.0
SEC probe or accounting	52	249.1	5.9	100.0	247.1	5.8	100.0
M&A	35	180.0	9.3	100.0	155.5	9.8	100.0
Leverage buyout	20	179.5	3.0	100.0	173.4	2.5	100.0

Panel B

		CRC (%)			CARC (%)		
Type	**N**	**Mean**	**t-stat.**	**% (>0)**	**Mean**	**t-stat.**	**% (>0)**
Full Sample	243	46.9	18.6	100.0	45.4	16.6	100.0
Economic distress	93	42.3	15.9	100.0	38.1	18.0	100.0
Financial distress	43	40.1	8.9	100.0	37.7	8.0	100.0
SEC probe or accounting	52	44.4	11.4	100.0	43.1	11.2	100.0
M&A	35	45.5	11.2	100.0	42.2	9.4	100.0
Leverage buyout	20	94.3	4.3	100.0	96.3	3.9	100.0

Table V
Stock and CDS Market Reactions to Jump Events by Event Type

The table compares the CDS market response and the stock market response to jump events over the period 2001 to 2005. CARC is the cumulative CDS spread relative changes, defined as the market model residual estimated over the period [-252, -50] prior to the event, where the market is the corresponding CDS Investment-grade Index or High-yield Index, depending on the rating of the CDS name. CAR is the cumulative equity abnormal returns, defined as the market model residual estimated over the period [-252, -50] prior to the event. The superscripts ***, **, and * indicate significance at 1%, 5% and 10% levels, respectively. The "% (>0)" entry indicates the percentage of observations with positive CARC/CAR.

Type I: Economics Distress (N=93)

	CARC (%)			CAR (%)		
Day	**Mean**	**t-stat.**	**% (>0)**	**Mean**	**t-stat.**	**% (>0)**
-1	1.4	3.3	50.0	-1.4	-3.9	36.5
0	38.1	18.0	100.0	-2.4	-6.7	44.1
1	0.0	0.1	44.2	-1.1	-3.1	54.8
-1,1	38.1	15.4	97.6	-4.9	-7.8	37.0
-5,5	36.9	12.3	94.0	-9.3	-7.8	32.6

Type II: Financial Distress (N=43)

	CARC (%)			CAR (%)		
Day	**Mean**	**t-stat.**	**% (>0)**	**Mean**	**t-stat.**	**% (>0)**
-1	0.1	0.3	38.9	-2.7	-5.2	31.6
0	37.7	8.0	100.0	-6.7	-13.1	25.6
1	1.1	0.7	52.6	-1.2	-2.3	44.7
-1,1	38.8	8.0	95.0	-10.7	-11.8	26.2
-5,5	36.8	6.4	90.0	-13.9	-7.9	31.0

Type III: SEC Probe (N=52)

	CARC (%)			CAR (%)		
Day	**Mean**	**t-stat.**	**% (>0)**	**Mean**	**t-stat.**	**% (>0)**
-1	1.3	1.3	51.0	-3.6	-5.4	33.3
0	43.1	11.2	100.0	-9.1	-13.8	28.8
1	5.0	1.5	53.1	-1.7	-2.6	50.0
-1,1	49.3	9.7	100.0	-14.4	-12.6	23.1
-5,5	49.8	8.9	95.9	-9.5	-4.6	34.6

Type IV: Merges & Acquisitions (N=35)

	CARC (%)			CAR (%)		
Day	**Mean**	**t-stat.**	**% (>0)**	**Mean**	**t-stat.**	**% (>0)**
-1	3.9	1.5	61.5	-1.3	-2.2	33.3
0	42.2	9.4	100.0	-2.5	-4.1	45.7
1	0.3	0.1	46.7	-0.7	-1.1	43.3
-1,1	45.8	6.6	93.6	-4.5	-4.2	37.1
-5,5	48.6	6.9	96.8	-3.4	-1.6	37.1

Type V: Leveraged Buyout (N=20)

	CARC (%)			CAR (%)		
Day	**Mean**	**t-stat.**	**% (>0)**	**Mean**	**t-stat.**	**% (>0)**
-1	7.4	2.1	70.6	1.5	2.3	70.0
0	96.3	3.9	100.0	7.0	11.0	75.0
1	8.8	2.3	73.3	0.7	1.5	52.9
-1,1	111.5	4.6	100.0	9.2	9.0	70.0
-5,5	116.3	4.9	100.0	9.5	4.6	75.0

Full Sample

	CARC (%)			CAR (%)		
Day	**Mean**	**t-stat.**	**% (>0)**	**Mean**	**t-stat.**	**% (>0)**
-1	2.1	3.8	52.0	-1.9	-7.6	37.5
0	45.4	16.6	100.0	-3.8	-16.1	40.3
1	2.1	1.8	50.2	-1.1	-4.4	50.2
-1,1	49.1	16.3	98.2	-6.8	-16.1	34.9
-5,5	50.6	15.4	95.5	-7.8	-9.8	36.9

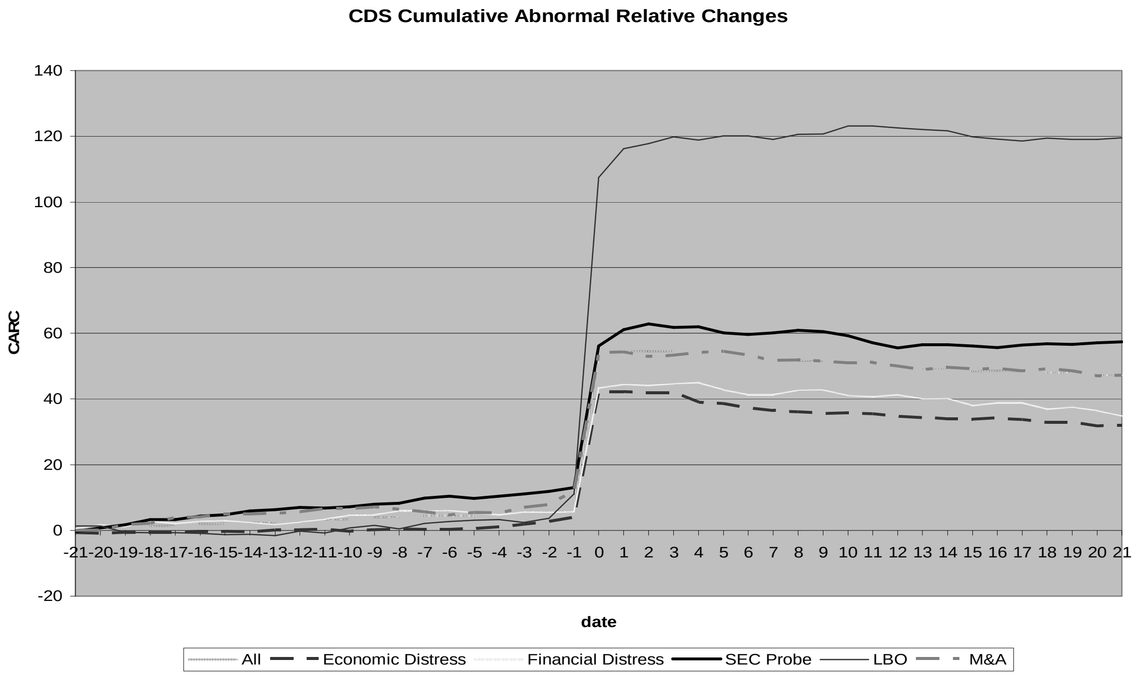

Figure 1: CDS Cumulative Abnormal Relative Changes (in percentage)

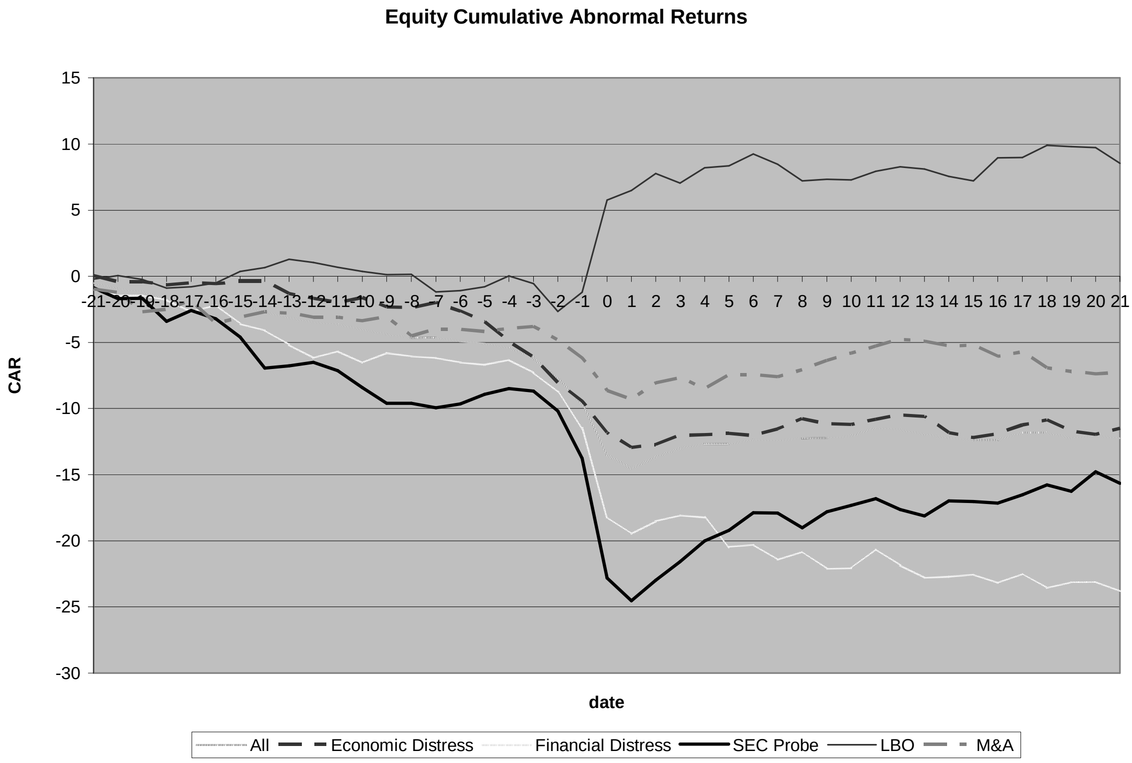

Figure 2: Equity Abnormal Returns (in percentage)